

2022 Domestic Uranium Production Report

May 2023



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Introduction

In this report, EIA provides detailed data on U.S. uranium production activities from 2008 through 2022.

Data in this report are based primarily on information reported on Form EIA-851A, *Domestic Uranium Production Report (Annual)*, and some information reported on Form EIA-858, *Uranium Marketing Annual Survey*. The Form EIA-851A survey collects data on uranium milling and in-situ recovery processing, feed sources, mining, employment, drilling, expenditures, and reserve estimates. The Form EIA-858 survey includes data collected on uranium contracts and deliveries.

<u>Previous editions</u> of this report are available on our website.

Definitions for terms in this report are available in our **Energy Glossary**.

Mining, production, shipments, and sales

U.S. uranium mines produced 194,000 pounds of of triuranium octoxide (U_3O_8), or uranium concentrate in 2022, a significant increase from th 21,000 pounds produced in 2021 as production resumed at White Mesa Mill in Utah. The production of uranium concentrate is the first step in the nuclear fuel production process, preceding the conversion of U_3O_8 into UF₆ to enable uranium enrichment, then fuel pellet fabrication, and finally fuel assembly fabrication.

Facility status (mills, heap leach plants, and in-situ recovery plants)

At the end of 2022, the White Mesa Mill in Utah was operating with an ability to process 2,000 short tons of ore per day. Shootaring Canyon Uranium Mill in Utah and Sweetwater Uranium Project in Wyoming were on standby with a total capacity of 3,750 short tons of material per day. In Wyoming, the Sheep Mountain heap leach facility remains in the planning stages.

Regarding in-situ recovery facilities, at the end of 2022 the Lost Creek Project and the Smith Ranch-Highland Operation in Wyoming were operating with a combined capacity of 7.5 million pounds U_3O_8 per year. Nine in-situ recovery plants were on standby as of the end of 2021 with a combined annual production capacity of 13.8 million pounds U_3O_8 . Ten in-situ recovery plants were planned for four states: New Mexico, South Dakota, Texas, and Wyoming with a combined annual production capacity of 15 million pounds U_3O_8 .

Employment and expenditures

Total employment in the U.S. uranium production industry was 196 full-time person-years (one person year is equal to full-time employment for one person) in 2022, a decrease of 5% from the 2021 total.

Total expenditures for land, exploration, drilling, production, and reclamation were \$84.7 million in 2022, a 17% increase from 2021 total expenditures.

Table 1. U.S. uranium drilling activities, 2008–22

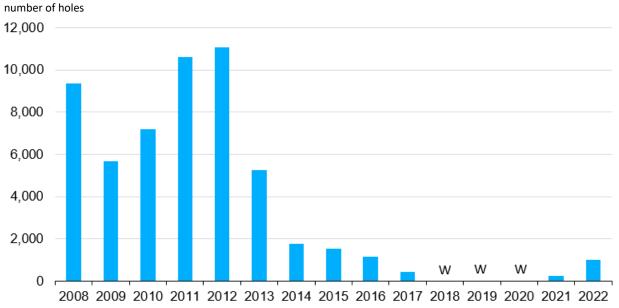
	Exploratio	n drilling	Developme	ent drilling	Exploration and development drilling			
Year	number of holes	feet (thousand)	number of holes	feet (thousand)	number of holes	feet (thousand)		
2008	5,198	2,543	4,157	2,551	9,355	5,093		
2009	1,790	1,051	3,889	2,691	5,679	3,742		
2010	2,439	1,460	4,770	3,444	7,209	4,904		
2011	5,441	3,322	5,156	3,003	10,597	6,325		
2012	5,112	3,447	5,970	3,709	11,082	7,156		
2013	1,231	919	4,013	2,926	5,244	3,845		
2014	W	W	W	W	1,752	1,299		
2015	W	W	W	W	1,518	878		
2016	W	W	W	W	1,158	757		
2017	W	W	W	W	420	196		
2018	W	W	W	W	W	W		
2019	W	W	W	W	W	W		
2020	W	W	W	W	W	W		
2021	W	W	W	W	260	123		
2022	259	151	749	384	1,008	534		

NA = Not available. W = Data withheld to avoid disclosure of individual company data.

