



DRILLING PAST DISASTER

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More Waste, and More Pollution to a Permian
Basin Already in Crisis

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THE PERMIAN IS ALREADY PAST ITS LIMITS

In Southeast New Mexico, the Permian Basin is already showing the consequences of decades of oil and gas extraction.

Companies spill toxic oilfield waste into land and water every day. Gaseous spills happen every fifteen minutes. Oil and gas pollution is driving ozone levels above the federal health standard near Carlsbad. Peer-reviewed research has measured elevated airborne radioactivity in Loving. Oil and gas extraction requires extraordinary amounts of water in a state preparing for a hotter, drier future. And the oil and gas industry generates a massive stream of contaminated waste that must be stored, moved, treated, reused, injected underground, or cleaned up when something goes wrong.

The Trump Administration's Bureau of Land Management (BLM) has an answer to these mounting impacts: more drilling.

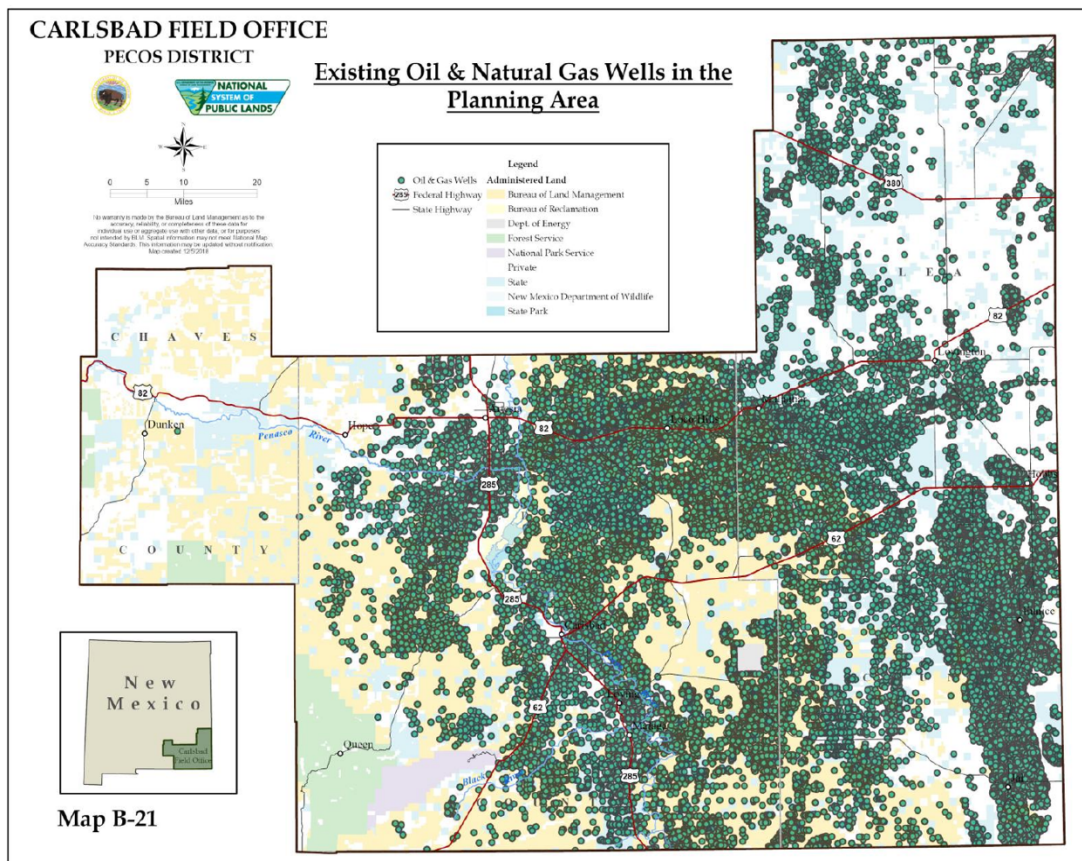


Figure 1. BLM's Carlsbad planning area. Source: Bureau of Land Management, Carlsbad Proposed Resource Management Plan/Final Environmental Impact Statement, 2026.

BLM began rewriting its 1988 Carlsbad plan in 2010, released a draft in 2018, and waited until 2026 to produce the final proposal.¹ After 16 years of planning, the Proposed Carlsbad Resource Management Plan would offer up 97% of the federal mineral estate for oil and gas leasing and facilitate another 12,096 federal wells over the next two decades.

Those wells alone would require 236.5 billion gallons of water. Add projected nonfederal extraction and oilfield water use climbs to 375.4 billion gallons, equal to nearly 40% of all the surface and groundwater New Mexico uses in a year and almost four times annual statewide public-water withdrawals.²

BLM projects future federal and nonfederal extraction would generate 30 billion barrels, or 1.26 trillion gallons, of new toxic liquid oilfield waste.³ That waste would pile onto a disposal system already triggering earthquakes and forcing regulators to restrict underground injection across the Permian.

The climate consequences are staggering. New federal extraction under BLM's proposed plan would generate approximately 3.378 billion metric tons of greenhouse-gas pollution. Across existing and future federal and nonfederal oil and gas activity, BLM's emissions tables total approximately 5.365 billion metric tons of direct carbon dioxide from 2026 through 2043.⁴

These harms do not stand alone, but rather would add to the current pollution crisis already plaguing New Mexico's land, water, and communities.

BLM'S PLAN, BY THE NUMBERS

NEARLY 44,000 ACTIVE WELLS + 19,200 MORE

375 BILLION GALLONS *oilfield water use*

1.26 TRILLION GALLONS *toxic oilfield waste*

5.365 BILLION METRIC TONS CO₂ *oilfield climate pollution*

3.2% of the world's remaining 1.5°C carbon budget

Sources: BLM; U.S. Energy Information Administration; Global Carbon Budget 2025; Guardians calculations.⁵

THE CRISIS IS ALREADY HERE

AN OILFIELD THAT SPILLS 96 TIMES A DAY

17,373

reported oil and gas spills and releases

96 PER DAY

one reported incident every 15 minutes

748

liquid spills

4.5+ MILLION GALLONS

of liquid oilfield waste spilled

1.5+ MILLION GALLONS

reported unrecovered or “lost” to soil and water

87% TO 96%

produced-water share of liquid spill volume in Q1 and Q2

98% TO 99%

of reported incidents occurred in Eddy and Lea counties

During the first half of 2026, New Mexico oil and gas operators reported 17,373 spills and releases, averaging 96 incidents per day, or approximately one every 15 minutes. Most records involved gaseous releases, but operators also reported 748 liquid spills that released more than 4.5 million gallons of oilfield waste. More than 1.5 million gallons were reported as unrecovered or “lost” to soil and water. Produced-water accounted for 87% of liquid spill volume in the first quarter and 96% in the second. Nearly all reported incidents occurred in Eddy and Lea counties, at the center of the area governed by the Carlsbad plan.⁶

During the two quarters, operators attributed 239 produced-water spills to equipment failure, 102 to corrosion, and 48 to routine or “normal” operations. Together, those three recurring causes accounted for four out of every five produced-water spills.

