Research Brief
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Utah's Energy Sector in 2023 and Outlook for 2024

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Utah is fortunate to have abundant and diverse energy resources, including large reserves of conventional fossil fuels as well as several areas suitable for renewable resource development. More recently, Utah has witnessed an evolution in its energy landscape. Crude oil and natural gas still feature prominently in Utah's energy mix, but each year coal has a more diminished role. The electricity market continues to adjust to decarbonization pressures balanced with grid reliability and affordability. This energy evolution will continue with ongoing emphasis on renewable and carbon-neutral energy sources, innovations in the hydrogen economy, and electrification of the transportation system.

Producing energy resources has always been a priority for Utah—not only does responsible development provide good high-paying jobs, mostly in rural areas of the state, but it also contributes significant tax revenue. For the past 40+ years, Utah has enjoyed the status of being a net energy exporter, meaning Utah produced/generated more energy than needed and was able to export the excess energy to surrounding states (and sometimes to other countries). Production of energy in Utah began decreasing in 2015 and continued to drop until it crossed the consumption line in 2020, flipping Utah back to being a net energy importer. This new situation has continued through 2023. However, energy production in Utah is once again on the rise, while energy consumption has plateaued in recent years. Most likely, Utah will return to being a net energy exporter in the near future.

2023 SUMMARY

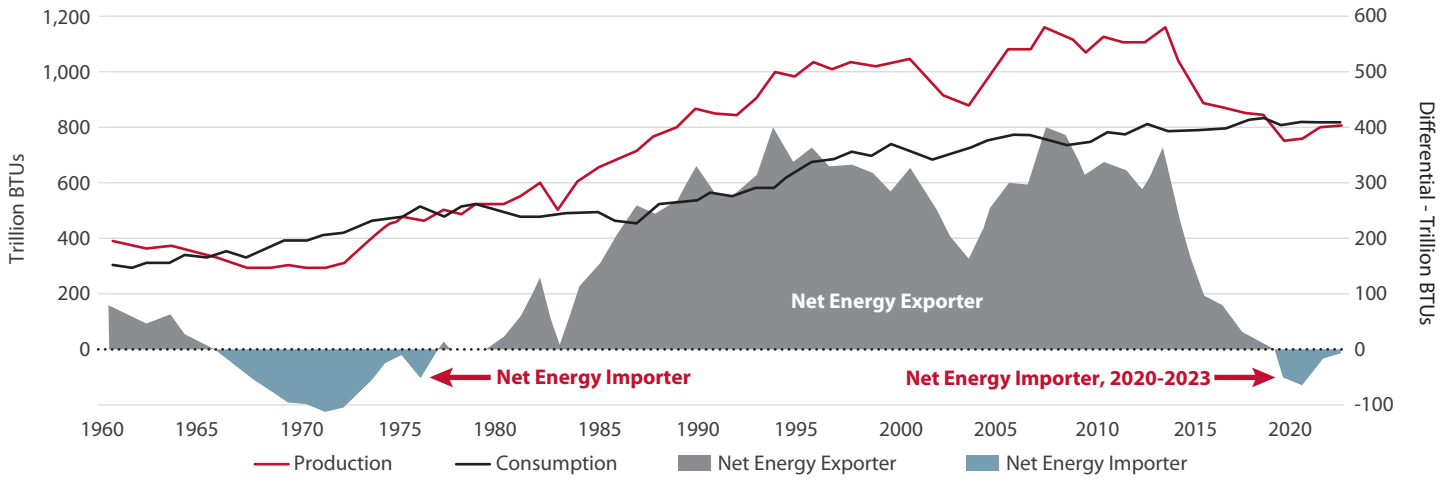
In 2023, the energy economy was still adjusting to lingering impacts from the post-COVID-19 run up in energy demand and lingering high energy prices. In addition, continued geopolitical situations (e.g., war in Ukraine and conflicts in the Middle East.) have kept petroleum and natural gas prices volatile and high. These high prices, coupled with consistently strong demand, have resulted in continued local drilling and production of oil and natural gas, particularly in the Uinta Basin. Furthermore, the federal administration maintains a strong emphasis on a transition to carbon-neutral energy sources, most acutely seen in the electric utility sector with a continued shift away from coal to renewable resources.

Utah crude oil prices in 2023 fluctuated between $62 and $76 per barrel, averaging $66.50 for the year. Although this price is about 18% lower than in 2022, Utah crude oil production increased 22% to 55.5 million barrels in 2023, the highest annual production on record. Natural gas prices were volatile in late 2022 and early 2023, spiking up to $28 per thousand cubic feet (Mcf) before settling back down to the $3 range, resulting in an average 2023 price of $7.00 per Mcf. These high natural gas prices, coupled with projected record high demand, led to a second year of production increases resulting in a total 2023 production of 288 billion cubic feet (Bcf).

Utah's central-west desert (Millard, Beaver, and Iron Counties) has been labeled "Utah's Renewable Energy Corridor" with large-scale development of solar, wind, and geothermal resources. Major investment in the Intermountain Power Project (IPP) site will facilitate electricity generation from natural gas and carbon-neutral hydrogen (IPP Renewed). In addition, research and development of enhanced geothermal resources cements the area's reputation as a clean energy hub. Several new utility-scale solar facilities will soon boost Utah's total solar capacity to 2.3 gigawatts (GW), or about 75% of total renewable electric capacity. New utility-scale capacity elevated solar to 12% of Utah's total electricity generation in 2023. In the residential sector, total installed photovoltaic (PV) capacity increased from 6 megawatts (MW) in 2013 to 379 MW in 2022. Electricity generation in Utah from all sources decreased 15% in 2023 despite consumption staying near a record high of 33,052 gigawatt hours (GWh). Electricity prices increased in 2023 but are still 30% lower than the national average.

Utah coal production dropped to the lowest level in over 45 years, 6.9 million tons in 2023 (36% less than 2022), despite a significant increase in coal prices. This decrease stemmed from underground problems at the Lila Canyon (which has been indefinitely idled as of fall 2023) and Skyline mines. Also, the Coal Hollow mine in southern Utah was idled in mid-2023. Utah production decreases led to local coal shortages that necessitated near record coal imports from Colorado and

Figure 1: Utah Energy Balance: Production and Consumption, 1960–2023



Wyoming. Coal demand at Utah power plants decreased from 12 million tons in 2021 to 8 million tons in 2023. The establishment of a foreign export coal market to meet high international demand continues to be a challenge as access to West Coast ports remains in question.

