

BloombergNEF

The Business Council
 **for Sustainable**
Energy®



February 13, 2020

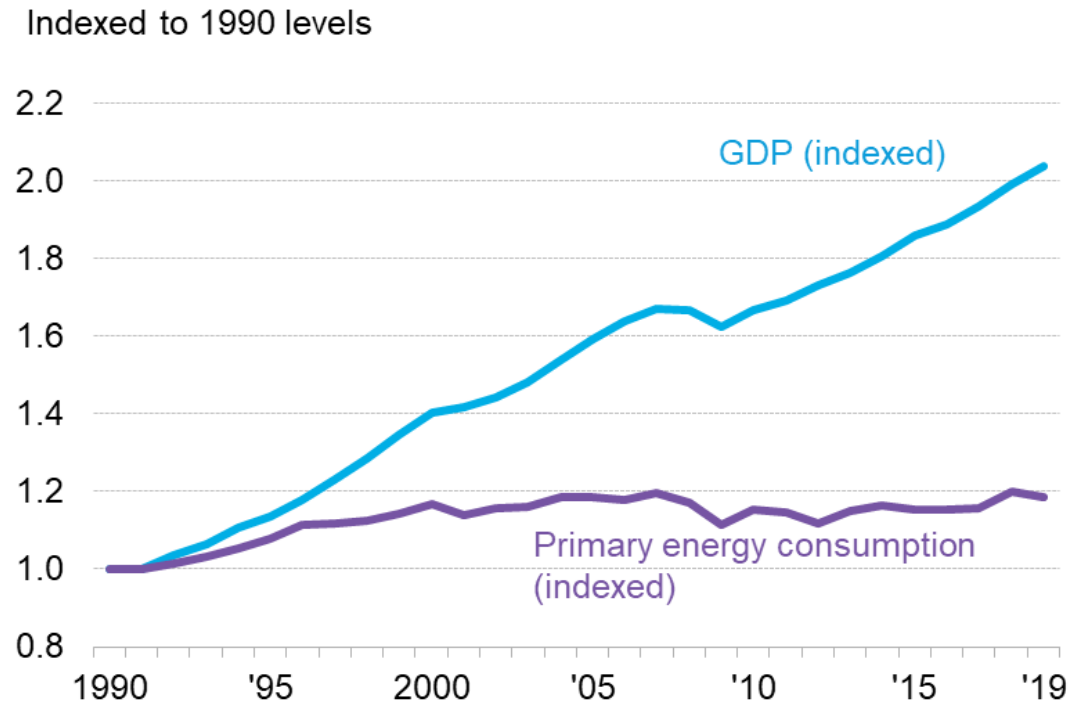
The Sustainable Energy Decade

headlines

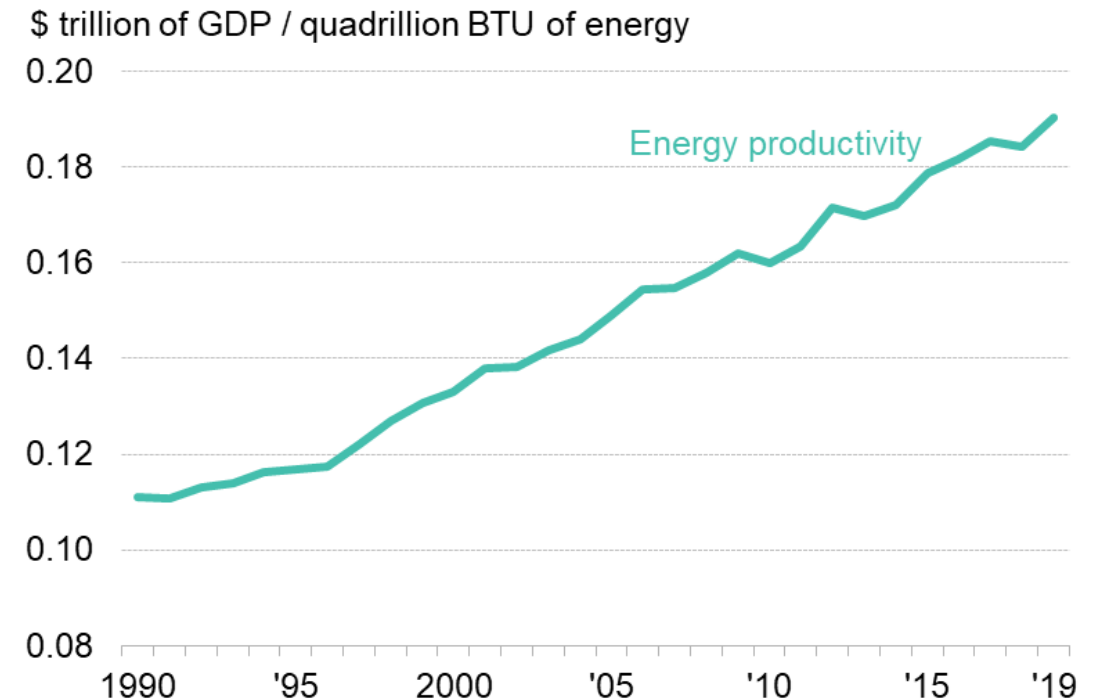
- *How The U.S. Generates, Delivers, And Consumes Energy All Transformed During The 2010's*
- *Gas Production Jumped >50%. Gas-fired Power Generation Went From 24% (2010) Electricity Demand To 38% (2019)*
- *Renewables Generation Jumped 77%; Capacity More Than Doubled*
- *Coal-fired Power Generation Dropped 45% -> 23%*
- *Investor-owned Utilities Spent \$170 Billion Expanding Transmission, 2010-2018*
- *GDP Grew Every Year of The Decade; Energy Consumption Shrank In Five Of Them*
- *Mass Deployment of Energy Efficient Equipment and Services*
- *The U.S.: No Longer a Net Importer of Oil and Gas*
- *U.S. Renewables Projects Attracted \$390 Billion*
- *3.5 Million Americans Are Working In Efficiency, Energy Storage, Renewables, Nuclear And Gas*
- *U.S. Power Sector Emissions of Greenhouse Gases Dropped Nearly ¼; Economy-wide, Emissions Dipped 4.1%*
- *Natural Gas, Wholesale Power, and Retail Power Prices All Dropped (With Variation By Region)*
- *More Consumer Choices: At the Pump, in The Automobile Showroom, at Home*
- *U.S. Households Putting Less Than 4% Of Their Monthly Average Income Toward Energy-related Expenses*