BLM’s analysis confirms that recovery is routinely incomplete, reporting that approximately 47% of the volume from liquid spills in 2023 was not recovered. BLM nevertheless states, without providing a quantified remediation success rate in that discussion, that remaining contamination from unrecovered spills “is remediated.”⁷

The same operators, infrastructure failures, and spill causes recur spill after spill, quarter after quarter, year after year: equipment breaks, pipelines leak, tanks overflow, corrosion eats through infrastructure, and toxic waste escapes. At this scale, spills are not exceptional accidents. They are the operating record of the oilfield to which BLM proposes to add thousands of new wells.

TOP CAUSES OF PRODUCED-WATER SPILLS

JANUARY 1 TO JUNE 30, 2026

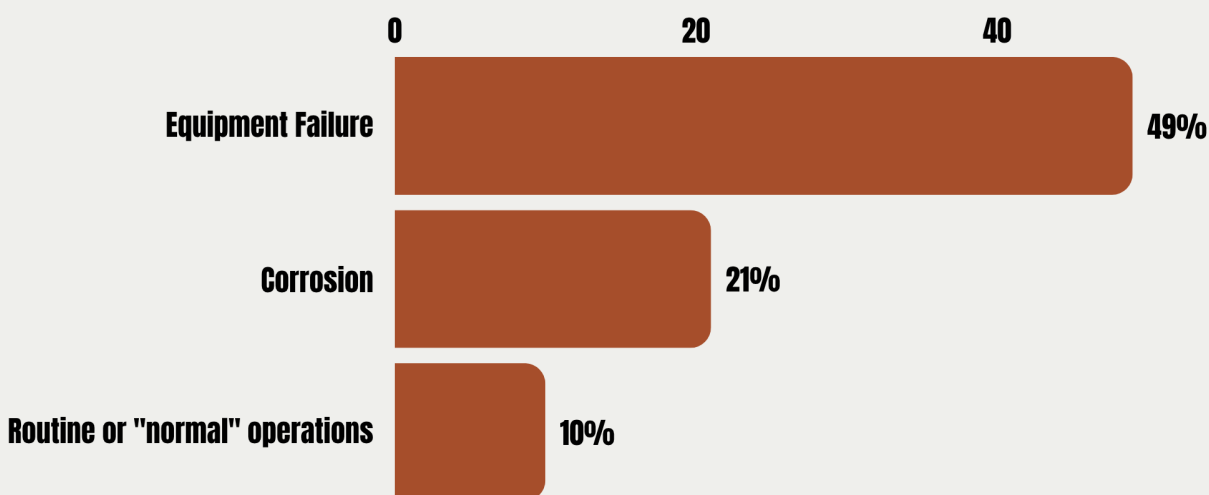


Figure 2. Source: WildEarth Guardians analysis of New Mexico Oil Conservation Division records, January 1–June 30, 2026. Percentages are based on 485 reported produced-water spills and combine Guardians' [Q1](#) and [Q2](#) analyses.

THE AIR IS ALREADY OVER THE LIMIT

Ozone forms when nitrogen oxides and volatile organic compounds released by oil and gas wells, compressors, engines, flares, trucks, and other sources react in sunlight. Ozone inflames and damages airways, worsens asthma and other lung disease, and makes it harder to breathe. Children, older adults, people with asthma, and people who work or exercise outdoors are especially vulnerable, with health effects documented even at relatively low concentrations.

That is why the Environmental Protection Agency (EPA) set the federal health standard for ozone at 70 parts per billion.⁸

Between January and in July 2026, regional monitors in southeastern New Mexico recorded 15 ozone exceedances across nine days. Carlsbad reached 78 ppb, Carlsbad Caverns National Park reached 75 ppb, and Hobbs reached 73 ppb. Preliminary 2024–2026 design values were even higher: 78 ppb at Carlsbad and 77 ppb at Carlsbad Caverns, both above the federal health standard by eleven and ten percent, respectively.⁹