Demand for oil and natural gas remained strong in 2023 and will continue to play a major role in Utah's energy landscape. However, there is a noticeable shift at the federal level to move more quickly to carbon-neutral energy sources. Fortunately, Utah is well positioned to take the lead in this energy transition with major research projects focused on geothermal energy, hydrogen technology, carbon sequestration opportunities, and utility-scale storage, as well as the continued buildout of large-scale PV solar farms that are starting to be coupled with innovative battery storage.

2023 Details

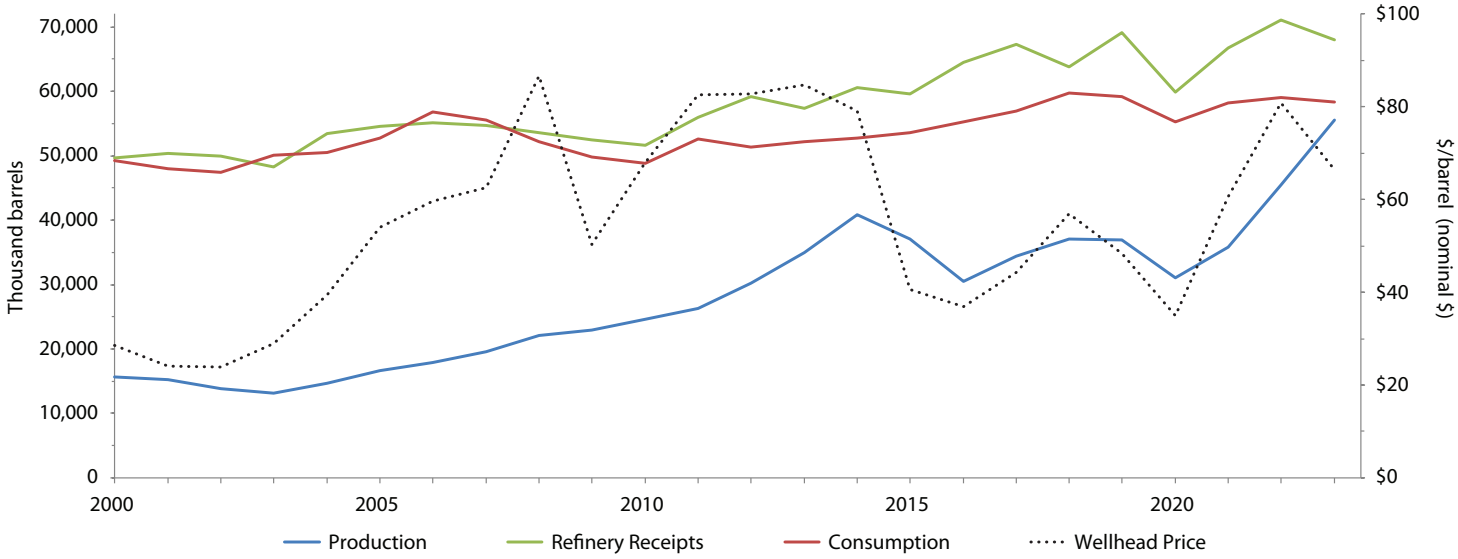
Petroleum

Production. Utah oil production took a major hit in 2020, dropping to 31.0 million barrels, when the COVID-19 pandemic caused major global disruptions to petroleum prices and demand. Production bottomed out at 69,600 barrels per day in May 2020, but then steadily increased over the past couple years, hitting a record high of 165,000 barrels per day in November 2023 (most up to date data available at time of writing). Total crude oil production for 2023 is expected to reach a record high of 55.5 million barrels, a 22% increase from 2022 (and 79% higher than 2020), mostly attributable to the drilling of very successful long-reach (10,000+ feet) horizontal wells in the Uinta Basin. Total crude oil pipeline imports from Colorado, Wyoming, and Canada decreased 5.8% to 36.5 million barrels in 2023. Similarly, refinery receipts—the amount of crude oil delivered to Utah's five refineries—decreased 4.3% to 68.0 million barrels. With the growth in production in 2023, estimated exports of Utah crude oil surged to a record high of about 24 million barrels, mostly related to more Uinta Basin crude oil heading to the Gulf Coast via trains that are loaded near Price, Utah.

Prices and Value. The price of Utah crude oil in 2023 has stayed relatively consistent throughout the year, averaging an estimated $66.50 per barrel, down 18% from $80.82 per barrel seen in 2022 but still 91% higher than the 2020 price. In terms of value, the decrease in price was mostly offset by the surge in production resulting in a value of Utah's produced crude oil of $3.7 billion in 2023. Following the same trend, Utah's average price for regular unleaded motor gasoline and diesel also decreased in 2023 to $3.88 and $4.36 per gallon, respectively.

Consumption. Petroleum product demand plummeted in 2020 as travel restrictions and stay-at-home directives went into effect due to the COVID-19 pandemic, but demand quickly rebounded. Utah's refined petroleum product production reached a record high of 82.8 million barrels in 2022 before retreating 2.8% to 80.5 million barrels in 2023. Utah's total petroleum product consumption is also expected to decrease slightly in 2023, down about 1% to 58.4 million barrels. Nearly 50% of total petroleum demand was motor gasoline, and diesel represented 25%. Utah imports and exports significant amounts of petroleum products via pipelines and trucks, but overall, Utah is a net exporter, only using about 73% of the product refined at Utah-based refineries (but is dependent on out-of-state crude oil imports to make refined products).