U.S. energy overview: Productivity

U.S. GDP and primary energy consumption



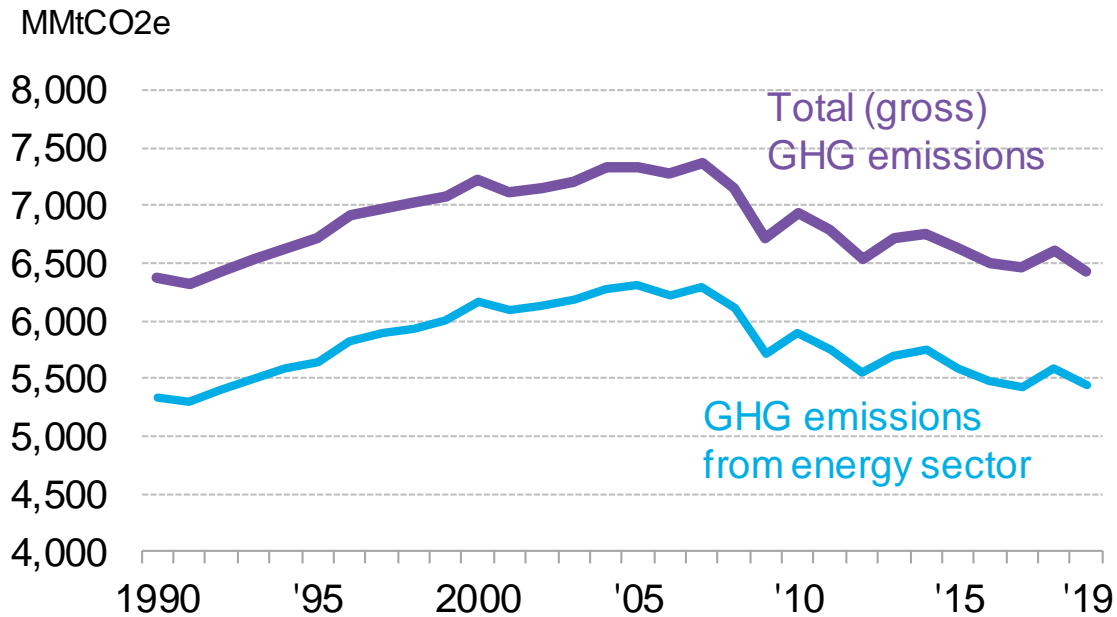
U.S. energy productivity



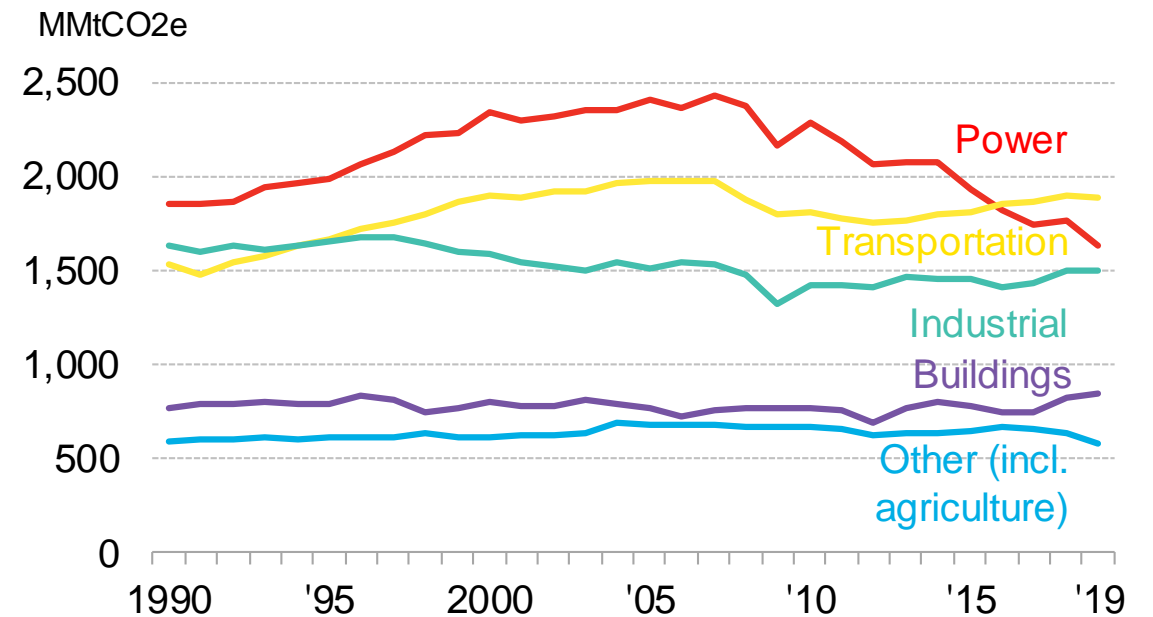
Source: Bureau of Economic Analysis, EIA, BloombergNEF Notes: Values for 2019 are projected, accounting for seasonality, based on latest monthly values from EIA (data available through September 2019). 2019 GDP estimate is a projection from economists compiled at ECFC <GO> on the Bloomberg Terminal.

