



bp Energy Outlook – 2024

Insights from the US

US emissions fall sharply across the scenarios from 2022, by 10-20% by 2030 and by 60-100% by 2050 due to the decarbonization of the power and transport sectors

1. Fossil fuel's share of the energy mix falls from almost 90% in 2022 to 40-63% by 2050 due to transport electrification and an increase in renewables for power generation. Oil demand falls from 19 Mb/d to 3.9-11.1 Mb/d by 2050
2. The share of wind and solar in electricity generation grows from 15% in 2022 to almost 70% in **Current Trajectory** and **Net Zero**
3. US LNG exports double from 103 Bcm in 2022 to over 200 Bcm by 2035 in **Current Trajectory** and **Net Zero**

18% to 32%

decline in primary energy from 2022-50

2%

share of coal in primary energy in both scenarios by 2050

33% to 51%

share of renewables in primary energy in 2050

60% to 100%

net decline in CO₂ emissions from 2022 to 2050

- ▶ The US economy grows by 1.5% per year from 2022-50, down from 2.1% per year over the past 20 years.
- ▶ Similar to other developed economies, US primary energy consumption declines in both scenarios, reflecting an increase in energy efficiency and transition to a low carbon system.
- ▶ Net CO₂ emissions fall from 5.4 Gt of CO₂e in 2022 to 2.4 Gt of CO₂e in **Current Trajectory** and -0.3 Gt of CO₂e in **Net Zero** by 2050. Compared to 2005, emissions fall by 25-34% by 2030.
- ▶ By 2050 electricity accounts for 38% of energy demand in **Current Trajectory** and roughly 60% in **Net Zero**, from 22% in 2022.
- ▶ US electricity load growth accelerates from 0.5% per year over the past decade to 2-3% per year from 2022 to 2035.
- ▶ Wind and solar's share of power generation rises from 15% in 2022 to almost 70% in both scenarios in 2050.
- ▶ Oil demand falls from almost 20 Mb/d in 2022 to 17 Mb/d in 2035 in **Current Trajectory**, similar to the past two decades' trajectory, but falls more sharply to 14 Mb/d in **Net Zero**.
- ▶ By 2050, the share of natural gas consumption in total primary energy decreases only slightly in both **Current Trajectory** and **Net Zero** to 31-34%, respectively, from 36% in 2022.
- ▶ By 2050 hydrogen production reaches 21 Mt in **Current Trajectory** and 70 Mt in **Net Zero**.
- ▶ Coal's share in the primary energy mix drops in **Current Trajectory** and **Net Zero**, to 2% by 2050 from 11% today. US oil and NGLs production plateaus by 2030 in both scenarios and falls to between 3-10 Mb/d by 2050.
- ▶ LNG exports more than double by 2030 from around 100 Bcm in 2022 in both scenarios. Growth continues to 300 Bcm in **Current Trajectory** by 2050 but falls to only 40 Bcm in **Net Zero**.



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	Level in 2050			2022	Shares in 2050 (%)		Change 2022-2050 (% p.a.)	
	2022	Current Trajectory	Net Zero		Current Trajectory	Net Zero	Current Trajectory	Net Zero
Primary energy consumption by energy type (EJ)								
Total	88	73	60	100%	100%	100%	-0.7%	-1.4%
Oil†	36	20	6.0	41%	27%	10%	-2.1%	-6.2%
Natural gas	32	25	18	36%	34%	31%	-0.9%	-1.9%
Coal	10	1.2	1.4	11%	1.6%	2.4%	-7.4%	-6.7%
Nuclear	2.9	2.1	2.3	3.3%	2.9%	3.9%	-1.1%	-0.8%
Hydro	0.9	1.1	1.3	1.1%	1.5%	2.1%	0.6%	1.1%
Renewables (incl. biofuels)	6.5	24	31	7.4%	33%	51%	4.7%	5.7%
Primary energy consumption (native units)								
Oil† (Mb/d)	19	11	3.9					
Natural gas (Bcm)	881	686	510					
Total final consumption by sector (EJ)								
Total	76	66	47	100%	100%	100%	-0.5%	-1.7%
Transport	26	18	12	34%	27%	26%	-1.4%	-2.6%
Feedstocks	7.3	8.0	5.8	9.6%	12%	13%	0.3%	-0.8%
Buildings	21	21	13	27%	31%	28%	0%	-1.6%
Industry	22	20	15	29%	30%	33%	-0.3%	-1.3%
Generation								
Power (TWh)	4,540	7,358	8,921				1.7%	2.4%
Hydrogen (Mt)	8.9	21	68				3.1%	7.5%
Production								
Oil† (Mb/d)	18	9.7	3.2				-2.1%	-6.0%
Natural gas (Bcm)	979	1,047	520				0.2%	-2.2%
Coal (EJ)	12	0.6	0.4				-10%	-11%
Emissions								
Carbon emissions†† (Gt of CO ₂ e)	5.4	2.4	-0.3				-2.9%	
CCUS (Mt of CO ₂)	-5.5	-268	-1,638				15%	23%

EJ = exajoules

† Oil supply includes crude oil, shale oil, oil sands, natural gas liquids, liquid fuels derived from coal and gas, and refinery gains, but excludes biofuels. Oil demand includes consumption of all liquid hydrocarbons but excludes biofuels. †† Carbon emissions include CO₂ emissions from energy use, industrial processes, natural gas flaring, and methane emissions from energy production.