Note: Totals may not equal sum of components because of independent rounding.

Data Source: U.S. Energy Information Administration, Form EIA-851A, *Domestic Uranium Production Report* (2008–22)

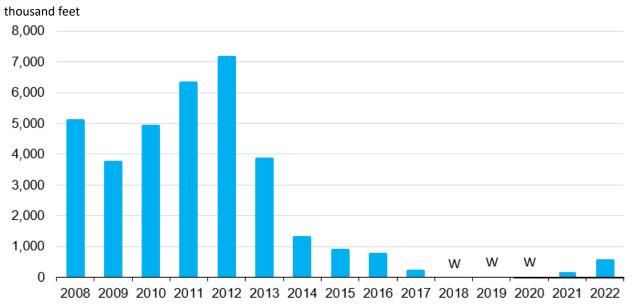
Figure 1. U.S. uranium drilling by number of holes, 2008-22



Data Source: U.S. Energy Information Administration, Form EIA-851A, *Domestic Uranium Production Report* (2008–22) W = Withheld



Figure 2. U.S. uranium drilling, 2008–22



Data Source: U.S. Energy Information Administration, Form EIA-851A, Domestic Uranium Production Report (2008–22) W = Withheld



Table 2. U.S. uranium mine production and number of mines and sources, 2008–22

Production / mining method	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Underground															
(estimated contained thousand pounds U ₃ O ₈)	W	w	w	w	w	w	w	w	w	w	w	w	w	w	w
Open pit															
(estimated contained thousand pounds U ₃ O ₈)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
In-situ recovery															
(thousand pounds U₃O₀)	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
Other ¹															
(thousand pounds U ₃ O ₈₎	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
Total mine production															
(thousand pounds U ₃ O ₈)	3,879	4,145	4,237	4,114	4,335	4,577	4,912	3,711	2,545	1,150	721	174	w	21	194
Number of operating mines															
Underground	10	14	4	5	6	3	2	1	0	0	0	1	1	0	0
Open pit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
In-Situ leaching	6	4	4	5	5	7	8	7	8	6	6	5	5	3	4
Other sources ¹	1	2	1	1	1	2	1	1	1	1	1	0	0	0	1
Total mines and sources	17	20	9	11	12	12	11	9	9	7	7	6	6	3	5

W = Data withheld to avoid disclosure of individual company data.

Data Source: U.S. Energy Information Administration, Form EIA-851A, Domestic Uranium Production Report (2008–22)

Table 3. U.S. uranium concentrate production, shipments, and sales, 2008–22

Activity at U.S. mills and in-situ-leach plants	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Estimated contained U ₃ O ₈ (thousand pounds)															
Ore from underground mines and stockpiles fed to mills ¹	W	W	W	W	W	W	w	0	0	0	0	w	W	W	0
Other feed materials ²	W	w	w	w	w	w	w	w	w	w	W	w	w	W	162
Total mill feed	w	w	w	w	w	w	w	w	w	w	w	w	w	w	162
Uranium concentrate produced at U.S. mills															
(thousand pounds U ₃ O ₈)	W	W	W	W	W	W	w	W	W	W	W	W	W	W	162
Uranium concentrate produced at U.S. in-situ-leach plants															
(thousand pounds U ₃ O ₈)	W	W	W	W	W	W	W	W	W	W	W	W	W	W	34
Total uranium concentrate production															
(thousand pounds U ₃ O ₈)	3,902	3,708	4,228	3,991	4,146	4,659	4,891	3,343	2,916	2,443	1,647	174	W	21	196
Total uranium concentrate shipped from U.S. mills and in-situ-lea	ch plants														
(thousand pounds U ₃ O ₈)	4,130	3,620	5,137	4,000	3,911	4,655	4,593	4,023	3,018	2,277	1,489	190	W	W	162
Total uranium concentrate sales by U.S. producers ³															
(thousand pounds U ₃ O ₈)	3,656	2,044	2,684	2,870	3,630	4,447	4,746	3,634	2,691	1,254	1,541	W	W	W	W
Weighted-average price (dollars per pound U₃O₃)	43.81	36.61	37.59	52.36	49.63	44.65	39.17	42.86	38.22	41.34	32.51	w	W	W	W