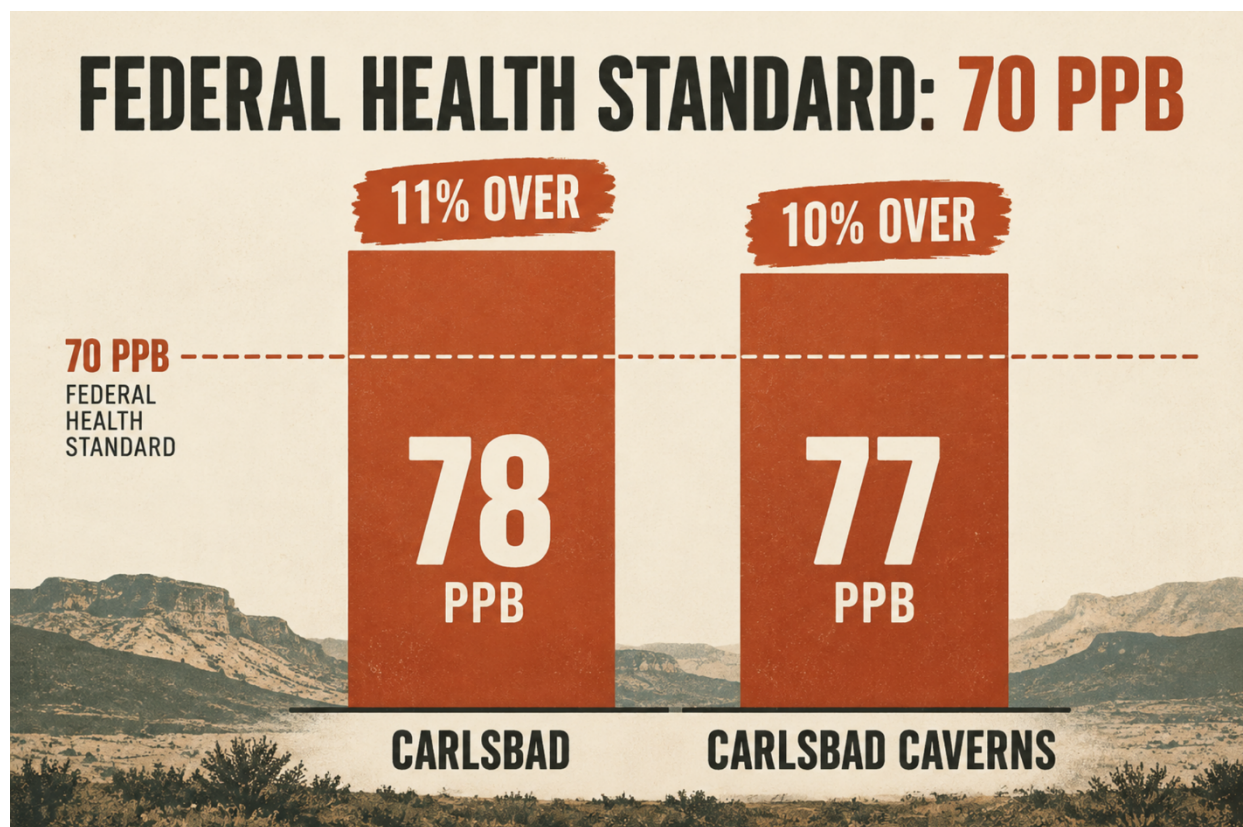


Figure 2. Preliminary 2024–2026 ozone design values at Carlsbad and Carlsbad Caverns National Park. Values reflect monitoring data available through July 2026. A design value is the three-year average of each year’s fourth-highest daily maximum eight-hour ozone concentration.

Without the BLM’s proposed increases to oil and gas drilling, the Permian’s air is already well over that health benchmark and remains un-remediated despite longstanding warnings. WildEarth Guardians petitioned the U.S. Environmental Protection Agency to designate New Mexico’s Permian Basin as an ozone nonattainment area after monitoring showed ozone pollution repeatedly exceeding the federal health standard in 2021. EPA acknowledged the petition but did not act.¹⁰

In April 2026, conservation, health, faith, and community groups filed a second petition asking EPA to designate Eddy, Lea, Chaves, and Roosevelt Counties nonattainment based on updated monitoring data showing the pollution problem had persisted.¹¹

The record now spans years: repeated ozone exceedances, two petitions to EPA, and no formal nonattainment designation.

AIRBORNE RADIOACTIVITY IS NOW PART OF THE RECORD

A 13-month peer-reviewed study published in 2026 measured airborne alpha radioactivity in Loving, New Mexico.

When winds came from the north-northwest, researchers measured median total alpha radioactivity approximately three to five times above background. Their analysis traced the strongest elevated measurements through a roughly 40-kilometer area extending north-northwest from Loving and centered around Carlsbad.¹² The study found a statistically significant relationship between flare density and measured radioactivity.

A separate 2026 study using the same year-long monitoring in Loving found exceptionally high air pollution and identified oil and gas operations, including flaring and midstream facilities, as major sources. The analysis found that oilfield emissions were critical drivers of ozone formation around Loving.¹³

WATER IN

BLM projects 725,733 acre-feet of gross water use for 12,096 new federal wells, equal to approximately 236.5 billion gallons.

Add BLM's projected nonfederal oil and gas extraction, and the total reaches:

375.4 BILLION GALLONS projected gross oilfield water use.¹⁴

And that is not starting from zero.

Before BLM's current drilling forecast began, the agency documented approximately 101.6 billion gallons of oilfield water use from 2014 through 2022 in Chaves, Eddy, and Lea Counties. Add that to BLM's projected 375.4 billion gallons, and the oilfield water ledger reaches:

477 BILLION GALLONS from 2014 through 2043.¹⁵

Even after hundreds of pages of analysis, BLM still does not tell the public how much new water will be pumped, from which aquifers, or how its projected use will be divided among freshwater, brackish or saline groundwater, and recycled produced-water. BLM provides no source-specific water budget and no estimate of net freshwater depletion.

BLM says recycled produced-water supplied between 40% and 90% of stimulation water in recent years, but the Proposed RMP does not incorporate that range as a planning assumption or enforceable requirement, and does not tell the public how much newly withdrawn fresh or brackish water its plan would require.¹⁶

That uncertainty spans roughly 185 billion gallons of potentially non-recycled water demand. Even then, BLM does not say how much would be freshwater.

Furthermore, BLM's water math compares different things. BLM projects gross oilfield water use, including recycled produced-water, but compares that figure against actual regional surface- and groundwater withdrawals. Those are not equivalent measures.¹⁷

BLM TELLS US HOW MUCH GROSS WATER USE IT PROJECTS. IT DOES NOT TELL US HOW MUCH NEW WATER WILL BE WITHDRAWN, OR FROM WHICH AQUIFERS.

BLM's planning assumption is already too low. The RMP assumes 60 acre-feet of water use per horizontal well. But BLM's own data show that average fracking water use reached 65.2 acre-feet per well in 2024, which is already above that planning factor.¹⁸

BLM also acknowledges that longer laterals or more water-intensive fracking could push water use even higher. Its 2023 technical report calls the water-balance analysis "very preliminary" and says more study is needed.¹⁹

New Mexico is already a dry state running short on water. The future is hotter, drier, and tighter.

The state's 50-Year Water Action Plan warns that New Mexico could have approximately 25% less water available in rivers and aquifers within 50 years and face a 750,000-acre-foot shortfall.²⁰

While New Mexico is planning for water scarcity, BLM is planning for decades more drilling.

375.4 BILLION GALLONS

**≈40% of all surface and groundwater
New Mexico uses in a year**

**≈4x annual statewide public-water
withdrawals**

13 YEARS ABQ | 126 YEARS SANTA FE | 58 YEARS LAS CRUCES

Figure 3. BLM projects 1,151,974 acre-feet, approximately 375.4 billion gallons, of gross water use associated with future federal and nonfederal oil and gas extraction through 2043.²¹

TOXIC WASTE OUT

Oil and gas extraction pumps enormous volumes of water underground, mixes it with sand and proprietary fracking chemicals under extreme pressure, and brings an even larger stream of toxic liquid waste back to the surface. Industry calls this fracking waste ‘produced water.’ We use produced-water to emphasize that it is an oilfield waste stream, not ordinary water.

