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2023 Minerals Yearbook

HELIUM [ADVANCE RELEASE]

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Helium

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Domestic consumption of Grade-A helium (99.997% or greater purity) and gaseous helium (generally 98% or greater purity) in 2023 was 56.0 million cubic meters[1] (2.02 billion cubic feet). Exports by private producers were reported by the U.S. Census Bureau to be 33.2 million cubic meters (1.20 billion cubic feet). Imports of helium were reported to be 8.0 million cubic meters (288 million cubic feet). Total sales of U.S.-produced helium were 81.2 million cubic meters (2.93 billion cubic feet), a 5% increase from those in 2022 (table 1).

Government Actions and Legislation

On October 2, 2013, the U.S. Congress passed the Helium Stewardship Act of 2013 (HSA) (U.S. Congress, 2013). With the passage of the HSA, Congress established a timeline for the privatization of the helium marketplace. The Federal helium program would continue for a period of time, but with significant changes to its operation. The HSA sought to mitigate helium shortages by enabling the sale of crude helium from the Federal Helium Reserve with the expectation of increasing taxpayer returns while also stimulating investment in private helium sources through market-driven sales. The HSA provided a transition in four phases.

Phase A, Allocation Transition.—The start of this phase began with the passage of the HSA and ended on September 30, 2014. This was a continuation of the Helium Privatization Act of 1996 (U.S. Congress, 1996) that directed the sale of much of the National Helium Reserve located at the Cliffside Field in Amarillo, TX, and prescribed sales volumes and conditions (U.S. Congress, 2013).

Phase B, Auction Implementation.—This phase was initiated on October 1, 2014, and was prescribed to end by the HSA when crude helium stored in the Federal Helium Reserve was reduced to a level of 83.2 million cubic meters [reported by the Bureau of Land Management (BLM) as 3 billion cubic feet]. In July 2014, the BLM conducted the first auction of helium for delivery during fiscal year 2015 (October 1, 2014, through September 30, 2015). The auction was open to all qualified bidders as defined in 50 U.S.C. 167d-(b). The last auction and sale were conducted in July 2018 for deliveries in fiscal year 2019. At the July 2018 sale, 5.8 million cubic meters (210 million cubic feet) were offered at auction at the allocated sale, and 2.5 million cubic meters (90 million cubic feet) were sold at the nonallocated sale. This was the last auction and sale conducted under phase B because the volume of conservation helium in storage dropped to approximately 83.2 million cubic meters (3 billion cubic feet).

Phase C, Continued Access for Federal Users.—This phase began on January 1, 2019, as the remaining crude helium stored in the Federal Helium Reserve reached 83.2 million cubic meters (3 billion cubic feet). The BLM continued to provide crude helium for sale to Federal users. In 2019, there were no sales nor auctions of helium to private entities, but deliveries to private entities of helium sold during phase B continued. Deliveries and sales of helium from the Cliffside Field were prescribed to continue until phase D was completed.

Phase D, Disposal of Assets.—During this phase, the Secretary of the Interior was required to dispose of assets in the Federal helium program no later than September 30, 2021. These assets included all underground natural resources and the United States' rights to those assets. Unlike the requirements of the Helium Privatization Act of 1996 (U.S. Congress, 1996), the BLM was no longer required to sell helium from the reserve in equal annual volumes. Under the HSA, sales could match the amount available for production from the reserve. Phase D was delayed owing to global disruptions associated with the coronavirus disease 2019 (COVID-19) pandemic. The management of helium assets was transferred from the BLM to the General Services Administration (GSA) on December 3, 2022, for the GSA to dispose of the assets as required by the HSA. On June 22, 2023, the GSA announced the sale of the Federal Helium System Assets. The sale process was planned to start on July 12, 2023, and was expected to take between 8 and 9 months (U.S. General Services Administration, 2023a). On September 7, 2023, a lawsuit was filed to prevent the Federal Government from selling the Federal Helium System (*Air Products and Chemicals, Inc. et al.* v. *General Services Administration et al.*, 2023). On October 2, 2023, the BLM published a final rule to remove obsolete regulations for the In-Kind Crude Helium Sales Contract Program and associated provisions (Bureau of Land Management, 2023). On October 31, 2023, the GSA announced that the sale of the Federal Helium System would be delayed (Annesley, 2023). On November 2, 2023, the Court issued a decision that the sale of the Federal Helium System would continue as mandated in the HSA (*Air Products and Chemicals, Inc. and Air Products LLC* v. *General Services Administration et al.*, 2023). On November 3, 2023, a new study about the helium and natural gas reserves in the Federal Helium System was released. This extended the period for receiving bids to January 25, 2024 (U.S. General Services Administration, 2023b). Until the helium assets were sold, the BLM would continue to deliver helium.

On January 30, 2023, the U.S. Geological Survey (USGS) asked for input from the public, including domestic helium users, on helium supply risk. This request for comments was to aid in analyzing whether there was an increasing risk of

[1]All metric helium volumes herein are at 101.325 kilopascals absolute (14.696 pounds per square inch absolute) and 15 degrees Celsius (°C) [59 degrees Fahrenheit (°F)]. Helium volumes, reported in parentheses following metric units, are measured in cubic feet at 14.7 pounds per square inch absolute and 70 °F—1,000 cubic feet (14.7 pounds per square inch absolute and 70 °F) equals 27.737 cubic meters (101.325 kilopascals absolute and 15 °C) and 1 cubic meter (101.325 kilopascals and 15 °C) equals 36.053 cubic feet (14.7 pounds per square inch absolute and 70 °F).

supply disruption, if there was a risk of supply disruption from countries that may be unwilling or unable to continue to supply the United States, and if those risks posed a significant likelihood of increasing the Nation's import reliance or creating a concentration and risk of permanent or intermittent supply disruptions from a small number of international or domestic supply sources. The USGS also requested comments that would aid the USGS in analyzing whether potential disruptions to helium supply would jeopardize manufacturing or use of products vital to the aerospace, consumer electronics, defense, healthcare, and other industries (U.S. Geological Survey, 2023).

Production

In 2023, 14 companies operated 22 privately owned domestic helium plants. Of the 22 operating plants, 9 produced gaseous helium, 8 produced Grade-A helium, and 5 extracted helium from natural gas to produce a crude helium product. The nine gaseous helium plants used a combination of pressure swing adsorption, membrane technology, and nitrogen rejection utilization to extract helium. All crude helium plants and Grade-A helium facilities used cryogenic extraction processes. The eight helium plants that produced Grade-A helium also produced liquefied helium (table 2).