W = Data withheld to avoid disclosure of individual company data.

Data Source: U.S. Energy Information Administration, Form EIA-851A, Domestic Uranium Production Report (2008-22), and Form EIA-858, Uranium Marketing Annual Survey (2008-22)

¹ Other includes, in various years, mine water, mill site cleanup and mill tailings, and well field restoration as sources of uranium.

Notes: Totals may not equal sum of components because of independent rounding. Table does not include byproduct production and sources.

¹ Uranium ore fed to mills in any year can include ore mined and shipped to a mill during the same year, ore that was mined during a previous year and later shipped from mine-site stockpiles, ore obtained from drawdowns of stockpiles maintained at a mill site, or a combination of these options.

 $^{^2\,}Includes\,for\,various\,years\,uranium\,from\,mill\,cleanup,\,mine\,water,\,tailings\,water,\,and\,other\,materials.$

³ Sales of U.S-origin uranium only.

Notes: Totals may not equal sum of components because of independent rounding.

Table 4. U.S. uranium mills and heap leach facilities by owner, location, capacity, and operating status at end of the year, 2018–22

Owner	Mill and heap leach ¹ facility name	County, State (existing and planned locations)	Capacity (short tons of ore per day)	2018	2019	2020	2021	2022
	Shootaring							
	Canyon	Carfiold						
Anfield Resources	Uranium Mill	Garfield, Utah	750	standby	standby	standby	standby	standby
		Otan		operating- processing	Standby	operating- processing	Standby	operating- processing
EFR White Mesa	White	San Juan,		alternate		alternate		alternate
LLC	Mesa Mill	Utah	2,000	feed	standby	feed	standby	feed
Energy Fuels	Sheep	Fremont,						
Wyoming Inc	Mountain	Wyoming	725	undeveloped	undeveloped	undeveloped	undeveloped	undeveloped
Kennecott Uranium					:::			
Company/Wyoming	Sweetwater							
Coal Resource	Uranium	Sweetwater,						
Company	Project	Wyoming	3,000	standby	standby	standby	standby	standby

Total Capacity: 6,475

Notes: Capacity for 2022. An operating status of *Operating* indicates the mill usually was producing uranium concentrate at the end of the period.

Data Source: U.S. Energy Information Administration, Form EIA-851A, Domestic Uranium Production Report (2018–22)

¹ Heap leach solutions: The separation, or dissolving-out from mined rock, of the soluble uranium constituents by the natural action of percolating a prepared chemical solution through mounded (heaped) rock material. The mounded material usually contains low grade mineralized material and waste rock, which are produced from open pit or underground mines. The solutions are collected after percolation is completed and processed to recover the valued components.

Table 5. U.S. uranium in-situ recovery plants by owner, location, capacity, and operating status at end of the year, 2018-22