U.S. energy overview: Greenhouse gas (GHG) emissions

Economy-wide and energy sector emissions

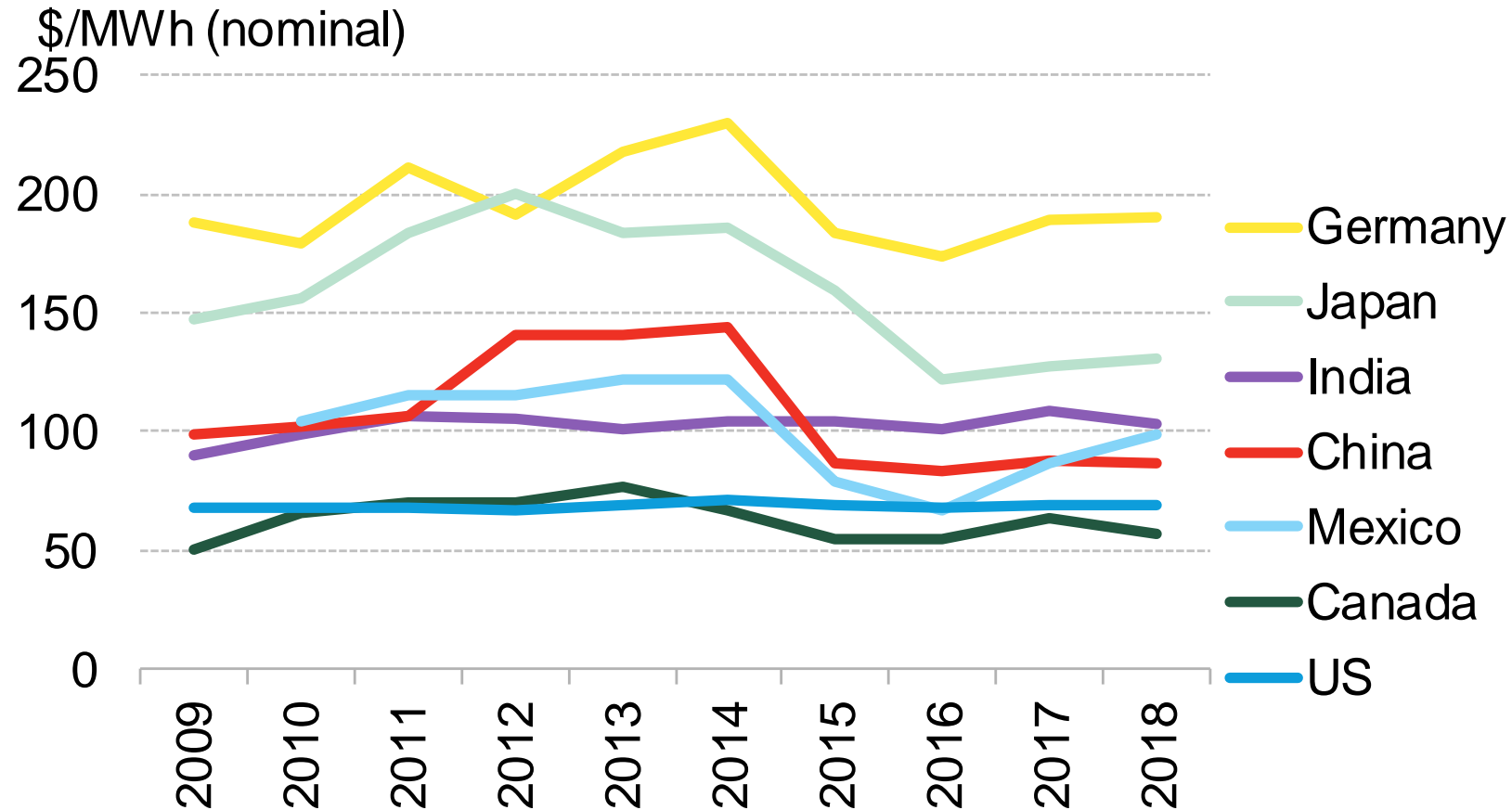


Emissions by sector



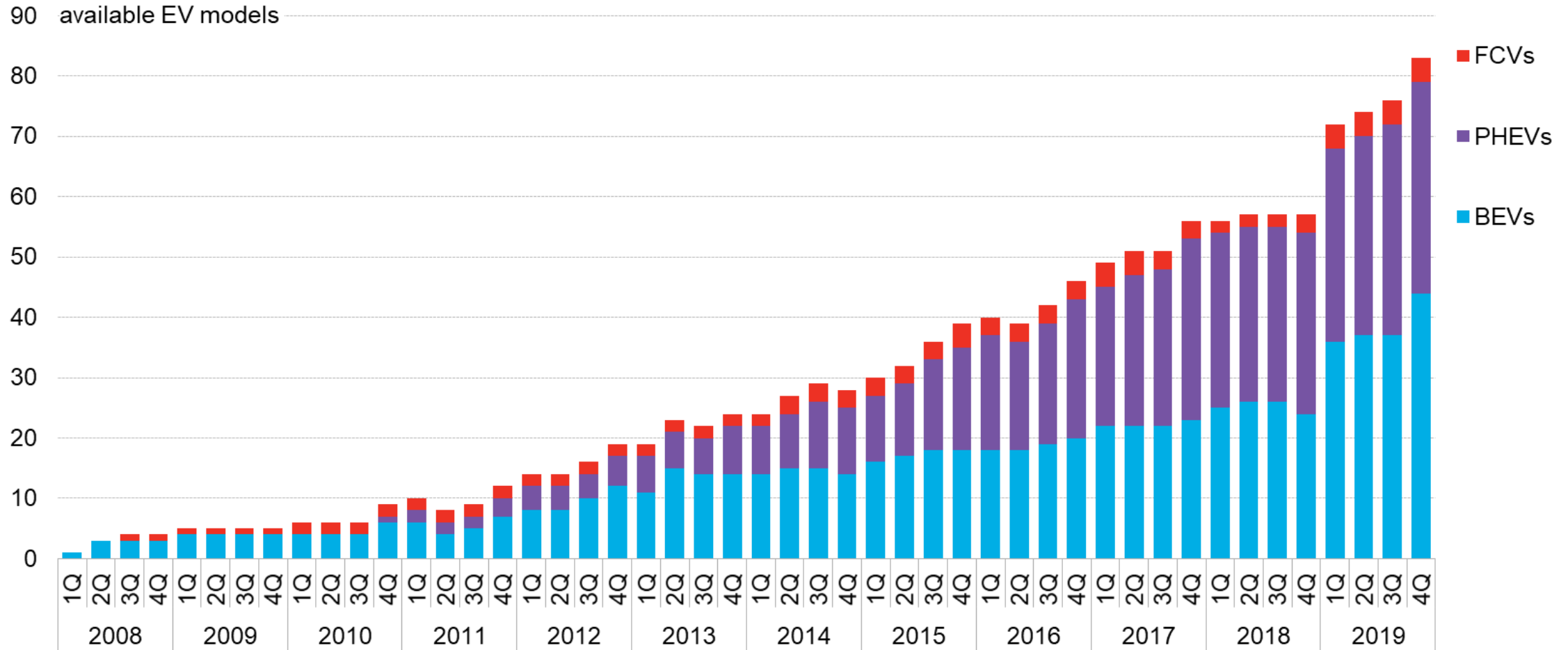
Source: BloombergNEF, EIA, EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016 Notes: "Sinks" refer to forests and green areas which absorb carbon dioxide. Values for 2019 are projected, accounting for seasonality, based on monthly values from EIA available through September 2019.

Industrial power prices compared



BloombergNEF, government sources (EIA for the U.S.) Notes: Prices are averages (and in most cases, weighted averages) across all regions within the country. Japanese data is for the C&I segment and 2016 figures come from a different source than preceding years.