Figure 2: Utah's Crude Oil Production, Refinery Receipts, and Petroleum Consumption Plotted with Crude Oil Wellhead Price, 2000–2023



Source: Utah Geological Survey; Utah Division of Oil, Gas and Mining; U.S. Energy Information Administration, Baker Hughes (rig data)

Table 1: Supply, Disposition, Prices, and Value of Crude Oil and Petroleum Products in Utah, 2000-2023e

	Crude Oil Production and Imports[1]				Drilling	Refining		Exports	Consumption by Product					Prices			Value
Year	Utah Crude Production	Colorado Imports	Wyoming Imports	Canadian Imports	Average # of rigs operating in Utah	Crude Oil Refinery Receipts	Refined Product Production	Utah Crude Oil Exports[2]	Motor Gasoline	Jet Fuel	Distillate Fuel	All Other	Total	Wellhead	Motor Gasoline - Regular Unleaded	Diesel	Value of Utah Crude Oil
	Thousand Barrels					Thousand Barrels								$/Barrel	$/Gallon	$/Gallon	Million $
2000	15,608	7,163	26,367	11,528	15	49,716	59,125	10,950	23,895	7,701	10,629	6,954	49,179	$28.53	$1.48	$1.53	$445
2001	15,271	7,208	25,100	11,364	21	50,310	59,094	8,633	22,993	6,880	11,236	6,904	48,013	$24.09	$1.41	$1.45	$368
2002	13,770	7,141	25,455	12,215	13	49,962	59,514	8,619	24,158	6,416	11,482	5,394	47,450	$23.87	$1.32	$1.34	$329
2003	13,096	6,964	24,152	9,690	14	48,267	57,511	5,635	24,325	6,758	12,082	6,917	50,082	$28.88	$1.56	$1.54	$378
2004	14,742	7,559	22,911	12,195	22	53,400	63,071	4,007	24,744	7,137	12,264	6,289	50,434	$39.35	$1.82	$1.87	$580
2005	16,675	8,214	24,372	10,991	28	54,513	63,487	5,739	24,677	7,394	13,717	7,015	52,803	$53.98	$2.20	$2.45	$900
2006	17,926	9,355	23,256	10,633	40	55,119	64,806	6,051	25,312	7,560	17,292	6,699	56,863	$59.70	$2.50	$2.80	$1,070
2007	19,534	10,708	22,012	8,769	41	54,764	66,443	6,258	26,054	7,085	15,946	6,465	55,550	$62.48	$2.73	$2.98	$1,220
2008	22,040	10,259	21,316	6,382	42	53,637	65,178	6,360	25,051	6,509	14,138	6,415	52,113	$86.58	$3.22	$3.79	$1,908
2009	22,941	7,409	23,000	5,520	18	52,475	64,752	6,395	25,324	5,751	12,852	5,854	49,781	$50.22	$2.23	$2.48	$1,152
2010	24,666	6,525	24,000	4,278	27	51,637	62,310	7,832	24,761	5,031	12,707	6,367	48,866	$68.09	$2.82	$3.03	$1,679
2011	26,276	6,997	26,050	3,894	28	55,900	65,369	7,318	25,568	4,825	15,448	6,772	52,613	$82.53	$3.44	$3.87	$2,169
2012	30,204	7,805	25,118	4,394	37	59,153	70,456	8,368	25,228	4,608	14,776	6,694	51,306	$82.73	$3.59	$3.98	$2,499
2013	35,002	7,601	23,124	3,111	29	57,345	67,892	11,493	26,085	4,468	15,317	6,366	52,236	$84.79	$3.45	$3.88	$2,968
2014	40,914	7,662	23,425	3,636	25	60,548	70,931	15,090	26,469	4,816	15,169	6,272	52,726	$79.04	$3.30	$3.85	$3,234
2015	37,136	7,048	22,211	4,963	7	59,549	70,385	11,809	27,776	5,288	14,293	6,167	53,524	$40.69	$2.47	$2.67	$1,511
2016	30,528	7,110	27,318	5,873	3	64,482	75,780	6,348	28,535	5,963	14,248	6,575	55,321	$36.92	$2.19	$2.31	$1,127
2017	34,438	5,763	26,187	4,967	9	67,311	78,473	4,043	28,769	6,357	15,043	6,762	56,931	$44.24	$2.39	$2.71	$1,524
2018	37,117	5,616	23,819	5,803	7	63,780	75,506	8,575	28,725	8,619	15,700	6,671	59,715	$56.85	$2.82	$3.22	$2,110
2019	36,933	5,253	26,059	8,308	6	69,067	80,371	7,487	29,667	7,501	15,040	6,953	59,161	$48.32	$2.74	$3.04	$1,785
2020	31,001	4,820	22,572	7,030	3	59,835	70,800	5,588	27,425	5,251	15,714	6,835	55,225	$34.91	$2.32	$2.52	$1,082
2021	35,774	4,189	25,010	8,582	8	66,737	77,935	6,818	28,963	7,369	15,049	6,878	58,259	$60.60	$3.25	$3.40	$2,168
2022*	45,419	4,003	26,178	8,576	12	71,066	82,837	13,110	28,902	8,049	15,300	6,800	59,051	$80.82	$4.23	$4.97	$3,671
2023†	55,500	4,298	24,941	7,279	13	68,043	80,500	23,974	28,600	8,500	14,700	6,600	58,400	$66.50	$3.88	$4.36	$3,691

* Distillate, other, and total consumption were estimated.

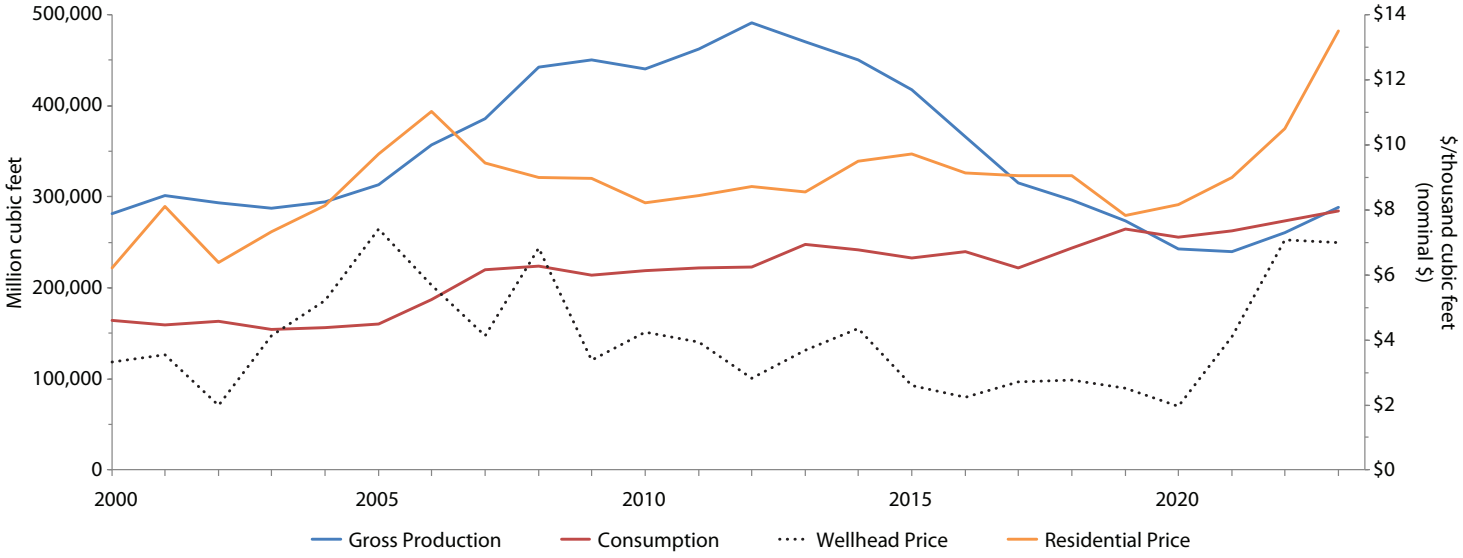
† Crude oil production, all consumption data, and wellhead price were estimated.