Total sales of U.S.-produced helium in 2023 increased by 5% compared with those in 2022 (table 1). All natural gas processed for helium recovery came from gasfields in Arizona, Colorado, Kansas, New Mexico, Oklahoma, Texas, Utah, and Wyoming (figs. 1, 2). Domestic production data for helium were developed by the USGS from an annual voluntary canvass of private U.S. operations and BLM operations. Of the 11 Grade-A and gaseous helium-producing companies, 9 provided production information. Those data represented 15 out of 17 Grade-A and gaseous helium operations, and 95% of the total helium sales. Helium production from the Government's helium reserve at Cliffside Field in 2023 was 44% more than that in 2022 (table 3).

In the second half of 2023, Blue Star Helium Ltd. (Australia) and Proton Green, LLC (Springerville, AZ) started production of gaseous helium in Colorado and Arizona, respectively (Burgess, 2023a; Proton Green, LLC, 2023). In May 2023, Paradox Resources, LLC (Houston, TX), a company that purified crude helium to Grade-A helium, filed for bankruptcy (Gasworld, 2023).

Most domestic helium production was from the Midcontinent and Rocky Mountain regions. The measured U.S. helium reserves occur in fewer than 50 gasfields in eight States. Most of these reserves are contained in the Cliffside and Panhandle West Fields in Texas; the Hugoton Field in Kansas, Oklahoma, and Texas; the Keyes Field in Oklahoma; the Panoma Field in Kansas; and the Riley Ridge Area Fields in Wyoming. The USGS estimated that the recoverable helium within known geologic natural gas formations in the United States was about 8.49 billion cubic meters (306 billion cubic feet) (Brennan and others, 2021).

Consumption

In 2023, U.S. domestic helium consumption increased by 9% to 56.0 million cubic meters (2.02 billion cubic feet) compared with consumption in 2022 (table 1). The major domestic end uses of helium were, in decreasing quantity of use, analytical, engineering, lab, science, and specialty gases (21%); controlled atmospheres, fiber optics, and semiconductors (17%); magnetic resonance imaging (17%); lifting gas (16%); aerospace, pressurizing, and purging (9%); welding (8%); leak detection (5%); diving (4%); and various other minor applications (3%) (fig. 3; Garvey, 2023b).

In-kind crude helium sales regulations (43 CFR part 3195) had previously required helium refiners that sold helium to Federal agencies and their contractors to buy an equivalent amount of crude helium from the BLM. In 2023, there were no in-kind crude helium sales (table 3).

Stocks

The BLM helium storage system contained crude helium purchased under contract by the Government from 1962 to 1973, in addition to privately owned helium extracted by industry and stored under contract (fig. 4). The volume of helium stored in the BLM helium storage system, including the pipeline network and the Cliffside Field, totaled approximately 90 million cubic meters (3.24 billion cubic feet) on December 31, 2023 (fig. 5; table 4). The privately owned helium was returned to the owners as needed for purification to Grade-A helium. During 2023, 4.6 million cubic meters (166 million cubic feet) of privately owned helium were delivered to the BLM's helium storage system, and 22.2 million cubic meters (800 million cubic feet) were withdrawn (table 3). Systemwide measurements showed that 6.7 million cubic meters (242 million cubic feet) were lost from the BLM's helium storage system in 2023. There was a total net decrease of 24.3 million cubic meters (876 million cubic feet) of private helium in storage in 2023 (table 4).

Prices

The HSA required the BLM to use market-based pricing for its crude helium sales to private industry. For fiscal year 2023, the conservation price was no longer posted. The BLM last posted conservation prices for fiscal year 2018. In-kind crude helium sales regulations require helium refiners that sell helium to Federal agencies and their contractors to buy an equivalent amount of crude helium from the BLM. The in-kind crude helium price was last posted for fiscal year 2022 and was $3.61 per cubic meter ($100 per thousand cubic feet) (Bureau of Land Management, 2021). The estimated price for private industry's Grade-A helium was about $14 per cubic meter ($390 per thousand cubic feet) in 2023, with some producers posting surcharges to this price.

Transportation

Private producers and (or) distributors shipped helium, predominantly as a liquid, in semitrailers, delivered to distribution centers, where some of it was gasified and compressed into trailers and cylinders for delivery to end users. The remaining liquid helium was sold as bulk liquid or repackaged in dewars (specialized vacuum tanks used for storing cryogens) of various sizes.

Foreign Trade

Private industry supplied all U.S. helium exports. In 2023, exports by private helium producers were reported by the U.S. Census Bureau to be 33.2 million cubic meters (1.20 billion cubic feet), a slight increase from those in 2022 (tables 1, 5). The associated value of helium exports was $453 million, a 26% increase compared with that in 2022. The average unit value of exports in 2023 was $13.65 per cubic meter ($378.61 per thousand cubic feet), a 24% increase from that in 2022. Regionally, Asia and the Pacific received 33% of the helium exported from the United States; Europe, 30%; North America, Central America, and the Caribbean, combined, 24%; South America, 9%; the Middle East and Africa, combined, 3%; and Australia and New Zealand, combined, less than 1% (table 5).

In 2023, imports for consumption of helium were 8.0 million cubic meters (310 million cubic feet), a 25% increase from those in 2022 (tables 1, 6). The associated value of helium imports was $91.8 million, a 51% increase compared with that in 2022. The average unit value of imports in 2023 was $11.43 per cubic meter ($317.03 per thousand cubic feet), a 20% increase from that in 2022. Of the United States' imports for consumption, Canada supplied 58%, Qatar supplied 24%, and Algeria supplied 10% (table 6). For 2023, import tariffs on helium remained at 3.7% for normal trade relations (NTR) nations and 25% for non-NTR nations.

World Review

Total world helium production was an estimated 173 million cubic meters (6.24 billion cubic feet) in 2023 (table 8). World production capacity of helium was estimated to be 360 million cubic meters (13.0 billion cubic feet) per year in 2023 (table 7). In addition to the United States, helium was produced in Algeria, Australia, Canada, Poland, Qatar, and Russia.

Worldwide, several helium projects started or were in the planning stage in 2023. There were multiple operations throughout North America in the planning stage. Multiple companies were expected to begin new helium operations in the United States in 2024 (Garvey, 2023b; Cockerill and Kornbluth, 2024).

Algeria.—Algeria continued to have less feedgas for helium production than in the past because it sent more natural gas to Europe via undersea pipelines. Thus, the gas was not available for helium extraction processing. More natural gas was sent directly to Europe as a result of the Russia-Ukraine conflict (Garvey 2023b). In September 2023, a project was completed to bring additional feedgas to Algeria's Arzew helium plant (Cockerill and Kornbluth, 2024).