Produced-water is known to contain radioactive materials, heavy metals, hydrocarbons, salts, carcinogens, and hazardous or undisclosed chemicals, many poorly characterized for toxicity.²² Yet federal law exempts produced-water and other oilfield exploration-and-production wastes from hazardous-waste regulation under the Resource Conservation and Recovery Act (RCRA), because of a decades-old industry carveout, not because the waste is chemically benign.²³

In the Permian Basin, oil and gas extraction generates at least four barrels of produced-water for every barrel of oil.²⁴

BLM projects 30 billion barrels of produced-water over the next 20 years.²⁵

1.26 TRILLION GALLONS

That waste stream is more than three times BLM's projected oilfield water use.

About 798 billion gallons would be tied to federal extraction alone. BLM projects produced-water generation will rise roughly 50% but does not estimate what that could mean for spills, unrecovered waste, or cleanup.²⁶

Every gallon of waste has to go somewhere. It must be stored. Moved. Reused. Treated. Injected. And cleaned up when it spills.

BLM talks about many of these waste stream pieces separately, but never puts them together to show how its projected 30 billion barrels of waste actually moves through and out of the oilfield.²⁷

Recycling does not resolve the waste problem; it exacerbates it. Recycling may reduce demand for newly withdrawn water for fracking, but requires more pipelines, storage, and treatment and leaves behind concentrated brines, salts, sludge, scale, and other residual wastes that also must be managed and disposed of.

BLM PROJECTS THE WASTE. IT DOES NOT PROVE THE DISPOSAL SYSTEM CAN HANDLE IT.

BLM reports 3,247 wells in Eddy and Lea Counties already injecting produced-water or being used for disposal as of late 2025.²⁸ But a well count is not a capacity analysis. BLM does not calculate how much disposal capacity exists, how much remains, how heavily it is already used, whether the projected waste stream would exceed it, or what additional seismic risk that level of injection could create.

BLM acknowledges that earthquake risk depends on injection rate, total injected volume, fault proximity, and underground conditions. Regulators on both sides of the Permian have already had to restrict produced-water injection in response to induced earthquakes. New Mexico has required injection reductions and shut-ins in seismic-response areas, while Texas has imposed cuts of up to 68% in one response area.²⁹ In 2026, the hazards of managing this enormous waste stream became dramatically visible near Loving, New Mexico, when a pipe at an NGL Energy Partners facility erupted in a roughly 70-foot geyser of produced-water.³⁰

If disposal capacity gets squeezed, the waste does not vanish. It backs up into the rest of the system. And all of this drilling and disposal is unfolding in the limestone and karst country

surrounding Carlsbad Caverns National Park, a landscape of caves, sinkholes, underground drainage, and some of the most extraordinary geology in the Southwest.

More tanks. More pipelines. More trucking. More treatment. More disposal wells. More opportunities for failure.



Figure 4. 27,000xWIPP. For scale, the Waste Isolation Pilot Plant in Southeast New Mexico is legally limited to ~6.2 million cubic feet, or ~46.4 million gallons, of packaged defense-generated transuranic waste. BLM's projected 1.26 trillion gallons of liquid oilfield waste is approximately 27,000 times that physical volume.³¹

NEW MEXICO SAYS CLIMATE POLLUTION MUST FALL

BLM PLANS FOR MORE DRILLING

New Mexico has set goals of cutting greenhouse-gas pollution 45% below 2005 levels by 2030 and reaching net-zero by 2050.³² Meeting those goals requires emissions to fall sharply in the years ahead.

BLM's Carlsbad plan moves in the opposite direction. It would facilitate thousands of additional wells and billions of tons of additional climate pollution through 2043, expanding oil and gas extraction deep into the same period when New Mexico says emissions must decline.

Pollution must go down. BLM's plan pushes it up. There is no climate math that makes perpetual expansion add up.

A GLOBAL CLIMATE DECISION

New federal extraction under BLM's plan would generate:

3.378 BILLION METRIC TONS OF CLIMATE POLLUTION³³

Across existing and future federal and nonfederal extraction, BLM projects:

5.365 BILLION METRIC TONS OF CO₂ 2026-2043³⁴

Averaged across the 18-year period, BLM's cumulative projection equals approximately 298 million metric tons of CO₂ every year. If the Carlsbad oil and gas system were treated like a country, it would rank 20th in the world by annual CO₂ volume, between Italy and Malaysia.³⁵

And our carbon budget is running out.

The Global Carbon Budget 2025 estimates that humanity began 2026 with approximately 170 billion metric tons of CO₂ remaining for a 50% chance of holding warming to 1.5°C.³⁶

ONE BLM PLANNING AREA: 3.2% OF THE WORLD'S REMAINING 1.5°C CARBON BUDGET

New federal extraction alone accounts for approximately 2.733 billion metric tons of direct CO₂, equal to about 1.6% of the remaining global budget.³⁷

51% OF BLM'S CO₂ IS TIED TO NEW FEDERAL EXTRACTION

Roughly half of BLM's modeled direct CO₂ depends on federal wells that have not yet been drilled.

BLM still has a choice.