1. Out-of-state imports only include pipeline shipments; minor imports may arrive by truck, and additional minor imports may come from other states.
2. Estimated by subtracting refinery receipts from total supply; all crude oil imports are assumed to be accounted for.

Note: Prices and values are in nominal dollars.

Source: Utah Geological Survey; Utah Division of Oil, Gas and Mining; U.S. Energy Information Administration, Baker Hughes (rig data)

Figure 3: Utah's Natural Gas Production and Consumption Plotted with Wellhead and Residential Prices, 2000–2023



Source: Utah Geological Survey; Utah Tax Commission; Utah Division of Oil, Gas and Mining; U.S. Energy Information Administration

Table 2: Supply, Disposition, Prices, and Value of Natural Gas in Utah, 2000-2023e

	Production				Consumption by End Use							Prices					Value
	Gross Production	Dry Production	Actual Sales	Natural Gas Liquids Production	Residential	Commercial	Vehicle Fuel	Industrial	Electric Utilities	Lease, Plant, & Pipeline	Total	Wellhead	End-Use Residential	End-Use Commercial	End-Use Industrial	Natural Gas Liquids	Value of NG and NGL
Year	Million cubic feet			Thousand Barrels	Million cubic feet							$/thousand cubic feet				$/bbl	Million $
2000	281,170	256,490	140,226	5,150	55,626	31,282	382	39,378	10,544	27,344	164,556	$3.31	$6.20	$4.92	$3.93	$11.31	$907
2001	300,966	272,534	219,138	4,641	55,008	30,917	474	33,585	15,141	24,175	159,300	$3.54	$8.09	$6.78	$5.29	$12.47	$1,023
2002	293,030	271,387	250,172	3,542	59,398	33,501	482	26,879	15,439	27,681	163,380	$1.99	$6.39	$5.20	$3.91	$8.91	$572
2003	287,141	264,654	224,327	3,080	54,632	30,994	589	25,200	14,484	28,226	154,125	$4.12	$7.33	$5.95	$5.04	$12.18	$1,128
2004	293,807	274,588	253,855	3,196	60,527	31,156	661	26,674	9,423	27,450	155,891	$5.22	$8.12	$6.75	$5.90	$19.66	$1,496
2005	313,491	298,408	269,062	2,310	58,044	34,447	187	25,370	12,239	29,989	160,276	$7.40	$9.71	$8.23	$7.33	$32.31	$2,283
2006	356,339	345,409	320,163	1,925	60,017	34,051	186	29,076	28,953	35,116	187,399	$5.69	$11.02	$9.61	$8.02	$31.40	$2,026
2007	385,517	373,680	350,285	1,769	60,563	34,447	209	31,578	56,438	36,464	219,699	$4.14	$9.44	$8.03	$6.35	$45.16	$1,627
2008	442,524	430,286	382,960	2,564	65,974	37,612	208	33,112	55,374	31,907	224,187	$6.82	$9.00	$7.74	$7.21	$68.15	$3,109
2009	449,675	435,673	390,475	4,817	65,184	37,024	149	29,845	49,984	32,034	214,220	$3.38	$8.95	$7.57	$5.62	$38.87	$1,660
2010	439,929	422,067	387,593	5,869	66,087	38,461	203	32,079	48,399	33,985	219,214	$4.25	$8.22	$6.83	$5.57	$49.98	$2,087
2011	462,495	442,615	406,323	7,571	70,076	40,444	290	33,633	40,138	37,646	222,227	$3.92	$8.44	$7.05	$5.50	$60.99	$2,197
2012	490,575	474,756	436,090	8,106	59,801	35,363	289	36,350	47,138	44,098	223,039	$2.82	$8.70	$7.00	$4.69	$50.49	$1,748
2013	470,349	455,454	409,704	8,132	70,491	41,398	224	38,009	49,562	47,602	247,286	$3.68	$8.55	$7.13	$5.22	$54.03	$2,115
2014	450,024	435,893	391,536	9,693	62,458	38,156	256	38,330	58,780	43,758	241,738	$4.35	$9.48	$7.71	$5.87	$46.13	$2,343
2015	417,023	401,722	360,018	7,286	58,562	35,772	326	37,189	56,449	44,315	232,613	$2.60	$9.72	$7.97	$5.93	$22.84	$1,213
2016	365,281	352,437	319,056	5,573	63,929	39,066	305	38,568	59,684	38,562	240,114	$2.24	$9.12	$7.43	$5.52	$25.51	$932
2017	315,197	304,266	278,015	4,813	66,700	41,264	354	40,007	40,830	32,679	221,834	$2.72	$9.05	$7.40	$5.51	$31.94	$981
2018	295,826	284,264	249,763	3,817	67,415	42,367	348	39,935	61,161	32,831	244,057	$2.77	$9.04	$7.37	$5.31	$46.33	$964
2019	272,978	262,157	223,142	4,003	75,938	47,336	322	41,348	67,386	31,972	264,302	$2.51	$7.82	$6.35	$5.00	$24.07	$754
2020	242,560	233,215	202,663	2,935	74,191	44,216	273	40,119	67,226	29,826	255,851	$1.96	$8.15	$6.56	$5.07	$22.64	$524
2021	240,079	230,784	197,867	2,785	71,628	43,970	290	39,747	75,956	30,760	262,351	$4.10	$8.99	$7.37	$5.43	$56.97	$1,105
2022	260,610	249,719	215,799	3,962	78,791	47,600	325	38,179	79,666	29,378	273,939	$7.07	$10.48	$8.92	$7.97	$64.28	$2,020
2023*	288,000	276,600	238,000	5,500	79,163	47,529	266	34,810	87,661	30,500	279,929	$7.00	$13.45	$11.85	$9.99	$39.00	$2,151