Australia.—The BOC Darwin Helium Plant in Australia stopped producing helium in late 2023 owing to the gas supply being exhausted (Wright, 2023). This plant closure left Australia without a domestic source of helium. As a result of the helium deficiency, Central Petroleum Ltd. signed a memorandum of understanding with Twin Bridges LLC (United States) to develop a helium recovery project in the Northern Territory, which would reestablish a domestic helium source (Central Petroleum Ltd., 2023).

Canada.—Canada continued to expand production with North American Helium Inc. adding four production facilities in 2023 with continued plans for expansion into 2024 (Burgess, 2023c). Royal Helium Ltd. started a helium operation in Steveville, Alberta, in October (Burgess, 2023d). First Helium Inc. planned to begin producing helium from Worsley, Alberta, in early 2024 (Burgess, 2023b).

China.—China was developing multiple helium projects for domestic consumption (Cockerill and Kornbluth, 2024). China was estimated to be the leading consumer of helium in Asia. The country's imports come mainly from Qatar, Russia, and the United States. In late 2023, China began importing greater volumes of helium from Russia, with imports from Russia expected to continue to increase (Gas Ecosphere, 2024).

Qatar.—Qatargas Operating Co. Ltd. planned to start a fourth helium plant (Qatar 4) by 2027. That plant was expected to have a liquid helium capacity of 38 million cubic meters per year (1.34 billion cubic feet per year) (Cockerill and Kornbluth, 2024).

Russia.—In Amur, a 60-million-cubic-meter-per-year (2.16-billion-cubic-foot-per-year) helium-processing plant was commissioned by PJSC Gazprom in 2021. The first of three 20-million-cubic-meter-per-year (721-billion-cubic-foot-per-year) helium production trains started production in the fall of 2021. A fire and explosion at this first facility took place in January 2022, which stopped production of helium for the entirety of 2022. The commissioning of the other two 20-million-cubic-meter-per-year (721-billion-cubic-foot-per-year) trains in Amur also was delayed owing to a fire at the gas-processing facility and the Russia-Ukraine conflict (Kornbluth, 2022). In September 2023, Gazprom restarted production of the first train. The majority of helium produced at Gazprom was sent to Asian countries such as China and India (Annesley, 2024). Irkutsk Oil Co. started 7.5 million cubic meters per year (270 thousand cubic feet per year) of liquid helium capacity in Irkutsk in the second half of 2023 (Garvey, 2023b). In November 2023, Russian courts ordered the seizure of 13 International Organization of Standardization (ISO) containers of liquid helium owned by Linde plc (Germany) as part of a contractual dispute with RusKhimAlyans, which was a subsidiary of Gazprom. This was owing to Linde's suspension of work on a Russian gas processing project following Western sanctions (Kapadia, 2023; Soldatkin and Kobzeva, 2023).

Tanzania.—Multiple companies continued exploring for helium in the Lake Rukwa area of Tanzania, and Helium One Global Ltd. (United Kingdom) and Noble Helium Ltd. (Australia) commenced drilling (Cockerill and Kornbluth, 2024).

Outlook

U.S. domestic and global helium consumption is expected to remain stable during 2024. World production and capacity may increase in 2024 if Russia is able to bring planned capacity online. Multiple companies are exploring for helium deposits throughout North America and around the world, some of which are nonhydrocarbon sourced (Garvey, 2023b). The BLM is expected to dispose of assets in the Federal helium program in 2024. The BLM and the GSA are working together to determine how to transition all Federal helium assets to private ownership (Cockerill and Kornbluth, 2024).

References Cited

Air Products and Chemicals, Inc. and Air Products LLC v. General Services Administration et al., 2023, Case no. 2:23-cv-147-Z: United States District Court, Northern District of Texas, Amarillo Division, November 2. (Accessed October 11, 2024, at https://caselaw.findlaw.com/court/us-dis-crt-n-d-tex-ama-div/115405560.html#:~:text=Id.%20at%203.%20Defendants%20are%20the%20General%20Services%20Administration%20(%E2%80%9CGSA%E2%80%9D).)

Air Products and Chemicals, Inc. et al. v. General Services Administration et al., 2023, Case no. 2:23-cv-00147: United States District Court, Northern District of Texas, September 7, 44 p. (Accessed October 11, 2024, at https://dockets.justia.com/docket/texas/txndce/2:2023cv00147/380989#:~:text=Filing%201%20COMPLAINT%20against%20Bureau%20of%20Land%20Management,%20Robin%20Carnahan.)

Annesley, Christian, 2023, Helium super summit—Bids invite for US Federal Helium System is pushed to January 2024: Gasworld, October 31. (Accessed October 11, 2024, via https://www.gasworld.com/story/helium-super-summit-bids-invite-for-federal-helium-system-is-pushed-to-january-2024/2129782.article/.)

Annesley, Christian, 2024, Helium—Prospects for the year ahead: Gasworld, January 6. (Accessed October 11, 2024, via https://www.gasworld.com/feature/helium-prospects-for-the-year-ahead/2136175.article/.)

Brennan, S.T., Rivera, J.L., Varela, B.A., and Park, A.J., 2021, National assessment of helium resources within known natural gas reservoirs: U.S. Geological Survey Scientific Investigations Report 2021–5085, 5 p. (Accessed September 16, 2023, at https://doi.org/10.3133/sir20215085.)

Burgess, Molly, 2023a, Blue Star Helium prepares for helium plant installation: Gasworld, October 5. (Accessed October 11, 2024, via https://www.gasworld.com/story/blue-star-helium-prepares-for-helium-plant-installation/2128556.article/.)

Burgess, Molly, 2023b, First Helium signs helium supply deal with industrial gas major: Gasworld, May 25. (Accessed October 11, 2024, via https://www.gasworld.com/story/first-helium-signs-helium-supply-deal-with-industrial-gas-major/2123578.article/.)

Burgess, Molly, 2023c, North American Helium brings seventh helium plant onstream in Saskatchewan: Gasworld, October 10. (Accessed October 11, 2024, via https://www.gasworld.com/story/north-american-helium-brings-seventh-helium-plant-onstream-in-saskatchewan/2128789.article/.)

Burgess, Molly, 2023d, Royal Helium starts-up helium purification facility in Alberta: Gasworld, October 13. (Accessed October 11, 2024, via https://www.gasworld.com/story/royal-helium-starts-up-helium-purification-facility-in-alberta/2128968.article/.)

Bureau of Land Management, 2021, Bureau of Land Management crude helium price: Washington, DC, Bureau of Land Management, March 31, 2 p. (Accessed September 16, 2023, at https://www.blm.gov/sites/blm.gov/files/docs/2021-06/FY2022%20Posted%20Price.pdf.)