IF CARLSBAD OIL & GAS WERE A COUNTRY

it would rank 20th in the world by annual CO₂ volume, between Italy and Malaysia

● ~Gt CO₂

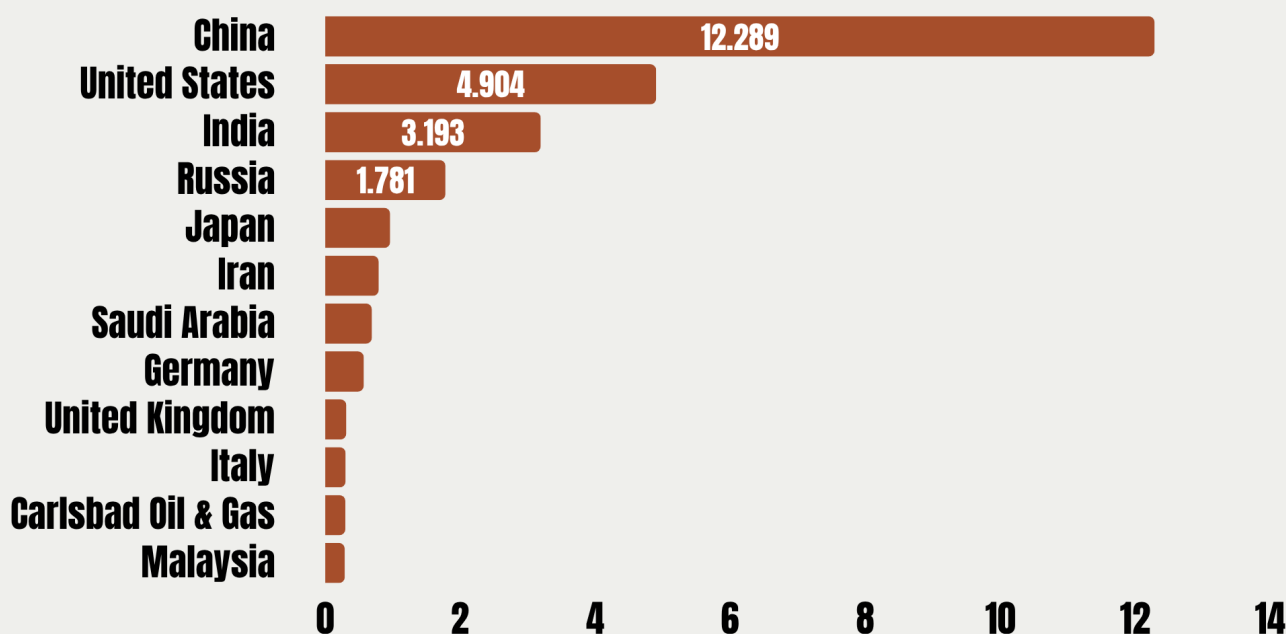


Figure 5. Source: Global Carbon Budget 2025. Carlsbad calculation: $5.365 \text{ Gt} \div 18 \text{ years} = 0.298 \text{ Gt CO}_2 \text{ per year}$.

STOP ADDING TO THE CRISIS

The Permian is already spilling daily. Its air is already over the federal health standard. New Mexico is preparing for shrinking water supplies. The oilfield already produces enormous volumes of toxic waste.

BLM's Proposed RMP would pile another 12,096 federal wells on top of that damage.

This is not a region that needs another generation of drilling. It needs fewer wells, less pollution, stronger safeguards, and a serious plan for dealing with the damage already here.

BLM should revise the Carlsbad RMP to close the federal mineral estate to new oil and gas leasing, stop planning for thousands of additional federal wells, protect public health and

scarce water supplies, and focus federal management on reducing pollution and addressing the enormous cleanup and waste burden from existing extraction.

The answer to an oilfield already in crisis is not more drilling.

¹ BLM, *Carlsbad Resource Management Plan Revision, Timeline* (Sept. 11, 2026), <https://eplanning.blm.gov/timeline/?id=c752f38d-a7f2-f011-8407-001dd803d067&spid=842e9e26-6ba8-f111-b8de-001dd802f839>. BLM initiated the plan revision in June 2010, published the Draft RMP/EIS in August 2018, and released the Proposed RMP/Final EIS in September 2026. BLM states that the Proposed RMP would make 97% of the federal mineral estate available for leasing.

² State of New Mexico, *50-Year Water Action Plan*, <https://www.nm.gov/wp-content/uploads/2024/01/New-Mexico-50-Year-WaterAction-Plan.pdf> (last visited Oct. 7, 2026) New Mexico reports approximately 3 million acre-feet of statewide surface- and groundwater use annually. BLM's projected 1,151,974 acre-feet equals approximately 38% of that amount. New Mexico Office of the State Engineer reports 299,803 acre-feet of public-water-supply withdrawals in 2020; BLM's projected oilfield use equals approximately 3.84 times that amount. <https://www.nm.gov/wp-content/uploads/2024/01/New-Mexico-50-Year-WaterAction-Plan.pdf>; <https://rulemaking.ose.nm.gov/rule-promulgation/view-rule/25>

³ BLM, *Carlsbad Proposed Resource Management Plan and Final Environmental Impact Statement*, Appendix P, Appendix W (Sept. 11, 2026). BLM projects 12,096 new federal wells and 725,733 acre-feet of federal water use. Adding 426,241 acre-feet associated with projected nonfederal extraction produces 1,151,974 acre-feet, approximately 375.4 billion gallons. eplanning.blm.gov/documents/?id=c752f38d-a7f2-f011-8407-001dd803d067&spid=cf8bdf55-a8f2-f011-8406-001dd8008d46&

⁴ See BLM, *Proposed Resource Management Plan and Final Environmental Impact Statement*, Appendix E; New federal extraction under the Proposed RMP proxy produces approximately 3.378 Gt CO₂e across extraction and downstream use. BLM annual emissions tables yield approximately 5.365 Gt direct CO₂ from existing and future federal and nonfederal oil and gas activity during 2026–2043.

⁵ **Wells.** BLM reports 43,766 active wells in the broader Pecos District, including 24,928 federal wells. Under the Proposed RMP framework, BLM facilitates 12,096 new federal wells, while its broader analysis projects 7,104 nonfederal wells, for a combined 19,200 future wells. The existing and projected counts cover somewhat different geographies and should not be added to produce a simultaneous active-well count. BLM, *Carlsbad Proposed Resource Management Plan/Final Environmental Impact Statement* (Sept. 11, 2026), Appendix P, Table P.1.2, pp. P-3–P-4; Appendix W, p. W-7.

Water. BLM projects 725,733 acre-feet of gross water use associated with 12,096 new federal wells and 426,241 acre-feet associated with 7,104 projected nonfederal wells. Guardians calculation: 725,733 + 426,241 = 1,151,974 acre-feet; 1,151,974 acre-feet × 325,851 gallons per acre-foot = approximately 375.4 billion gallons. This is projected gross oilfield water use, including reused produced-water. BLM, *Carlsbad Proposed RMP/Final EIS*, Appendix P, Table P.1.2, pp. P-3–P-4; Appendix W, p. W-7.

Waste. BLM projects approximately 30 billion barrels of produced-water during its 20-year forecast period. Using the U.S. Energy Information Administration's conversion of 42 U.S. gallons per barrel, 30 billion barrels × 42 gallons per barrel = approximately 1.26 trillion gallons. BLM, *Carlsbad Proposed RMP/Final EIS*, Appendix P, p. P-3; U.S. Energy Information Administration, *Glossary*, "Barrel," <https://www.eia.gov/tools/glossary/index.php?id=barrel>.