*Data are preliminary
NG = natural gas, NGL = natural gas liquids, bbl = barrels
Note: Prices and values are in nominal dollars.
Source: Utah Geological Survey; Utah Tax Commission; Utah Division of Oil, Gas and Mining; U.S. Energy Information Administration

Natural Gas

Production. Utah's natural gas production peaked in 2012 at 491 Bcf but then retreated to 240 Bcf by 2021 due to several years of low prices and a lack of natural gas drilling. However, production increased 9% in 2022 and another 11% in 2023, with 2023 total production estimated to be 288 Bcf as prices spiked and natural gas-specific drilling resumed for the first time in nearly four years. Natural gas production was also boosted by the significant associated gas produced from new crude oil wells. Dry natural gas production and natural gas sales in 2023 also increased to 277 and 238 Bcf, respectively, and natural gas liquids production increased to 5.5 million barrels.

Prices and Value. After averaging only about $2.50 per Mcf between 2015 and 2020, the average wellhead price for natural gas in Utah increased to $4.10 in 2021, then to $7.07 in 2022, before retreating slightly to $7.00 in 2023. However, annual averages do not reveal the entire story. Natural gas prices in the Rocky Mountains spiked to more than $28 per Mcf in December 2022 and remained high (about $16) in January 2023 due to very cold winter weather and shortages of gas in the western United States. These very high prices skewed the annual average to high values even though gas prices have since retreated back to the $2.50 to $4.50 per Mcf range in summer and fall 2023. With this dramatic increase in prices over the past couple years, natural gas-specific drilling has resumed in Utah (two to four rigs were drilling natural gas wells in 2023). When wellhead prices increase, so do consumer prices; the residential natural gas price increased about 28% in 2023 to $13.45 per Mcf and the price for industrial uses increased 25% to $9.99. Higher natural gas and natural gas liquids production, coupled with higher prices, pushed the 2023 natural gas production value to $2.2 billion, more than quadruple the value recorded in 2020.

Consumption. Natural gas consumption in Utah steadily increased over the past several years mostly due to increases in the electric utility and residential markets. Consumption in Utah is expected to reach a record high in 2023 of 280 Bcf, about 2% higher than 2022. Most natural gas in Utah is used for residential purposes (28%) or electricity generation (31%), followed by the commercial (17%) and industrial (12%) sectors. Traditionally Utah has been a net exporter of natural gas, but this changed starting in 2019; for the past five years Utah has been a net importer (comparing dry production to total consumption).

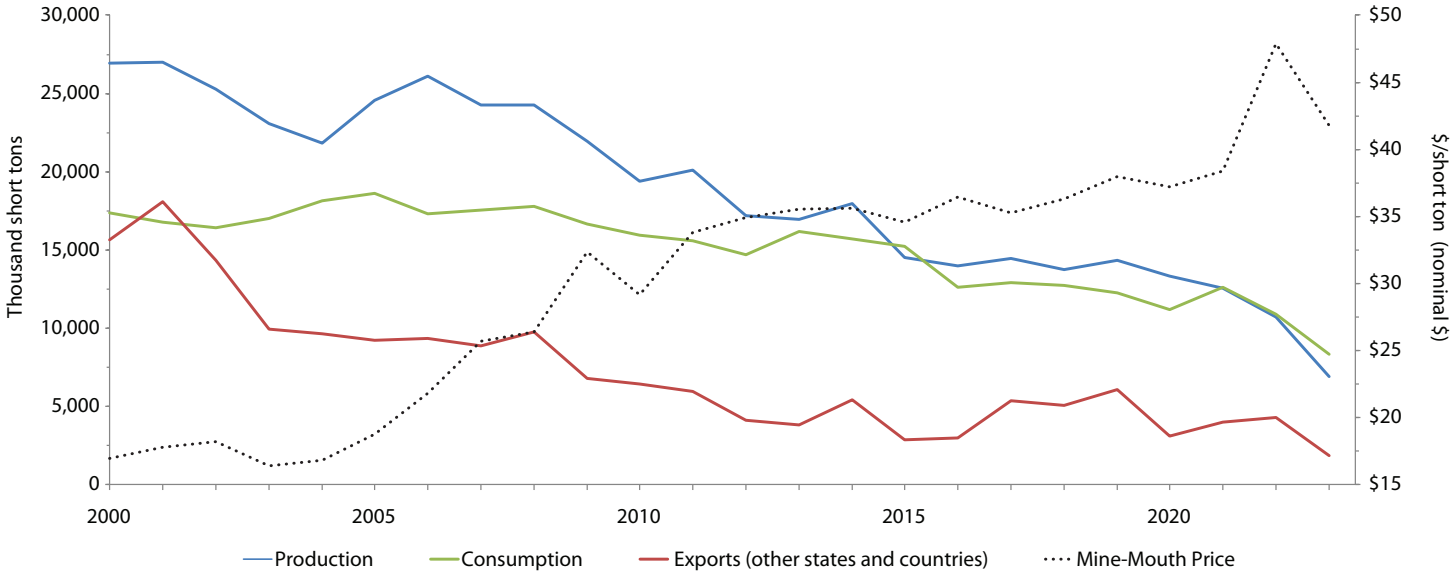
Coal

Production. In 2023, Utah had six active coal mines, the fewest number since mining operations began in Utah nearly 150 years ago. This number was recently reduced to four after the Coal Hollow mine in southern Utah was idled after only producing 67,000 tons due to limited reserves on current leases and permitting issues, and the Lila Canyon mine was "indefinitely idled" in fall 2023 after producing only 159,000 tons. Overall, coal production dropped by 36% in 2023 to just 6.9 million short tons, well below the 24.5 million tons averaged in the 2000s, and the lowest production total since 1975. The decline in Utah coal production started during the 2008 recession but demand never rebounded like other energy commodities since coal has dropped out of favor as a fuel for electric and industrial needs. Production at the two remaining Wolverine mines, Skyline and Sufco, accounted for 79% (5.5 million tons) of Utah's total coal production in 2023. The Emery County Coal Resources Lila Canyon mine resumed minor production in 2023 (only development work with continuous miner machines) after being idled in September 2022 due to an underground combustion event. However, efforts to reopen the mine were abandoned in late 2023. The Gentry mine, owned by COP Coal Development, produced about 400,000 tons in 2023, and production at Bronco's Emery mine dropped about 25% to 798,000 tons in 2023.