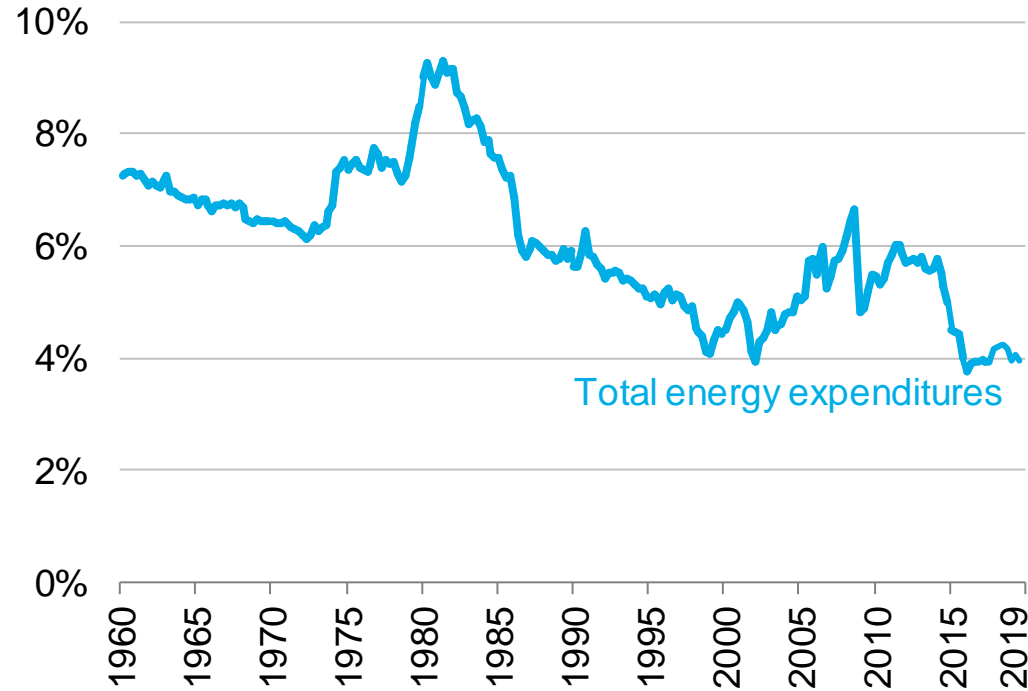
Deployment: Electric vehicle and fuel cell vehicle model availability in North America



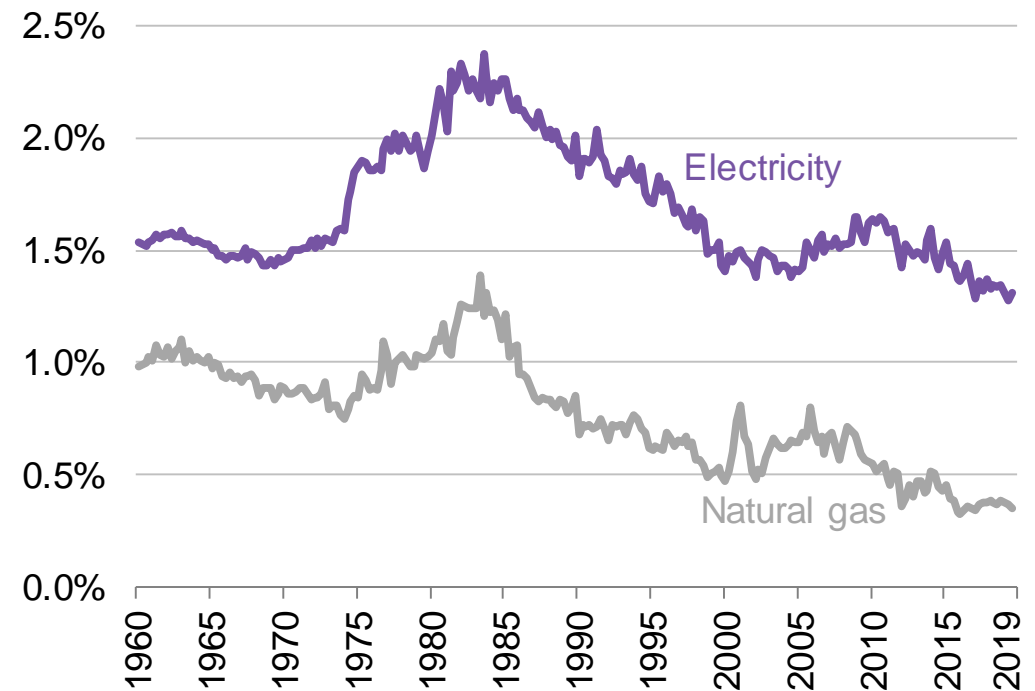
Source: BloombergNEF, Marklines. Note: EV includes BEVs and PHEVs. FCV stands for fuel cell electric vehicle, PHEV stands for plug-in hybrid electric vehicle and BEV stands for battery electric vehicle. Data as of November 26, 2019.