In-situ recovery plant		County, State (existing and	Production capacity (pounds U ₂ O ₄	2018	2019	2020	2021	2022
owner	plant name	planned locations)	per year)	2018	2019	2020	2021	2022
Uranium Energy Corporation	Reno Creek ISR Uranium Project	Campbell, Wyoming	2.000.000	partially permitted and licensed	partially permitted and licensed	permitted and licensed	permitted and licensed	permitted and licensed
Azarga Uranium Corp	Dewey Burdock Project	Fall River and Custer, South Dakota	1,000,000	partially permitted and licensed	partially permitted and licensed	permitted and licensed	permitted and licensed	permitted and licensed
Carneco	Crow Butte Operation	Dawes, Nebraska	1,000,000	operating	standby	standby	standby	standby
Hydro Resources, Inc.	Church Rock	McKinley, New Mexico	1,000,000	partially permitted and licensed				
Hydro Resources, Inc.	Crownpoint	McKinley, New Mexico	1,000,000	partially permitted and licensed				
Lost Creek ISR LLC	Lost Creek Project	Sweetwater, Wyoming	2,000,000	operating	operating	operating	operating	operating
Mestena Uranium LLC	Alta Mesa Project	Brooks, Texas	1,500,000	standby	standby	standby	standby	standby
Pathfinder Mines Corporation	Pathfinder Shirley Basin	Carbon County, Wyoming	2,000,000	developing	developing	permitted and licensed	permitted and licensed	permitted and licensed
Power Resources Inc., dba Cameco Resources	Smith Ranch- Highland Operation	Converse, Wyoming	5,500,000	operating	operating	operating	operating	operating
Uranium Energy Corporation	Hobson ISR Processing Plant	Karnes, Texas	2,000,000	standby	standby	standby	standby	standby
Uranium Energy Corporation	La Palangana ISR Uranium Project	Duval, Texas	1,000,000	standby	standby	standby	standby	standby
Strata Energy Inc	Ross CPP	Crook, Wyoming	3,000,000	operating	standby	standby	standby	standby
URI, Inc. (an enCore Energy company)	Kingsville Dome	Kleberg, Texas	1,000,000	restoration	restoration	standby	standby	standby
URI, Inc. (an enCore Energy company)	Flosita	Duval, Texas	1,000,000	reclamation	reclamation	standby	standby	standby
URI, Inc. (an enCore Energy company)	Vasquez	Duval, Texas	1,000,000	restoration	restoration	reclamation	reclamation	reclamation
Uranerz Energy Corporation (An Energy Fuels company)	Nichols Ranch ISR Project	Johnson and Campbell, Wyoming	2,000,000	operating	operating	standby	standby	standby
Uranium Energy Corporation	Burke Hollow ISR Uranium Project	Bee County, Texas	1,000,000	partially permitted and licensed	partially permitted and licensed	permitted and licensed	permitted and licensed	permitted and licensed
Uranium Energy Corporation	Goliad ISR Uranium Project	Goliad, Texas	1,000,000	permitted and licensed				
Uranium Energy Corporation	Jab and Antelope	Sweetwater, Wyoming	2,000,000	developing	developing	developing	developing	developing
Uranium Energy Corporation	Moore Ranch	Campbell, Wyoming	3,000,000	permitted and licensed				
Uranium Energy Corporation	Willow Creek Project (Christensen Ranch and Irigaray)	Campbell and Johnson, Wyoming	1,300,000	operating	standby	standby	standby	standby

Total Production 36,300,000

36,300,000

Notes: Production capacity for 2022. An operating status of *Cperating* indicates the in-situ recovery plant usually was producing uranium concentrate at the end of the period. Hobson ISR Plant processes uranium concentrate that came from La Palangana. Hobson and La Palangana are part of the same project. ISR stands for in-situ recovery. Christensen Ranch and Irigaray are part of the Willow Creek Project. Uranerz Energy has a tolling arrangement with Cameco Resources. Uranium is first processed at the Nichols Ranch plant and then transported to the Smith Ranch-Highland Operation plant for final processing into Uranerz's uranium concentrate. CPP = central processing plant.