Prices and Value. The average mine-mouth price for Utah coal dramatically increased to $47.85 per short ton in 2022 before settling back to about $42 in 2023, still a relatively high price in nominal dollars but well below the inflation-adjusted high of $118 per ton reached in 1976. The end-use price of coal at Utah electric utilities, which includes transportation costs, also increased to $55 per ton in 2023. The value of coal produced in Utah totaled only $289 million in 2023, 44% lower than 2022, and well below the inflation-adjusted high of $1.5 billion recorded in 1982.

Consumption. Demand for coal in Utah dropped 17% between 2015 and 2016, then remained steady (about 12.6 million tons) until 2020 when it dropped to about 11 million tons in response to the COVID-19 pandemic-related decline in electricity demand. Demand rebounded in 2021 back to 12.6 million short tons but decreased again in 2022 to 10.9 million tons and again in 2023 to 8.3 million tons, 96% of which was burned at electric utilities. Coal demand in Utah's industrial sector, mostly by cement and lime producers, dropped to about 300,000 tons in 2023, less than a quarter of peak demand of 1.4 million tons reached in 2005. Utah used to be a significant net exporter of coal to neighboring states, but the reduced production at Lila Canyon and at other mines created a localized coal shortage limiting the coal available for the domestic and foreign export market. Out-of-state

Figure 4: Utah's Coal Production, Consumption, and Exports Plotted with Mine-Mouth Price, 2000–2023



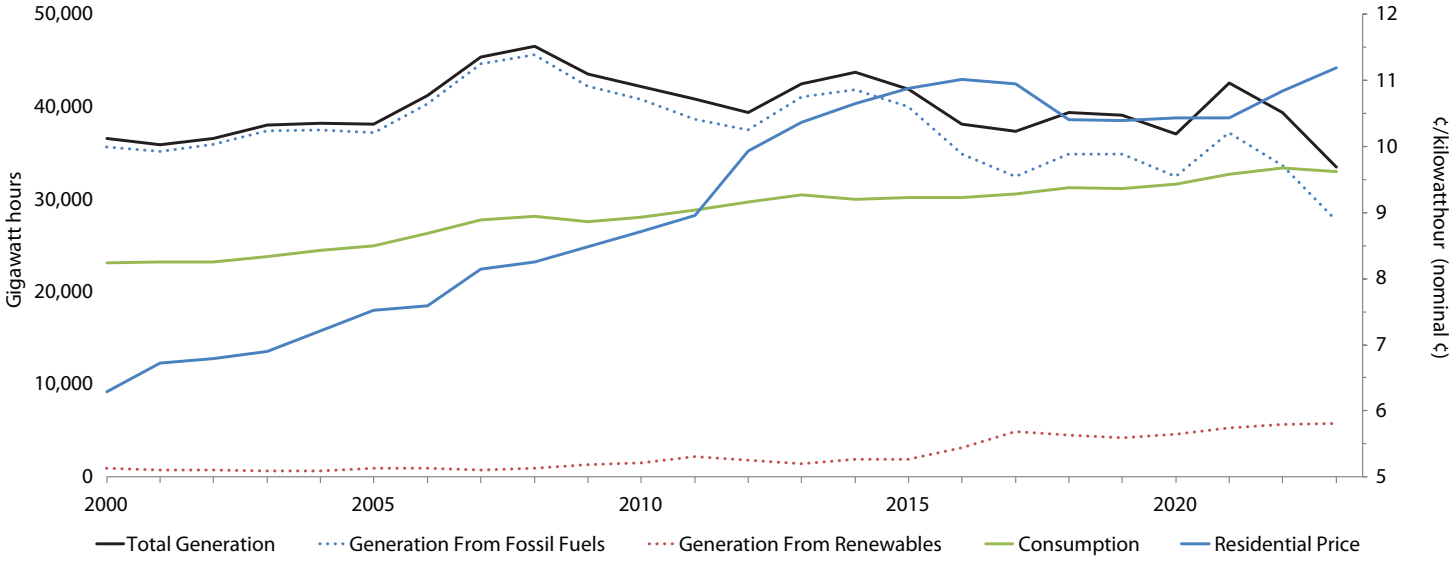
Source: Utah Geological Survey, U.S. Energy Information Administration

Table 3: Supply, Disposition, Price, and Value of Coal in Utah, 2000-2023e

	Supply		Distribution	Consumption by End Use					Exports		Prices		Value
	Production	Imports	Total Distribution of Utah Coal	Residential & Commercial	Coke Plants	Other Industrial	Electric Utilities	Total	To Other U.S. States	To Canada and/or Overseas	Mine Mouth	End-Use Electric Utilities	Value of Utah Coal
Year	Thousand short tons										$/short ton		Million $
2000	26,920	2,535	27,955	59	984	1,166	15,164	17,373	12,553	3,073	$16.93	$23.16	$456
2001	27,024	3,062	26,906	60	547	1,235	14,906	16,748	15,920	2,144	$17.76	$25.48	$480
2002	25,299	2,251	24,392	198	0	592	15,644	16,434	13,170	1,142	$18.20	$21.84	$460
2003	23,069	2,039	23,551	61	0	611	16,302	16,974	9,584	318	$16.36	$23.20	$377
2004	21,818	3,033	23,145	214	0	1,330	16,606	18,150	9,294	346	$16.82	$24.95	$367
2005	24,556	2,776	23,025	45	0	1,431	17,118	18,594	8,835	351	$18.71	$24.52	$459
2006	26,131	1,925	24,520	35	0	680	16,609	17,324	9,279	55	$21.77	$27.34	$569
2007	24,288	1,596	24,451	23	0	911	16,593	17,527	8,877	0	$25.69	$30.33	$624
2008	24,275	2,528	25,426	0	0	873	16,927	17,800	9,219	541	$26.39	$30.66	$641
2009	21,927	4,251	20,487	0	0	718	15,925	16,643	6,643	148	$32.32	$33.96	$709
2010	19,406	1,775	19,220	0	0	717	15,233	15,950	5,807	634	$29.15	$37.68	$566
2011	20,073	2,020	19,039	0	0	598	15,005	15,603	4,841	1,081	$33.80	$39.21	$678
2012	17,155	1,708	16,140	0	0	588	14,084	14,672	3,012	1,080	$34.92	$41.84	$599
2013	16,953	1,864	16,896	0	0	645	15,529	16,174	2,673	1,110	$35.52	$44.73	$602
2014	17,933	1,967	17,829	0	0	614	15,062	15,676	2,543	2,869	$35.59	$46.03	$638
2015	14,513	3,098	14,938	0	0	662	14,580	15,242	2,116	735	$34.53	$42.12	$501
2016	13,978	1,908	14,620	0	0	575	12,001	12,576	1,890	1,049	$36.40	$41.36	$509
2017	14,417	2,314	15,020	0	0	485	12,438	12,923	2,242	3,123	$35.28	$41.56	$509
2018	13,753	1,907	14,084	0	0	378	12,332	12,710	1,907	3,148	$36.31	$43.31	$499
2019	14,347	2,219	15,284	0	0	382	11,891	12,272	2,077	3,964	$37.95	$42.79	$544
2020	13,325	2,334	13,176	0	0	306	10,866	11,173	1,521	1,554	$37.22	$44.53	$496
2021	12,542	1,571	12,953	0	0	335	12,274	12,609	1,656	2,292	$38.41	$43.93	$482
2022	10,719	2,323	11,879	0	0	318	10,571	10,889	1,446	2,803	$47.85	$47.77	$513
2023*	6,911	3,000	6,300	0	0	300	8,036	8,336	870	950	$41.75	$55.40	$289