Bureau of Land Management, 2023, BLM takes step to implement Helium Stewardship Act: Washington, DC, U.S. Department of the Interior, October 2. (Accessed October 14, 2024, at https://www.blm.gov/press-release/blm-takes-step-implement-helium-stewardship-act.)

Cockerill, Rob, and Kornbluth, Phil, 2024, The helium heatmap—Reloaded: Gasworld, January 15. (Accessed October 11, 2024, via https://www.gasworld.com/feature/the-helium-heatmap-reloaded/2132387.article/.)

Central Petroleum Ltd., 2023, Mereenie helium recovery unit MOU: ASX announcement and media release, August 30, 3 p. (Accessed December 26, 2024, at https://announcements.asx.com.au/asxpdf/20230830/pdf/05t87kt4nkgd0c.pdf.)

Garvey, Maura, 2023a, A worldwide & US perspective on helium demand & supply: Houston, TX, Gasworld Helium Super Summit, October 31, presentation, 13 p.

Garvey, Maura, 2023b, The 2023 worldwide helium market: Gasworld, October 12. (Accessed October 11, 2024, via https://www.gasworld.com/feature/the-2023-worldwide-helium-market/2128890.article/.)

Gas Ecosphere, 2024, Global helium production increases by 8% in 2023—Qatar and Russia lead production growth: Wuxi, Jiangsu, China, Gas Ecosphere, February 19. (Accessed December 26, 2024, via https://en.igascn.com/global/detail/?TypeId=1036&Id=7506&SortSource=hot.)

Gasworld, 2023, Paradox Resources files for bankruptcy: Gasworld, May 26. (Accessed October 11, 2024, via https://www.gasworld.com/story/paradox-resources-files-for-bankruptcy/2123603.article/.)

Kapadia, Anish, 2023, Russian court orders seizure of Linde's helium containers: Stanmore, United Kingdom, AKAP Energy, November 3. (Accessed October 11, 2024, via https://www.akapenergy.com/post/russian-court-orders-seizure-of-linde-s-helium-containers.)

Kornbluth, Phil, 2022, Latest Amur fire tightens helium supply for 2022: Gasworld, January 17. (Accessed September 16, 2023, via https://www.gasworld.com/story/kornbluth-latest-amur-fire-tightens-helium-supply-for-2022/2093392.article/.)

Proton Green, LLC, 2023, Proton Green announces first helium sales from St. Johns Field Phase I helium extraction plant: Houston, TX, Proton Green, LLC, press release, August 31. (Accessed October 11, 2024, at https://www.protongreen.com/press-releases/#b2iLibScrollTo.)

Soldatkin, Vladimir, and Kobzeva, Oksana, 2023, Russian court orders seizure of Linde's liquid helium containers: Thomson Reuters, November 3. (Accessed October 11, 2024, at https://www.reuters.com/business/energy/russian-court-orders-seizure-lindes-liquid-helium-containers-2023-11-03/#:~:text=A%20Russian%20court%20has%20ordered%20the%20seizure%20of,giant%20Gazprom%2C%20according%20to%20a%20Russian%20court%20ruling.)

U.S. Congress, 1996, Helium Privatization Act of 1996: U.S. Congress Public Law 104–273, September 25, 6 p.

U.S. Congress, 2013, Helium Stewardship Act of 2013: U.S. Congress Public Law 113–40, October 2, 14 p.

U.S. General Services Administration, 2023a, GSA announces sale of Federal Helium System assets—Updated: Washington, DC, U.S. General Services Administration, June 22. (Accessed October 11, 2024, at https://www.gsa.gov/about-us/gsa-regions/region-7-greater-southwest/region-7-newsroom/greater-southwest-feature-stories-and-news-releases/gsa-announces-sale-of-federal-helium-system-assets-06222023.)

U.S. General Services Administration, 2023b, New study released, bidding deadline extended for Federal Helium System assets: Washington, DC, U.S. General Services Administration, November 3. (Accessed November 3, 2024, at https://www.gsa.gov/about-us/gsa-regions/region-7-greater-southwest/region-7-newsroom/greater-southwest-feature-stories-and-news-release/new-study-released-bidding-deadline-extended-for-11032023.)

U.S. Geological Survey, 2023, Request for comments on helium supply risk: Federal Register, v. 88, no. 19, January 30, p. 5904–5905. (Accessed December 26, 2024, at https://www.federalregister.gov/documents/2023/01/30/2023-01852/request-for-comments-on-helium-supply-risk.)

Wright, Anthony, 2023, Australia ceases helium production as its sole plant shuts down: Gasworld, December 7. (Accessed October 11, 2024, via https://www.gasworld.com/story/australia-ceases-helium-production-as-sole-plant-shuts-down/2131354.article/.)

GENERAL SOURCES OF INFORMATION

U.S. Geological Survey Publications

Helium. Ch. in Mineral Commodity Summaries, annual.

Helium. Ch. in United States Mineral Resources, Professional Paper 820, 1973.

Historical Statistics for Mineral and Material Commodities in the United States. Data Series 140.

Other

Analyses of Natural Gases, 1917–1985. U.S. Bureau of Mines Information Circular 9129, 1987.

Analyses of Natural Gases, 1986–1990. U.S. Bureau of Mines Information Circular 9301, 1991.

Analyses of Natural Gases, 1991. U.S. Bureau of Mines Information Circular 9318, 1992.

Analyses of Natural Gases, 1992. U.S. Bureau of Mines Information Circular 9356, 1993.

Analyses of Natural Gases, 1993. U.S. Bureau of Mines Information Circular 9400, 1994.

Analyses of Natural Gases, 1996–1997. U.S. Bureau of Land Management Technical Note 404, 1998.
Analyses of Natural Gases, 1998–2001. U.S. Bureau of Land Management Technical Note 412, 2003.
Analyses of Natural Gases, 2002–2004. U.S. Bureau of Land Management Technical Note 418, 2005.
Analyses of Natural Gases, 2005–2007. U.S. Bureau of Land Management Technical Note 427, 2009.
Helium. Ch. in Mineral Facts and Problems, U.S. Bureau of Mines Bulletin 675, 1985.
Helium Resources of the United States, 1991. U.S. Bureau of Mines Information Circular 9342, 1993.
Helium Resources of the United States, 1997. U.S. Bureau of Land Management Technical Note 403, 1998.
Helium Resources of the United States, 2001. U.S. Bureau of Land Management Technical Note 408, 2001.
Helium Resources of the United States, 2003. U.S. Bureau of Land Management Technical Note 415, 2004.
Helium Resources of the United States, 2007. U.S. Bureau of Land Management Technical Note 429, 2009.