Climate. Guardians' calculation using BLM's annual emissions projections totals approximately 5.365 billion metric tons of direct CO₂ from existing and future federal and nonfederal oil and gas activity during 2026–2043. BLM, *Carlsbad Proposed RMP/Final EIS*, Appendix E, Tables E-17–E-20. The *Global Carbon Budget 2025* estimates that approximately 170 billion metric tons of CO₂ remained as of January 1, 2026, for a 50% chance of limiting warming to 1.5°C. Guardians calculation: 5.365 ÷ 170 = 3.16%, rounded to approximately 3.2%. Pierre Friedlingstein et al., *Global Carbon Budget 2025*, 18 *Earth System Science Data* 3288 (May 13, 2026), <https://essd.copernicus.org/articles/18/3211/2026/>.

⁶ WildEarth Guardians, *Q2 Waste Watch: New Mexico Oil and Gas Spill Counts Drop, but Toxic Waste Volumes Surge* (July 14, 2026), <https://wildearthguardians.org/press-releases/q2-waste-watch-new-mexico-oil-and-gas-spill-counts-drop-but-toxic-waste-volumes-surge/>. The first-half of 2026 totaled: 17,373 reported spills (approximately 96 per day), more than 4.5 million gallons of liquid waste spilled, and more than 1.5 million gallons reported lost. "Lost" is the reporting terminology used for material not recovered; it should not be understood as a complete measurement of environmental contamination.

⁷ BLM, *Carlsbad Proposed Resource Management Plan and Final Environmental Impact Statement*, Appendix B, pp. B-11–B-12. (Sept. 11, 2026).

⁸ U.S. Environmental Protection Agency, *Health Effects of Ozone in the General Population*, <https://www.epa.gov/ozone-pollution-and-your-patients-health/health-effects-ozone-general-population> (last updated Mar. 24, 2025). EPA identifies children, older adults, people with asthma and other lung disease, and people active outdoors as groups at increased risk from ozone exposure. EPA also reports that prolonged exposure around 60–70 ppb can cause lung-function changes and airway inflammation in healthy adults engaged in outdoor activity.

⁹ Center for Biological Diversity, *Notice of Intent to File Suit Under the Clean Air Act, Unreasonable Delay in Responding to Petition to Designate Permian Basin of New Mexico an Ozone Nonattainment Area* (July 31, 2026), <https://www.epa.gov/system/files/documents/2026-08/26-07-31-unreasonable-delay-noi.pdf>. Based on EPA monitoring data, the notice reports 15 exceedances across nine days in 2026 and preliminary 2024–2026 design values of 78 ppb at Carlsbad and 77 ppb at Carlsbad Caverns, above the 70 ppb federal ozone standard.

¹⁰ WildEarth Guardians, *Permian ozone petition* (Mar. 2, 2021), <https://wildearthguardians.org/press-releases/guardians-calls-on-environmental-protection-agency-to-defend-clean-air-justice-in-permian-basin-of-southeast-new-mexico/>; WildEarth Guardians, *Notice of Intent to File Suit Under the Clean Air Act, Unreasonable Delay in Responding to Petition to Designate Permian Basin of New Mexico an Ozone Nonattainment Area* (Aug. 30, 2021), <https://www.epa.gov/system/files/documents/2021-09/weg-noi-08302021.pdf>. Guardians petitioned EPA to designate southeast New Mexico’s Permian Basin nonattainment for ozone and later notified EPA that its delay was unreasonable.

¹¹ Center for Biological Diversity et al., *Petition to Designate Permian Basin of Southeast New Mexico a Nonattainment Area Due to Ongoing Violations of Ozone Health Standards* (Apr. 29, 2026), https://biologicaldiversity.org/programs/climate_law_institute/pdfs/26-04-29_Permian-Nonattainment-Petition-Final.pdf. Petitioners include WildEarth Guardians and conservation, health, faith, and community organizations.

¹² Caputi et al., *Airborne radioactivity in the New Mexico oil and gas development area of the Permian Basin* (Aug. 12, 2026), 14 *Elementa: Science of the Anthropocene* 00128, <https://online.ucpress.edu/elementa/article/14/1/00128/219000/Airborne-radioactivity-in-the-New-Mexico-oil-and>. Researchers monitored Loving from May 2023 through May 2024 and measured alpha radioactivity approximately 3–5 times background under certain wind conditions. The study identifies several potential natural and industrial sources and does not attribute the measurements to any single facility.

¹³ Schade et al., *Source Contributions to Air Pollution in the Permian Basin: Evaluating Emissions from Unconventional Oil and Gas Activities* (Apr. 8, 2026), 3 *ACS ES&T Air* 1284, <https://pubs.acs.org/aeacd5/article-abstract/3/5/1284/5074615/Source-Contributions-to-Air-Pollution-in-the?redirectedFrom=fulltext>. Researchers conducted one year of continuous air monitoring in Loving, New Mexico, measuring nitrogen oxides, sulfur dioxide, hydrogen sulfide, methane, carbon monoxide, radon, particle radioactivity and 20 volatile organic compounds. The study reports exceptionally high hydrocarbon concentrations and identifies multiple unconventional oil-and-gas-related pollution sources, including gas flaring and midstream facilities.

¹⁴ BLM, *Carlsbad Proposed RMP/Final EIS*, Appendix P, Table P.1.2, pp. P-3–P-4; Appendix W, p. W-7. Guardians’ calculation: 725,733 federal acre-feet + 426,241 projected nonfederal acre-feet = 1,151,974 acre-feet.

¹⁵ BLM, *Water Support Document for Oil and Gas Development in New Mexico 2025*, Table 3-5, p. 3-9. Through 2022, BLM reports 305,543.40 acre-feet of hydraulic-fracturing water use; adding BLM’s estimated 6,285.30 acre-feet of non-hydraulic-fracturing use yields 311,828.70 acre-feet, or approximately 101.6 billion gallons. Guardians’ calculation: 311,828.70 historical acre-feet + 725,733 projected federal acre-feet + 426,241 projected nonfederal acre-feet = 1,463,802.70 acre-feet, or approximately 477.0 billion gallons. The historical figures cover Chaves, Eddy, and Lea Counties, while the future projection follows the Carlsbad planning analysis; the geographic boundaries are not identical. This is a gross water-use ledger, not an estimate of net freshwater depletion.