*Production is premilinary, all other data are estimated.
Note: Prices and values are in nominal dollars.
Source: Utah Geological Survey, U.S. Energy Information Administration

Figure 5: Utah's Electricity Net Generation and Consumption Plotted with End-Use Residential Price, 2000–2023



Source: Utah Geological Survey, U.S. Energy Information Administration

Table 4: Supply, Disposition, and Price of Electricity in Utah, 2000-2023e

	Net Generation by Fuel Type										Consumption by End Use					Prices by End Use			
	Coal	Petroleum	Natural Gas	Hydro	Geo-thermal	Wind	Solar	Biomass[1]	Other[2]	Total	Residential	Commercial	Industrial	Total	Residential Consumption Per Capita	Residential	Commercial	Industrial	All Sectors
Year	Gigawatt hours														MWh/person	¢/kilowatt hour			
2000	34,491	58	890	746	186	0	0	9	258	36,639	6,514	8,754	7,917	23,185	2.90	6.3	5.2	3.4	4.8
2001	33,679	58	1,446	508	186	0	0	5	4	35,887	6,693	9,113	7,411	23,217	2.92	6.7	5.6	3.5	5.2
2002	34,488	54	1,380	458	247	0	0	6	5	36,638	6,938	9,309	7,019	23,267	2.98	6.8	5.6	3.8	5.4
2003	35,979	33	1,383	421	198	0	0	5	4	38,024	7,166	9,048	7,646	23,860	3.02	6.9	5.6	3.8	5.4
2004	36,618	33	910	450	195	0	0	4	3	38,212	7,325	9,370	7,816	24,512	3.01	7.2	5.9	4.0	5.7
2005	35,970	41	1,178	784	185	0	0	4	3	38,165	7,567	9,444	7,989	25,000	3.02	7.5	6.1	4.2	5.9
2006	36,856	62	3,389	747	191	0	0	15	5	41,263	8,232	9,778	8,356	26,366	3.20	7.6	6.2	4.2	6.0
2007	37,171	39	7,424	539	164	0	0	31	5	45,373	8,752	10,275	8,759	27,785	3.32	8.2	6.5	4.5	6.4
2008	38,020	44	7,366	668	254	24	0	24	179	46,579	8,786	10,319	9,086	28,192	3.26	8.3	6.7	4.6	6.5
2009	35,526	36	6,444	835	279	160	0	48	215	43,543	8,725	10,268	8,594	27,587	3.16	8.5	7.0	4.8	6.8
2010	34,057	50	6,455	696	277	448	0	56	210	42,249	8,834	10,402	8,808	28,044	3.19	8.7	7.2	4.9	6.9
2011	33,138	54	5,256	1,230	330	573	0	58	197	40,836	8,947	10,579	9,333	28,859	3.17	9.0	7.4	5.1	7.1
2012	30,799	40	6,580	748	335	704	2	60	137	39,403	9,188	10,841	9,694	29,723	3.20	9.9	8.1	5.6	7.8
2013	34,285	26	6,606	505	319	540	2	71	163	42,517	9,402	11,062	10,010	30,474	3.24	10.4	8.3	5.9	8.2
2014	33,377	24	8,376	633	522	660	2	73	118	43,785	8,964	11,114	9,965	30,043	3.04	10.7	8.5	6.1	8.4
2015	31,656	20	8,218	769	430	626	32	85	114	41,949	9,117	11,670	9,405	30,192	3.04	10.9	8.6	6.2	8.5
2016	25,939	32	8,691	760	485	822	1,054	84	267	38,134	9,371	11,622	9,187	30,180	3.06	11.0	8.8	6.3	8.7
2017	26,390	38	5,871	1,294	481	858	2,211	78	191	37,412	9,511	11,795	9,283	30,589	3.05	11.0	8.7	6.1	8.6
2018	25,912	37	8,724	927	446	795	2,224	79	232	39,375	9,715	12,135	9,393	31,242	3.06	10.4	8.2	5.9	8.2
2019	25,241	40	9,369	875	310	819	2,186	71	206	39,117	9,740	11,912	9,491	31,143	3.01	10.4	8.3	6.0	8.2
2020	22,806	40	9,460	817	377	803	2,571	78	137	37,087	10,547	11,444	9,672	31,663	3.21	10.4	8.3	5.9	8.3
2021	26,376	38	10,686	494	420	825	3,479	81	167	42,566	10,950	12,255	9,472	32,678	3.28	10.4	8.1	6.2	8.3
2023	22,390	31	11,107	595	463	723	3,853	74	149	39,386	11,344	12,917	9,105	33,366	3.34	10.8	8.4	6.8	8.8
2023*	15,698	29	11,950	538	527	685	3,918	78	105	33,528	11,143	13,268	8,641	33,052	3.22	11.2	8.5	7.0	9.0

*Data are preliminary
MWh = megawatt hours
1Includes landfill gas, biogenic municipal solid waste, and other biogenic gases.
2Includes blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels, as well as nonbiogenic municipal solid waste.
Note: Prices are in nominal dollars.
Source: Utah Geological Survey, U.S. Energy Information Administration

domestic demand dropped from a high of 16 million tons in 2001 to just 870,000 tons in 2023. Utah's foreign coal exports peaked in the mid-1990s at about 5 million tons, then dropped to near zero in the mid-2000s. Demand from the foreign market increased over the past decade but dropped again in 2023 to about 950,000 tons.