TABLE 1
SALIENT HELIUM STATISTICS[1]

(Million cubic meters)

Statistic	2019	2020	2021	2022	2023
Consumption, apparent	45.0 e, 2	53.0	50.5 r	51.5 r	56.0
Exports[3]	57.8	35.2	33.1	32.4 r	33.2
Imports[3]	6.8	6.7	7.7 r	6.4 r	8.0
Total sales of U.S.-produced helium	86.2	81.5	75.9	77.5	81.2

eEstimated. rRevised.
[1]Data are rounded to no more than three significant digits.
[2]Consumption was estimated because of unusually high exports reported by the U.S. Census Bureau.
[3]Source: U.S. Census Bureau.

TABLE 2
OWNERSHIP AND LOCATION OF ACTIVE HELIUM EXTRACTION PLANTS IN THE UNITED STATES IN 2023

Owner or operator	Plant Name	County, State	Product purity[1]
Air Products Corporation, Inc.	Doe Canyon	Dolores, CO	Grade-A helium.
Do.	Liberal	Seward, KS	Do.
Blue Star Helium, Ltd.	Red Rocks	Las Animas, CO	Gaseous helium.
DCP Midstream, LLC	National	Seward, KS	Crude helium.
Do.	Sher-Han	Hansford, TX	Do.
Energy Transfer	Sunray	Moore, TX	Do.
ExxonMobil Gas Marketing Co.	LaBarge	Sweetwater, WY	Grade-A helium.
IACX Energy	Dineh-Bi-Keyah	Apache, AZ	Gaseous helium.
Do.	Harley Dome	Grand, UT	Do.
Do.	Hodgeman	Hodgeman, KS	Do.
Do.	IACX Otis	Rush, KS	Do.
Do.	Paden	Okfuskee, OK	Do.
Do.	Rock Creek	Hutchinson, TX	Crude helium.
Do.	Roswell	Chaves, NM	Gaseous helium.
Linde Global Helium, Inc.	Ulysses	Grant, KS	Grade-A helium.
Messer, LLC	Messer Otis	Rush, KS	Do.
Midstream Energy Services, LLC	Keyes	Cimarron, OK	Do.
Navajo Transitional Energy Company	Tocito Dome	San Juan, NM	Gaseous helium.
Paradox Resources	Lisbon	San Juan, UT	Grade-A helium.
Proton Green, LLC	St. Johns	Apache, AZ	Gaseous helium.
Scout Energy	Jayhawk	Grant, KS	Crude helium.
Tumbleweed Resources	Ladder Creek	Cheyenne, CO	Grade-A helium.

Do., do. Ditto.
[1]Grade-A helium, including liquefaction, is at least 99.997% helium. Gaseous helium is generally greater than 98% helium. Crude helium generally contains between 60% and 80% helium.

TABLE 3
HELIUM RECOVERY IN THE UNITED STATES[1]

(Million cubic meters)

	2019	2020	2021	2022	2023
Bureau of Land Management (BLM) crude helium sold (in-kind and open market)	5.0 [2]	5.9 [2]	4.4 [2]	6.8 [2]	-- [3]
Crude helium accepted and stored by BLM	3.2	5.1	7.1	9.1	4.6
Crude helium withdrawn from storage	-25.0	-14.7	-14.2	-21.3	-22.2
Total net crude helium put into storage[4]	-21.8	-9.6	-7.0	-12.2	-17.6
Private industry gaseous or Grade-A helium sold	86.2	81.5	75.9	77.5	81.2
Total helium recovered from natural gas[4]	64.4	71.9	68.9	65.3	63.6

-- Zero.
[1]Negative numbers denote a net withdrawal from BLM's underground storage facility, a partially depleted natural gas reservoir at the Cliffside Field near Amarillo, TX.
[2]This only represents in-kind sales. Open market sales ended in 2018.
[3]Open market sales ended in 2018 and in-kind sales ended in 2022.
[4]Numbers may not add to totals shown owing to rounding and conversions.

TABLE 4
SUMMARY OF BUREAU OF LAND MANAGEMENT (BLM) HELIUM CONSERVATION STORAGE SYSTEM OPERATIONS[1, 2]

(Million cubic meters)

	2019	2020	2021	2022	2023
Helium in conservation storage system on January 1:					
Stored under BLM conservation program	83.1	77.5	68.9	60.7	52.9
Stored for private producers under contract	82.0	65.2	61.7	61.0	55.7
Total[3]	165.1	142.7	130.6	121.7	108.6
Additions to system:					
Stored for private producers under contract	3.2	5.1	7.1	9.1	4.6
Redelivery of helium stored for private producers under contract	-25.0	-14.7	-14.2	-21.3	-22.2
Systemwide measurement and plant losses or gains	-0.6	-2.6	-1.9	-1.1	-6.7
Net addition to system[3, 4]	-22.4	-12.2	-9.0	-13.3	-24.3
Helium in conservation storage system on December 31:					
Stored under BLM conservation program[4]	77.5	68.9	60.7	52.9	51.8
Stored for private producers under contract	65.2	61.7	61.0	55.7	38.2
Total[3]	142.7	130.6	121.7	108.6	90.0

[1]Crude helium is injected into or withdrawn from BLM's underground storage facility, a partially depleted natural gas reservoir at the Cliffside Field near Amarillo, TX.
[2]Negative numbers denote a net withdrawal from BLM's underground storage facility.
[3]Numbers may not add to totals shown owing to rounding and conversions.
[4]Net additions to system do not include in-kind crude sales or transfers. Totals, however, include crude sales and transfers.