¹⁶ BLM, *Water Support Document for Oil and Gas Development in New Mexico 2025*, pp. 3-13–3-14, <https://www.blm.gov/sites/default/files/docs/2025-12/oil-and-gas-water-support-document-blm-nm-2025.pdf>; BLM, *Carlsbad Proposed RMP/Final EIS*, Appendix P, pp. P-2–P-3; Appendix W, p. W-7. BLM reports that recycled produced-water supplied approximately 40%–90% of stimulation water in recent years but does not apply a single future reuse rate or quantify projected net freshwater, brackish-water, saline-groundwater, or surface-water withdrawals by source or aquifer. BLM’s limited analysis prevents the public from obtaining an accurate estimation in multiple ways. On one hand, BLM states that future water use “could be lower if produced-water is reused or recycled.” Appendix W, p. W-7. However, BLM also states that “water use could increase” if “more water-intensive stimulation methods (e.g., slickwater fracturing) are implemented or if laterals become longer.” Appendix W, p. W-7.

Applying the 40%–90% historical reuse range to BLM’s projected federal-plus-nonfederal stimulation demand produces a difference of approximately 185 billion gallons in potentially non-recycled water demand. This does not establish freshwater demand because BLM does not identify the source mix of the non-recycled portion.

¹⁷ BLM, *Carlsbad Proposed RMP/Final EIS*, Appendix W, p. W-7. BLM compares projected gross oilfield water use, which can include recycled produced-water, against approximately 619,375 acre-feet of actual 2015 surface- and groundwater withdrawals in Chaves, Eddy, and Lea Counties. The numerator and denominator therefore measure different things.

¹⁸ BLM, *Water Support Document for Oil and Gas Development in New Mexico 2025*; BLM, *Carlsbad Proposed RMP/Final EIS*, Appendix W, p. W-7; BLM uses a 60-acre-foot-per-well planning factor, while its 2025 Water Support Document reports average hydraulic-fracturing use of 65.2 acre-feet per well in 2024.

¹⁹ Thomas W. Engler, *Reasonably Foreseeable Development Scenario for Oil and Gas Activities*, Final Report, submitted to U.S. Bureau of Land Management, Carlsbad Field Office (July 10, 2023), p. 20 (describing the water-balance comparison as “very preliminary” and stating that more detailed analysis is needed); BLM, *Carlsbad Proposed Resource Management Plan/Final Environmental Impact Statement*, Appendix W, p. W-7 (stating that water use could increase if more water-intensive stimulation methods are used or laterals become longer).

²⁰ State of New Mexico, *50-Year Water Action Plan*, <https://www.nm.gov/wp-content/uploads/2024/01/New-Mexico-50-Year-WaterAction-Plan.pdf>. The state projects approximately 25% less water available in rivers and aquifers within 50 years and a 750,000-acre-foot shortfall.

²¹ BLM, *Carlsbad Proposed Resource Management Plan/Final Environmental Impact Statement*, Vpp. P, table P.1.2, pp. P-3–P-4; and App. W, p. W-7. BLM projects 725,733 acre-feet for new federal extraction and 426,241 acre-feet associated with projected nonfederal extraction. Guardians' calculation: 1,151,974 acre-feet × 325,851 gallons per acre-foot = 375.4 billion gallons. The "nearly 40%" comparison uses the approximately 3 million acre-feet of annual statewide surface- and groundwater use reported in the New Mexico Office of the Governor's *50-Year Water Action Plan*, p. 1: 1,151,974 ÷ 3,000,000 = 38.4%. The New Mexico Office of the State Engineer's detailed *New Mexico Water Use by Categories 2020*, Technical Report 56, p. i, reports 3,805,077 acre-feet of total statewide withdrawals and 299,803 acre-feet of public-water-supply withdrawals in 2020; the projected oilfield total equals 30.3% and 3.84 times those respective amounts. Municipal comparisons use annual production of 29.0 billion gallons reported in the Albuquerque Bernalillo County Water Utility Authority's *2024 Annual Report*, p. 3; 9,107 acre-feet, approximately 2.97 billion gallons, reported in City of Santa Fe Water's *2025 Annual Report*, executive summary, p. 3; and approximately 6.5 billion gallons reported by *Las Cruces Utilities*. Calculations: 375.4 ÷ 29.0 = 12.9 years; 375.4 ÷ 2.97 = 126.4 years; and 375.4 ÷ 6.5 = 57.8 years.

²² Cloelle Danforth et al., *An integrative method for identification and prioritization of constituents of concern in produced water from onshore oil and gas extraction* (Jan. 2020), 134 *Environment International* 105280, <https://doi.org/10.1016/j.envint.2019.105280>.

²³ U.S. EPA, *Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations*. Congress created the oil-and-gas exemption through the 1980 "Bentsen Amendment," excluding drilling fluids, produced water, and other exploration-and-production wastes from Resource Conservation and Recovery Act Subtitle C hazardous-waste regulation pending further study. EPA retained the exemption in its 1988 regulatory determination. EPA has expressly explained that exemption from Subtitle C does not mean these wastes cannot pose hazards to human health or the environment. EPA timeline: <https://www.epa.gov/hw/legislative-and-regulatory-timeline-crude-oil-and-natural-gas-waste>

²⁴ U.S. EPA, *Summary of Input on Oil and Gas Extraction Wastewater Management Practices Under the Clean Water Act*, EPA-821-S19-001 (May 2020), <https://www.epa.gov/sites/default/files/2020-05/documents/oil-gas-final-report-2020.pdf>; BLM, *Carlsbad Proposed RMP/Final EIS*, Appendix L, p. L-23; Appendix O, p. O-46 (discussing produced-water treatment, containment, recycling, transportation, and residual-waste management).

²⁵ Technical note on BLM conversion: BLM states in Appendix P that 30 billion barrels of produced-water are equivalent to approximately 2,900,095 acre-feet. Using the standard conversions of 42 gallons per barrel and 325,851 gallons per acre-foot yields approximately 3,866,798 acre-feet, about 967,000 acre-feet, or 25%, higher than BLM's stated acre-foot equivalent. This discrepancy does not affect Guardians' 1.26-trillion-gallon calculation, which is based directly on BLM's 30-billion-barrel projection and the standard 42-gallon barrel conversion.