Source: U.S. Energy Information Administration, Form EIA-851A, Domestic Litarium Phoduction Report (2019-22)

Table 6. Employment in the U.S. uranium production industry by category, 2008–22

person-years

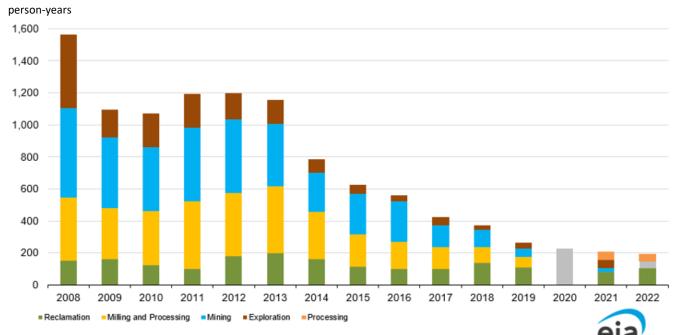
Year	Exploration	Mining	Milling	Processing	Reclamation	Total
2008	457	558	W	W	154	1,563
2009	175	441	W	W	162	1,096
2010	211	400	W	W	125	1,073
2011	208	462	W	W	102	1,191
2012	161	462	W	W	179	1,196
2013	149	392	W	W	199	1,156
2014	86	246	W	W	161	787
2015	58	251	W	W	116	625
2016	38	255	W	W	98	560
2017	50	136	W	W	100	424
2018	27	110	W	W	138	372
2019	40	48	W	W	110	265
2020	W	W	W	W	W	225
2021	42	32	0	52	82	207
2022	W	W	W	50	105	196

W = Data withheld to avoid disclosure of individual company data.

Note: Totals may not equal sum of components because of independent rounding. A large, one-time reclamation project needed to be withheld and was not included in 2016 data.

Source: U.S. Energy Information Administration, Form EIA-851A, Domestic Uranium Production Report (2008–22)

Figure 3. Employment in the U.S. uranium production industry by category, 2008–22



Data Source: U.S. Energy Information Administration: Form EIA-851A, Domestic Uranium Production Report (2008-22)

Table 7. Employment in the U.S. uranium production industry by state, 2008–22

person-years

State(s)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Wyoming	301	308	348	424	512	531	416	343	323	245	197	146	112	96	89
Colorado and Texas	696	340	292	331	248	198	105	79	61	46	54	44	42	58	49
Nebraska and New Mexico	160	159	134	127	W	W	W	W	W	56	36	48	46	w	W
Arizona, Utah, and Washington	360	273	281	W	W	W	W	W	W	W	W	W	W	W	W
Alaska, Michigan, Nevada, and															
South Dakota	30	W	W	W	W	W	0	0	0	W	W	W	W	W	W
California, Montana, North Dakota, Oklahoma, Oregon, Utah, and															
Virginia	17	W	W	W	W	W	W	W	W	W	W	W	W	W	W
Total	1,563	1,096	1,073	1,191	1,196	1,156	787	625	560	424	372	265	225	207	196

W = Data withheld to avoid disclosure of individual company data.

Note: Totals may not equal sum of components because of independent rounding.

Data Source: U.S. Energy Information Administration, Form EIA-851A, Domestic Uranium Production Report (2008–22)

Table 8. U.S. uranium expenditures, 2008–22

million dollars

Land and other 3 total land Total Year Drilling 1 Production ² and other land exploration reclamation Expenditures 2008 221.2 164.4 65.2 50.2 467.6 81.9 49.1 2009 35.4 141.0 104.0 17.3 24.2 62.4 280.5 2010 44.6 133.3 99.5 20.2 34.5 44.7 277.3 2011 168.8 43.5 33.7 319.2 53.6 96.8 19.6 2012 66.6 186.9 99.4 16.8 33.3 49.3 352.9 49.9 2013 168.2 90.6 14.6 21.6 54.4 308.7 2014 28.2 137.6 74.0 10.7 51.7 239.7 11.6 2015 28.7 118.5 76.2 12.1 4.7 59.4 223.5 2016 22.3 98.0 49.6 169.9 9.9 2.5 37.2 2017 4.0 78.3 40.2 8.9 3.7 27.7 122.5 2018 W 65.9 W W W W 108.8 2019 W 38.0 W W 81.0 W W 2020 W 87.0 W 40.0 W W W 2021 W 29.2 W W W 72.5 8.6 2022 9.4 22.2 53.1 5.4 36.4 84.7 11.4

Notes: Expenditures are in nominal U.S. dollars. Totals may not equal sum of components because of independent rounding. Data Source: U.S. Energy Information Administration, Form EIA-851A, *Domestic Uranium Production Report* (2008–22).

