



bp Energy Outlook – 2023

Insights from the Accelerated, Net Zero and New Momentum scenarios – US

US emissions fall sharply across all scenarios from 2019, by 20-40% by 2030 and by at least 60% by 2050 due to decarbonization of power and transport

1. Oil's share in the energy mix falls from 40% today as electrification in the transport sector accelerates, reducing oil demand from 19 Mb/d in 2021 to 16-18 Mb/d by 2030 and to 3-11 Mb/d by 2050
2. The share of wind and solar in electricity generation grows from 10% today to over 60% in all scenarios
3. US LNG exports double from 95 bcm in 2021 to almost 200 bcm by 2030 in **Accelerated** and **New Momentum**

8% to 23%

range of decline in primary energy from 2019-2050 under all scenarios

50% to 60%

share of power in primary energy in 2050

43% to 70%

share of renewables in primary energy in 2050

30% to 50%

net decline in CO₂ emissions by 2030 compared to 2005

- ▶ The US economy grows at a rate of 1.8% a year in 2019-2050, down from 2.0% a year over the past 20 years.
- ▶ Primary energy consumption falls by 8-23% in all three scenarios, an acceleration on the decline of 2% over the past two decades.
- ▶ Net CO₂ emissions fall sharply from 2019, by 20-40% by 2030 and by at least 60% by 2050 across all scenarios.
- ▶ Wind and solar power's share in the electricity generation mix increases from around 10% today to 60% in **New Momentum**, 70% in **Accelerated** and 72% in **Net Zero** by 2050.
- ▶ Coal's share in the primary energy mix is phased out from 12% in 2019 to less than 1% by 2050 in all scenarios.
- ▶ Oil's share in the energy mix falls from almost 40% today to 12% in **Accelerated**, 5% in **Net Zero** and 21% in 2050 in **New Momentum**. Demand falls from 19 Mb/d to a range of 3 Mb/d in **Net Zero** to 11Mb/d in **New Momentum** by 2050.
- ▶ The share of natural gas consumption in total primary energy decreases in **Accelerated** and **Net Zero** to 15% and 13% respectively and retains a share of 27% in **New Momentum** by 2050 from 32% today.
- ▶ US LNG exports double from 2021 levels by 2030 in **Accelerated** and **New Momentum**. By 2050, the US accounts for 30% of LNG trade in **New Momentum** and around 20% in the other scenarios, from 18% in 2021.
- ▶ Hydrogen production for use in industry and transport ranges from 27-67 Mt by 2050, with green hydrogen accounting for around half of this, and the US being a net exporter. In **Net Zero** the US accounts for around 15% of global hydrogen trade in 2050.
- ▶ By 2050, the US accounts for almost 20% of the carbon sequestered globally in the **Accelerated** and **Net Zero** scenarios and over 30% in **New Momentum**.



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	Level in 2050				2019	Shares in 2050 (%)			Change 2019-2050 (% p.a.)		
	2019	Accelerated	Net Zero	New Momentum		2019	Accelerated	Net Zero	New Momentum	Accelerated	Net Zero
Primary energy consumption by fuel (EJ)											
Total	97	76	74	89	100	100	100	100	-0.8	-0.9	-0.3
Oil†	37	9.2	4.0	19	38	12	5.4	21	-4.4	-6.9	-2.1
Natural gas	31	12	9.7	25	32	15	13	27	-3.0	-3.6	-0.7
Coal	11	0.1	0.1	1.3	12	0.2	0.1	1.4	-13	-14	-6.9
Nuclear	7.6	4.5	5.7	3.6	7.8	6.0	7.7	4.1	-1.6	-0.9	-2.4
Hydro	2.5	2.6	2.6	2.5	2.6	3.4	3.5	2.8	0	0.1	0
Renewables (incl. biofuels)	7.9	48	52	38	8.2	63	70	43	6.0	6.3	5.2
Primary energy consumption (native units)											
Oil† (Mb/d)	19	5.7	2.7	11							
Natural gas (Bcm)	848	325	270	681							
Total final consumption by sector (EJ)											
Total	76	44	38	60	100	100	100	100	-1.7	-2.2	-0.7
Transport	28	14	13	18	37	33	35	30	-2.1	-2.4	-1.4
Feedstocks	6.9	5.9	4.1	8.0	9.1	14	11	13	-0.5	-1.7	0.5
Buildings	22	14	13	18	29	32	33	30	-1.4	-1.8	-0.6
Industry	19	9.6	7.9	16	25	22	21	27	-2.2	-2.8	-0.5
Generation											
Electricity (TWh)	4,407	6,844	7,308	6,629					1.4	1.6	1.3
Hydrogen (Mt)	8.8	38	67	27					4.8	6.8	3.7
Production											
Oil† (Mb/d)	18	4.8	1.5	8.9					-4.2	-7.7	-2.3
Natural gas (Bcm)	930	447	363	1,060					-2.3	-3.0	0.4
Coal (EJ)	14	0.7	0.2	3.4					-9.2	-12	-4.5
Emissions											
Carbon emissions (Gt of CO ₂ e) ^{††}	5.5	0.5	-0.3	2.3					-7.6	-191	-2.8
CCUS (Mt of CO ₂)	0	632	1,031	382							

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.