²⁶ BLM, *Carlsbad Proposed RMP/Final EIS*, Appendix P, p. P-3; Appendix B, pp. B-12, B-126. BLM projects approximately 30 billion barrels of produced-water during the planning period, including approximately 19 billion barrels associated with federal extraction, and states that annual produced-water generation would increase from a recent historical average of approximately 1 billion barrels per year to about 1.5 billion barrels per year, a roughly 50% increase. Guardians' conversion at 42 gallons per barrel: 1.26 trillion gallons total and approximately 798 billion gallons federal. Compared with BLM's projected 375.4 billion gallons of gross federal-plus-nonfederal oilfield water use, the produced-water waste stream is approximately 3.4 times larger by physical volume. BLM reports historic liquid spills and losses but does not quantify how the projected 50% increase in produced-water generation could affect future spill exposure, unrecovered waste, or remediation needs.

²⁷ Guardians' review of the BLM Final EIS and 2023 RFD. BLM discusses produced-water generation, reuse, storage, transportation, treatment, underground injection, spills, and other disposal methods, but does not provide a reconciled system-wide accounting showing the ultimate disposition of the projected 30 billion barrels or a complete mass balance for the produced-water stream.

²⁸ BLM, *Carlsbad Proposed RMP/Final EIS*, Appendix B, p. B-127. BLM reports 3,247 injection or saltwater-disposal wells in Eddy and Lea Counties as of late 2025. The Final EIS does not calculate existing disposal capacity, remaining capacity, utilization rates, projected future disposal demand, whether available capacity could accommodate that demand, or how many additional disposal wells or other facilities could be required.

²⁹ New Mexico Energy, Minerals and Natural Resources Department, Oil Conservation Division, *Seismicity Response Protocol, County Line Seismic Response Area, Management Plan Revision No. 1* (Dec. 1, 2023), <https://www.emnrd.nm.gov/ocd/wp-content/uploads/sites/6/2023-12-01-Notice-Operator-County-Line-Revision-12-1-23.pdf>. OCD requires operators to reduce injection following triggering seismic events under its seismic-response protocol; OCD has also temporarily curtailed injection and suspended or cancelled disposal-well activity in the County Line Seismic Response Area in response to induced seismicity. See also OCD, *Notice: Induced Seismicity Pending Permits* (Nov. 23, 2021), stating that OCD's analysis indicated injection-well activity was a potential cause or contributor to seismicity and documenting voluntary suspension of injection in nearby wells. Railroad Commission of Texas, *Northern Culberson-Reeves Seismic Response Area Revised Response Plan*, <https://www.rrc.texas.gov/news/030722-northern-culberson-reeves-seismic-response-plan/>

Following increased seismicity, regulators and operators reduced targeted deep saltwater-disposal injection to 162,000 barrels per day, approximately 68% below January 2022 volumes, and required 50% reductions at deep disposal wells.

³⁰ Jerry Redfern, *70-Foot Wastewater Geyser Reflects New Mexico's Latest Oilfield Challenge*, Capital & Main, republished by New Mexico PBS (May 22, 2026), <https://www.newmexicopbs.org/productions/newmexicoinfo/70-foot-wastewater-geyser-reflects-new-mexicos-latest-oilfield-challenge>. On May 19, 2026, a pipe at an NGL Energy Partners facility near Loving, New Mexico, released a roughly 70-foot geyser of produced-water.

³¹ The Waste Isolation Pilot Plant Land Withdrawal Act, passed by Congress in 1992, established a statutory disposal-volume limit of 6.2 million cubic feet of transuranic waste. See <https://www.wipp.energy.gov/>. Guardians converts 6.2 million cubic feet to approximately 46.4 million gallons and compares that figure solely as physical volume with BLM's 1.26-trillion-gallon produced-water projection. The waste streams are not comparable in composition, hazard, or disposal requirements.

³² State of New Mexico, Executive Order 2019-003, *Addressing Climate Change and Energy Waste* (Jan. 29, 2019), (establishing a statewide objective of reducing greenhouse-gas emissions at least 45% below 2005 levels by 2030), https://www.governor.state.nm.us/wp-content/uploads/2019/01/EO_2019-003.pdf; New Mexico Environment Department, *New Mexico Climate Action Plan* (2025) (charting a pathway to net-zero emissions by 2050), <https://www.climateaction.nm.gov/cap/>; Office of the Governor, *2026 State of the State Address* (Jan. 20, 2026) (reaffirming the 45% by 2030 and net-zero by 2050 goals), <https://www.governor.state.nm.us/2026/01/20/governor-delivers-2026-state-of-the-state-address/>.

³³ BLM, *Carlsbad RMP/Final EIS*, Appendix E; Guardians' calculation. New federal extraction under the Proposed RMP proxy produces approximately 3.378 billion metric tons CO₂e across extraction and downstream use.

³⁴ BLM, *Carlsbad RMP/Final EIS*, Appendix E; Guardians' calculation. Existing and future federal and nonfederal oil and gas activity produces approximately 5.365 billion metric tons of direct CO₂ during 2026–2043.

³⁵ Guardians' calculation: 5.365 billion metric tons ÷ 18 years = approximately 298.06 million metric tons annually. Country figures are 2024 territorial fossil-fuel and industrial CO₂ emissions from Robbie M. Andrew and Glen P. Peters, *The Global Carbon Project's Fossil CO₂ Emissions Dataset, Version 251022(2025)*, <https://zenodo.org/records/17417124>. Italy emitted approximately 301.93 million metric tons and Malaysia approximately 290.22 million metric tons. Country emissions use territorial accounting, while the Carlsbad figure attributes production, transportation, processing, and end-use emissions to oil and gas activity in the planning area. The comparison illustrates scale rather than identical emissions accounting.

³⁶ Friedlingstein et al., *Global Carbon Budget 2025* (May 13, 2026), <https://essd.copernicus.org/articles/18/3211/2026/>. Remaining 1.5°C carbon budget at 50% probability: approximately 170 Gt CO₂ as of January 1, 2026. Guardians calculation: 5.365 ÷ 170 = 3.16%, rounded to 3.2%.

³⁷ Guardians' calculation from BLM Appendix E and *Global Carbon Budget 2025*. New federal extraction accounts for approximately 2.733 Gt direct CO₂. 2.733 ÷ 170 = approximately 1.6% of the remaining 1.5°C carbon budget; 2.733 ÷ 5.365 = approximately 50.9%, or 51%, of BLM's modeled direct CO₂ from existing and future federal and nonfederal activity.