TABLE 5
U.S. EXPORTS OF HELIUM, BY REGION AND DESTINATION[1]

(Million cubic meters, thousand dollars, and dollars per cubic meter)

Destination	2022			2023		
	Quantity	Value[2]	Unit value	Quantity	Value[2]	Unit value
Africa and the Middle East	(3)	2,670	14.30	1	7,360	11.26
Asia:						
China[4]	3	33,000 r	12.51 r	2	35,700	18.53
Japan	2	41,800	17.09	2	39,400	17.46
Korea, Republic of	4	50,900	12.53	4	70,800	18.53
Taiwan	3	35,900	14.10	3	63,200	18.85
Other	(3)	1,070 r	12.03 r	(3)	658	14.96
Total	12	163,000	13.81	11	210,000	18.39
Europe:						
Belgium	5	65,100	12.09	7	82,200	11.56
Germany	2	20,200	8.91	1	16,300	12.78
Ireland	1	12,900	19.31	1	3,980	5.79
Netherlands	1	2,830	4.37	(3)	194	4.72
United Kingdom	1	5,300	9.25	1	10,000	12.73
Other	1	6,230	10.16	(3)	4,590	17.33
Total	10	113,000	11.09	10	117,000	11.53
North America:						
Canada	3	21,700	7.98	4	27,300	6.33
Costa Rica	1	789 r	1.26 r	(3)	902	4.18
Mexico	2 r	21,200 r	11.44 r	3	38,200	14.97
Other	2	4,500	2.26 r	1	5,820	5.90
Total	7	48,200 r	6.98 r	8	72,200	8.95
Oceania, Australia	(3)	386	4.33	(3)	569	5.08
South America:						
Brazil	2	19,200	11.49	2	29,700	18.18
Chile	1	4,120	7.51	(3)	6,260	13.75
Other	1	8,350	7.61	1	9,660	14.1
Total	3	31,700	9.55	3	45,600	16.44
Grand total	32.4 r	358,000	11.04	33.2	453,000	13.65

rRevised.
[1]Table includes data available through September 23, 2024. Data are rounded to no more than three significant digits, except "Unit value". Data may not add to totals shown.
[2]Free alongside ship value of material at U.S. port of export. Based on transaction price; includes all charges incurred in placing material alongside ship.
[3]Less than ½ unit.
[4]Includes Hong Kong.

Source: U.S. Census Bureau.

TABLE 6
U.S. IMPORTS OF HELIUM, BY COUNTRY OR LOCALITY[1]

(Million cubic meters, thousand dollars, and dollars per cubic meter)

	2022			2023		
Country or locality	Quantity	Value[2]	Unit value	Quantity	Value[2]	Unit value
Algeria	(3)	742 r	6.94 r	1	6,970	9.10
Canada	3 r	37,400 r	12.43 r	5	63,800	13.84
Qatar	3	20,900 r	7.41 r	2	16,600	8.85
Other	(3)	1,850 r	4.23 r	1	4,480	5.74
Total	6.4 r	60,900 r	9.55 r	8.0	91,800	11.43

rRevised.
[1]Table includes data available through September 23, 2024. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Cost, insurance, and freight value of material at U.S. port of entry. Based on purchase price; includes all charges (except U.S. import duties) in bringing material from foreign country to alongside carrier.
[3]Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 7
ESTIMATED WORLD ANNUAL GRADE-A AND GASEOUS HELIUM PRODUCTION CAPACITY, DECEMBER 31, 2023[1]

(Million cubic meters)

Country or locality	Capacity
Algeria	50
Canada	9
Poland	3
Qatar	72
Russia	31
South Africa	1
United States	194
Total	360

[1]Includes capacity at operating plants and at plants on standby basis. Data may not add to total shown.

TABLE 8
HELIUM: WORLD PRODUCTION, BY COUNTRY OR LOCALITY[1]

(Million cubic meters)

Country or locality	2019	2020	2021	2022	2023
Algeria[e]	14	14	10	8	9
Australia[e]	4	4	4	3	1
Canada	(2)	1	1 r	3	5
Poland	3	3	3	3	3
Qatar[e]	45	51	61	59	66
Russia[e]	5	5	5	5	8
United States	86	82	76	78	81
Total	157	159	161	159	173

eEstimated. rRevised.
[1]Table includes data available through October 3, 2024. All data are reported unless otherwise noted; totals may include estimated data. Totals, U.S. data, and estimated data are rounded to three significant digits; may not add to totals shown.
[2]Less than ½ unit.

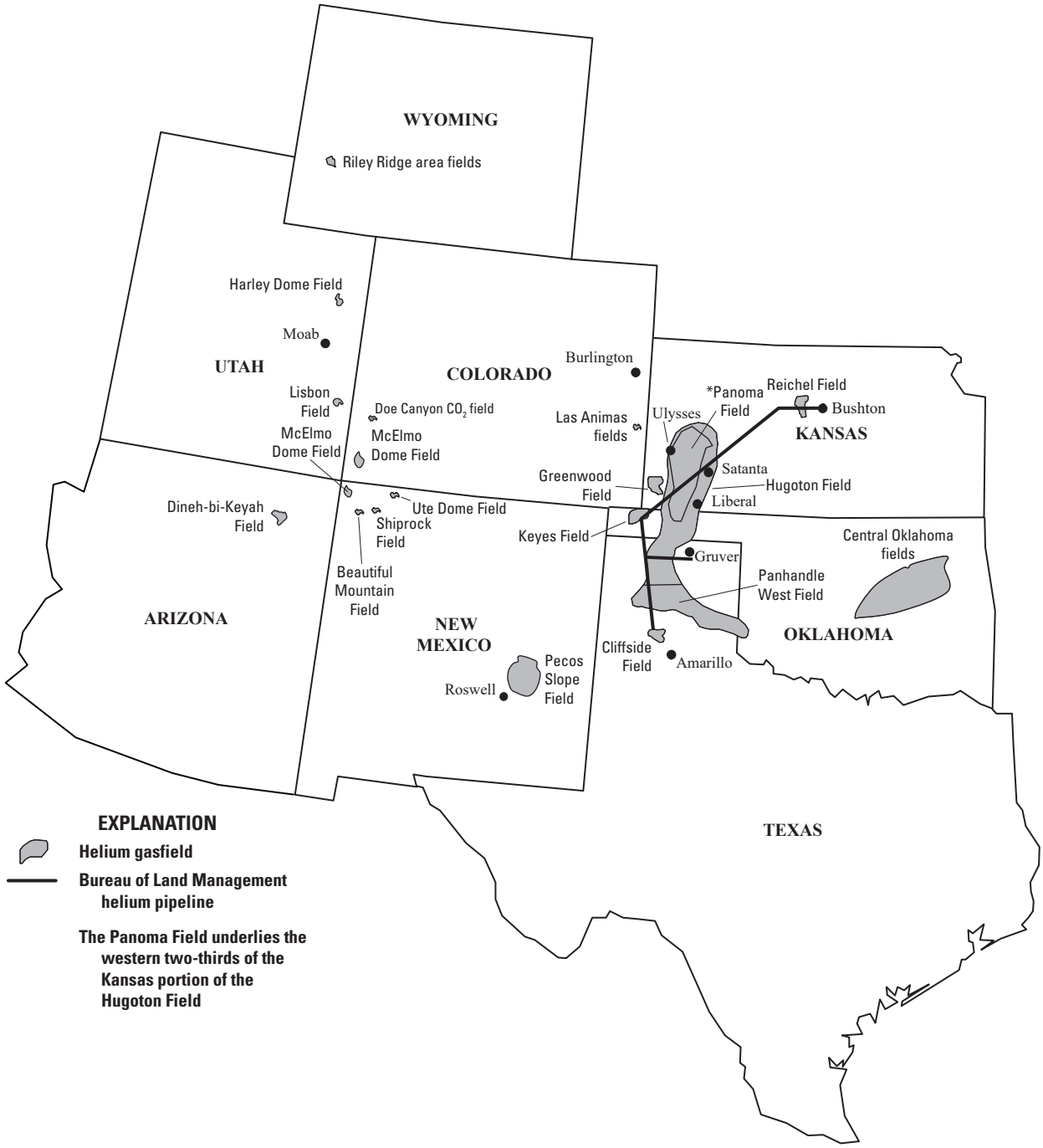

Figure 1. Major helium-bearing natural gas fields in the United States.