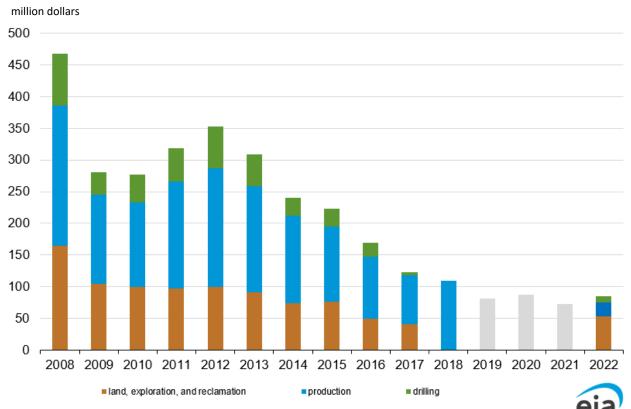
NA = Not available. W = Data withheld to avoid disclosure of individual company data.

¹ Drilling: All expenditures directly associated with exploration and development drilling.

² Production: All expenditures for mining, milling, processing of uranium, and facility expense.

³ Land and Other: All expenditures for land; geological research; geochemical and geophysical surveys; costs incurred by field personnel in the course of exploration, reclamation, and restoration work; and overhead and administrative charges directly associated with supervising and supporting field activities.

Figure 4. U.S. uranium expenditures, 2008–22



Data Source: U.S. Energy Information Administration, Form EIA-851A, Domestic Uranium Production Report (2008–22)

Table 9. Summary production statistics of the U.S. uranium industry, 2008–22

Year	Exploration and development surface drililng million feet	Exploration and development drilling expenditures ¹ million dollars	Mine production of uranium million pounds U ₃ O ₈	Uranium concentrate production million pounds U ₃ O ₈	shipments	Employment person-years
2008	5.1	81.9	3.9	3.9	4.1	1,563
2009	3.7	35.4	4.1	3.7	3.6	1,096
2010	4.9	44.6	4.2	4.2	5.1	1,073
2011	6.3	53.6	4.1	4.0	4.0	1,191
2012	7.2	66.6	4.3	4.1	3.9	1,196
2013	3.8	49.9	4.6	4.7	4.7	1,156
2014	1.3	28.2	4.9	4.9	4.6	787
2015	0.9	28.7	3.7	3.3	4.0	625
2016	0.8	22.3	2.5	2.9	3.0	560
2017	0.2	4.0	1.2	2.4	2.3	424
2018	W	W	0.7	1.6	1.5	372
2019	W	W	0.2	0.2	0.2	265
2020	W	W	W	W	W	225
2021	0.1	W	0.02	0.02	W	207
2022	0.5	9.4	0.02	0.2	0.2	196

W = Data withheld to avoid disclosure of individual company data.

Note: A large, one-time reclamation project needed to be withheld and was not included in 2016 data.

Data Source: U.S. Energy Information Administration, 2008-2022 data from Form EIA-851A, Domestic Uranium Production Report (2008-22)

¹ Expenditures are in nominal U.S. dollars.