Electricity and Renewable Resources

Production. Electricity generation in Utah is expected to decrease a significant 15% in 2023 to 33,528 GWh, the lowest value in over 25 years. This large decrease is almost entirely related to coal-fired power plants in Utah generating less electricity—coal is estimated to account for only 47% of Utah's total electricity generation in 2023. This decrease is related to several factors including the disruption in local coal supply and the continued ramping down of the Intermountain Power Project coal-fired power plant near Delta, Utah. In addition, increases in natural gas generation (36% of total in 2022) and renewable sources (17% in 2023) have broadened Utah's generation portfolio. The largest change in Utah's electricity sector is the recent exponential increase in utility-scale PV solar capacity. Between mid-2015 and the end of 2016, 855 MW of utility-scale solar capacity came online, more than wind, hydroelectric, geothermal, and biomass combined. By the end of 2023, an additional 769 MW of solar was installed for a total of 1.6 GW of utility-scale solar capacity, with another 715 MW slated to be installed by the end of 2024. Solar now contributes about 12% of Utah's total electric generation; in contrast, electric generation at Utah's coal-fired power plants has decreased more than 59% since 2008.

Prices. The overall price of electricity in Utah has remained mostly steady over the past ten years, but with a slight uptick (6%) in 2022 and again (3%) in 2023. Utah's 2023 average electric rate of 9.0 cents per kilowatt hour (kWh) for all sectors of the economy is about 30% lower than the national average of 12.7 cents. The residential price of Utah's electricity also increased 3% in 2023 to 11.2 cents per kWh, lower than the national average of 16.0 cents per kWh.

Consumption. After reaching a new record high in electricity consumption in 2022 (33,366 GWh), electricity demand retreated a slight 1% to 33,052 GWh in 2023. This decrease took place in the residential (accounting for 34% of total demand) and industrial (26% of total demand) sectors, whereas electricity demand in the commercial sector (40% of total) increased slightly. Residential electricity consumption per person averaged about 3.04 MWh per capita between 2014 and 2019 before increasing to about 3.26 MWh per capita over the past four years. Overall, Utah remains a net exporter of electricity, but just barely, using 98.6% of in-state electric generation. This percentage has greatly increased in recent years compared to Utah only using an average of 65% of total electricity generation between 2000 and 2015.

2024 OUTLOOK

Crude oil prices in Utah will likely remain volatile but relatively high in 2024, in the upper-$60 to low-$70 per barrel range as demand continues to grow and geopolitical situations influence global prices. Oil prices in this range will continue to support 8 to 10 drill rigs in the Uinta Basin, almost exclusively drilling long-reach horizontal oil wells. However, in the short term, natural gas off-take options (oil production from new wells cannot commence until an operator secures a plan for bringing the associated natural gas to market) and crude oil transportation constraints place a ceiling on higher crude oil production. Fortunately, additional natural gas pipeline capacity in the Uinta Basin is expected to come online in mid-2024, enabling operators to increase crude oil production in the second half of 2024 to as high as 175,000 barrels per day. By comparison, fall 2023 Uinta Basin production was about 150,000 barrels per day. The proposed Uinta Basin railway recently suffered a legal setback, but developers are determined to push forward. In the meantime, Uinta Basin operators truck crude oil to trans-loading terminals in Price, Utah, for unit trains headed to the Gulf Coast.

Oil and gas exploration/development elsewhere in Utah will likely remain minor compared with drilling in the Uinta Basin, but the increase in crude oil prices has spurred some interest in the Paradox Basin (e.g., Cane Creek play) and the central Utah thrust belt. Demand for petroleum products in Utah is projected to stay near record highs in 2024 and is expected to continue this upward trend into 2025. Petroleum demand reductions based on the electrification of Utah's transportation sector will take years to materialize as electric vehicles still account for less than 1% of total vehicle registrations.

Several years of sub-$3 per Mcf natural gas prices caused stagnation in Utah's natural gas production industry, resulting in the lowest production levels since the 1980s. However, in late 2021 and continuing into 2023, the price of natural gas experienced significant swings resulting in average prices near $7 per Mcf. These higher prices have facilitated the return of drill rigs that specifically target natural gas reservoirs, with up to four rigs drilling gas wells in the Uinta Basin in 2023. However, national benchmark prices for natural gas started dropping in mid-2023 and it is unclear how long these lower prices might last (prices are predicted to be in the $2 to $3 range in 2024). The lower prices have already resulted in falling rig counts, as currently (February 2024) only two rigs remain drilling for gas in the Uinta Basin.

Coal production in Utah is expected to increase only slightly in 2024 to about 8.0 million tons. Production losses from the idling of the Lila Canyon and Coal Hollow mines could be somewhat offset by the possible opening of a new mine in the Trail Mountain area. However, even with relatively strong local demand for coal currently, active Utah mines find it difficult to ramp up production. The current supply-demand balance will change starting in 2025 when the coal-fired Intermountain Power Plant converts to natural gas and eventually hydrogen, removing demand for 2 to 3 million tons of coal. Utah coal deliveries to the foreign export market have experienced a modest jump in recent years and potential remains for access to a strong overseas market that could partially replace falling domestic demand. However, West Coast port facilities are vital for accessing the Asian coal market, but current capacity at existing ports is limited and additional capacity is unlikely.

Electricity consumption in Utah continues to increase with population growth, and Utah is fortunate to have electricity prices 30% below the national average. Utah's electric generation portfolio will continue to evolve as demand for carbon-neutral electricity increases. In addition to several new utility-scale PV solar installations on the horizon, Fervo Energy has started development on a 400-MW enhanced geothermal electric system in Millard County, which is slated to come online in 2026. This intensified emphasis on carbon-neutral energy sources has also spurred research in:

1. large-scale electric storage facilities (e.g., generation of carbon-neutral hydrogen coupled with underground storage, underground compressed air, pumped hydroelectric facilities, and more traditional utility-scale battery storage),
2. enhanced geothermal systems and closed-loop systems, as well as continued research into traditional geothermal resources,
3. production of carbon-neutral hydrogen for electricity generation and vehicle fuel, and
4. next-generation nuclear energy facilities (e.g., molten salt, etc.).

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