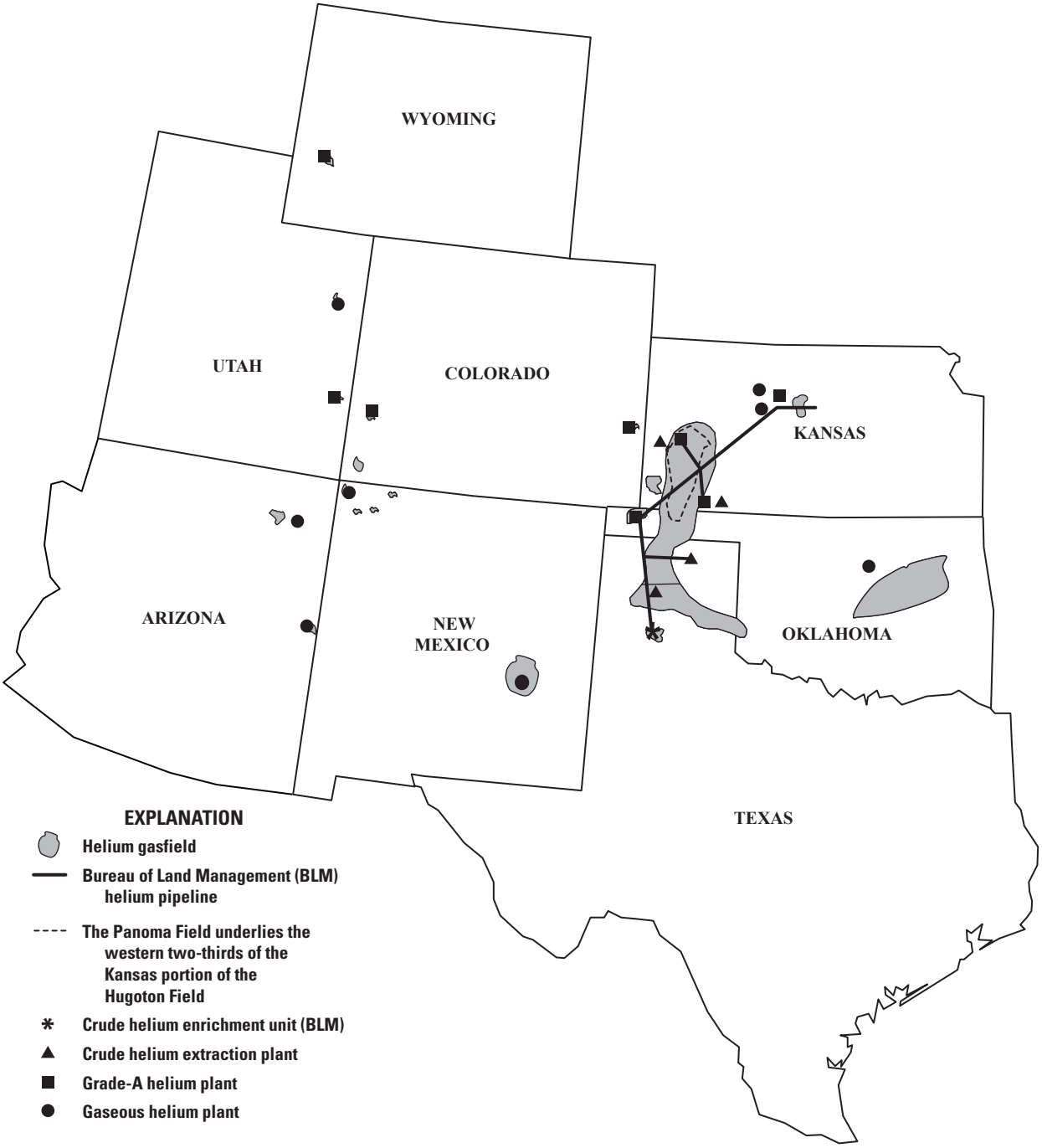

Figure 2. Active helium extraction and refining plants in the United States.

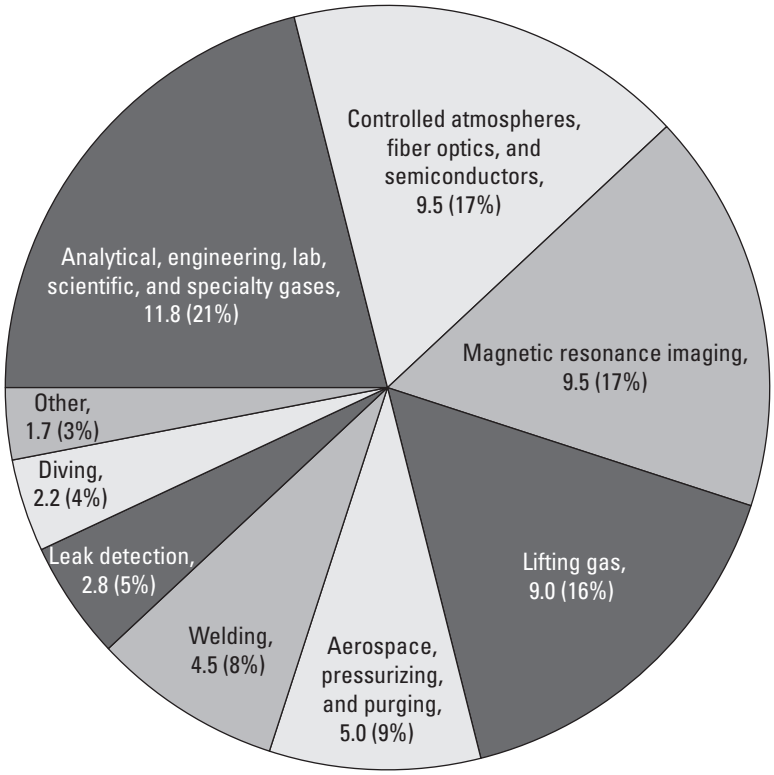

Figure 3. Estimated helium consumption in the United States in 2023, by end use, reported in million cubic meters (Garvey, 2023a).