Figure 5. U.S. mine production of uranium, 2008–22

million pounds U₃O₈

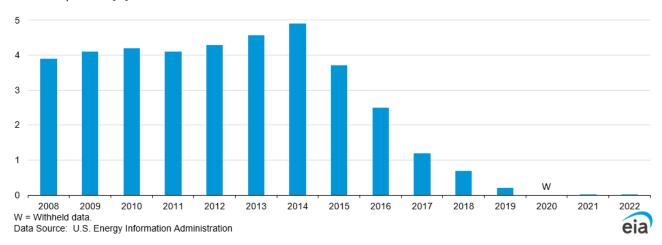
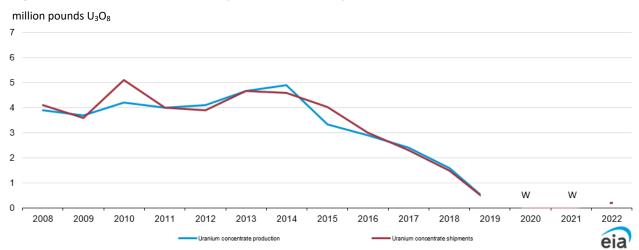


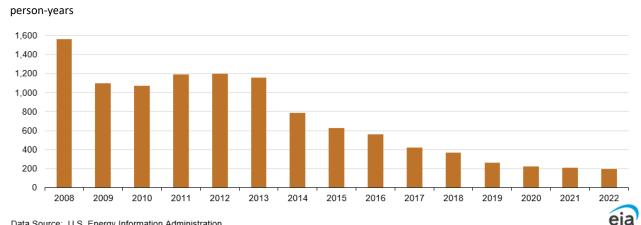
Figure 6. U.S. uranium concentrate production and shipments, 2008–22



W = Withheld data.

Data Source: U.S. Energy Information Administration

Figure 7. Employment in the U.S. uranium production industry, 2008–22



Data Source: U.S. Energy Information Administration

Table 10. Uranium reserve estimates at the end of 2021 and 2022

million pounds U3O8

		End of 2021			End of 2022						
	Forward Cost ²										
Uranium reserve estimates ¹ by mine and property	\$0 to \$30 per	\$0 to \$50 per	\$0 to \$100	\$0 to \$30 per	\$0 to \$50 per	\$0 to \$100					
status, mining method, and State(s)	pound	pound	per pound	pound	pound	per pound					
Properties with exploration completed, exploration											
continuing, and only assessment work	W	W	W	W	W	W					
Properties under development for production and											
development drilling	W	W	w	W	W	W					
Mines in production	W	w	W	w	W	W					
Mines closed temporarily, closed permanently, and											
mined out	W	W	W	W	W	W					
Total	w	w	435.5	w	w	437.5					
In-situ leach mining	w	w	W	w	W	W					
Underground and open pit mining	W	W	W	W	W	W					
Total	w	w	435.5	w	w	437.5					
Arizona, New Mexico, and Utah	W	w	w	W	w	W					
Colorado, Nebraska, and Texas	w	w	W	W	w	W					
Wyoming	w	w	W	W	w	W					
Total	w	w	435.5	w	w	437.5					

W = Data withheld to avoid disclosure of individual company data.

Note: Totals may not equal sum of components because of independent rounding.

Data Source: U.S. Energy Information Administration, Form EIA-851A, Domestic Uranium Production Report (2021–22)

¹ These uranium reserve estimates cannot be compared with the much larger historical data set of uranium reserves that were published in the July 2010 report *U.S. Uranium Reserves Estimates*. Reserves, as reported here, do not necessarily imply compliance with U.S. or international government definitions for purposes of investment disclosure.

² Forward Cost: The operating and capital costs still to be incurred in the production of uranium from in-place reserves. By using forward costing, estimates for reserves for ore deposits in differing geological settings and status of development can be aggregated and reported for selected cost categories. Included are costs for labor, materials, power and fuel, royalties, payroll taxes, insurance, and applicable general and administrative costs. Excluded from forward cost estimates are prior expenditures, if any, incurred for property acquisition, exploration, mine development, and mill construction, as well as income taxes, profit, and the cost of money. Forward costs are neither the full costs of production nor the market price at which the uranium, when produced, might be sold.