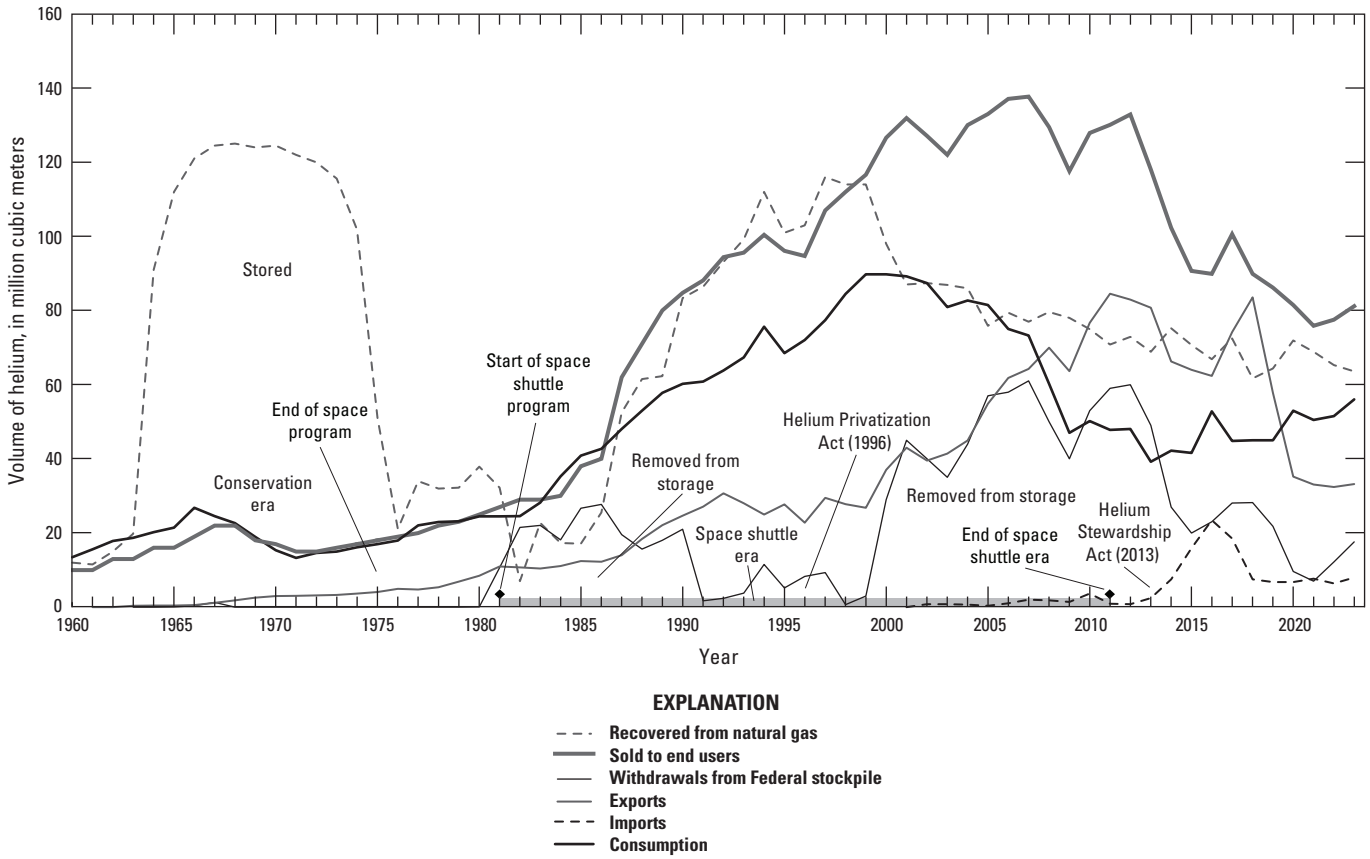

Figure 4. Helium trends in the United States, 1960 through 2023.

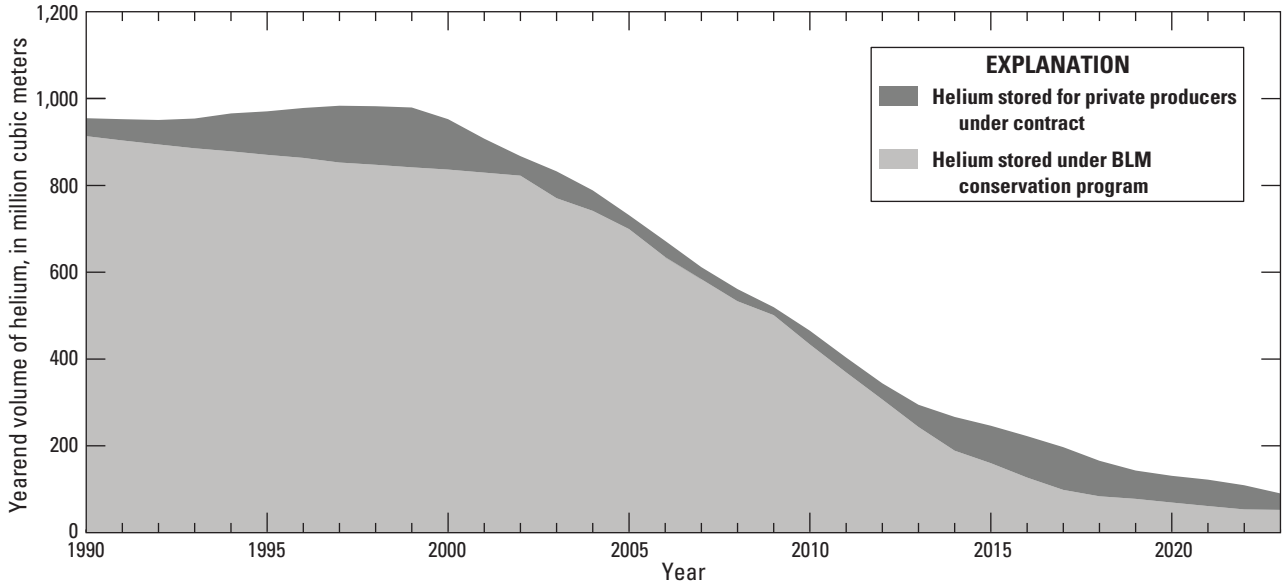

Figure 5. Helium in the Bureau of Land Management (BLM) conservation storage system, 1990 through 2023.