Energy as a share of personal consumption expenditures

Total energy goods and services as share of total consumption expenditure



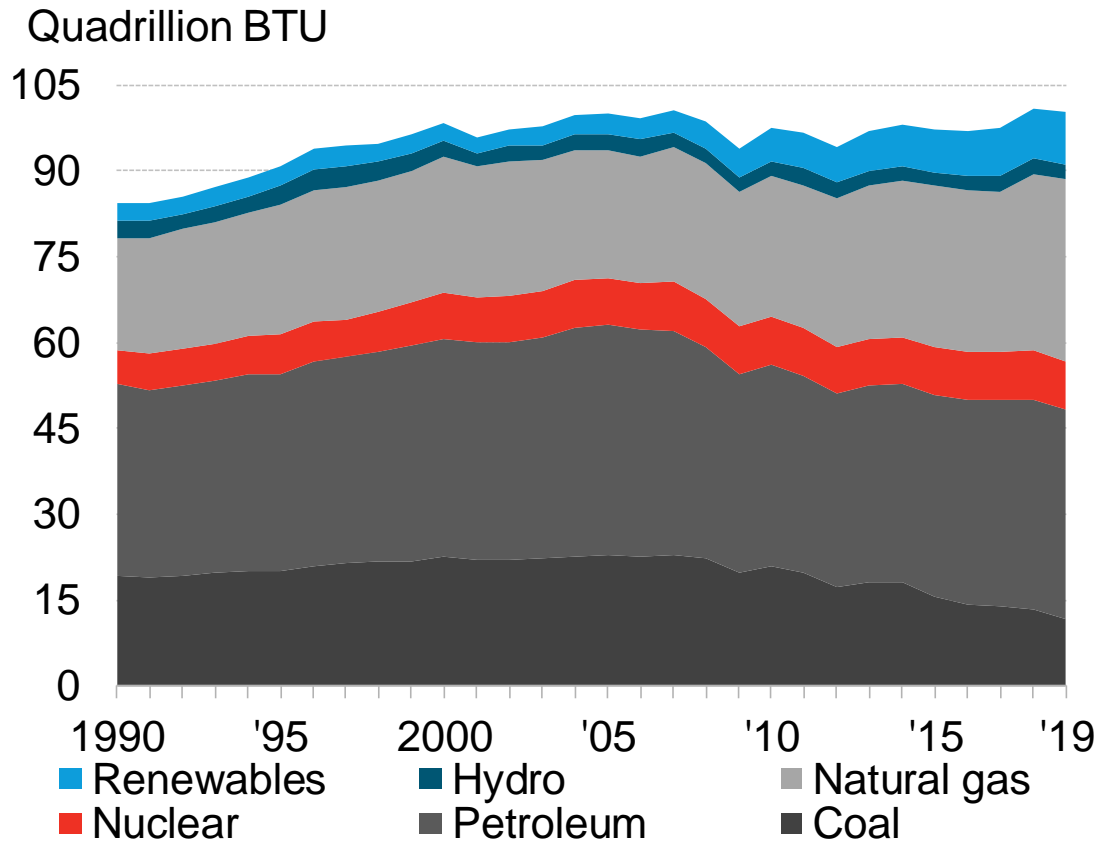
Electricity and natural gas as share of total consumption expenditure



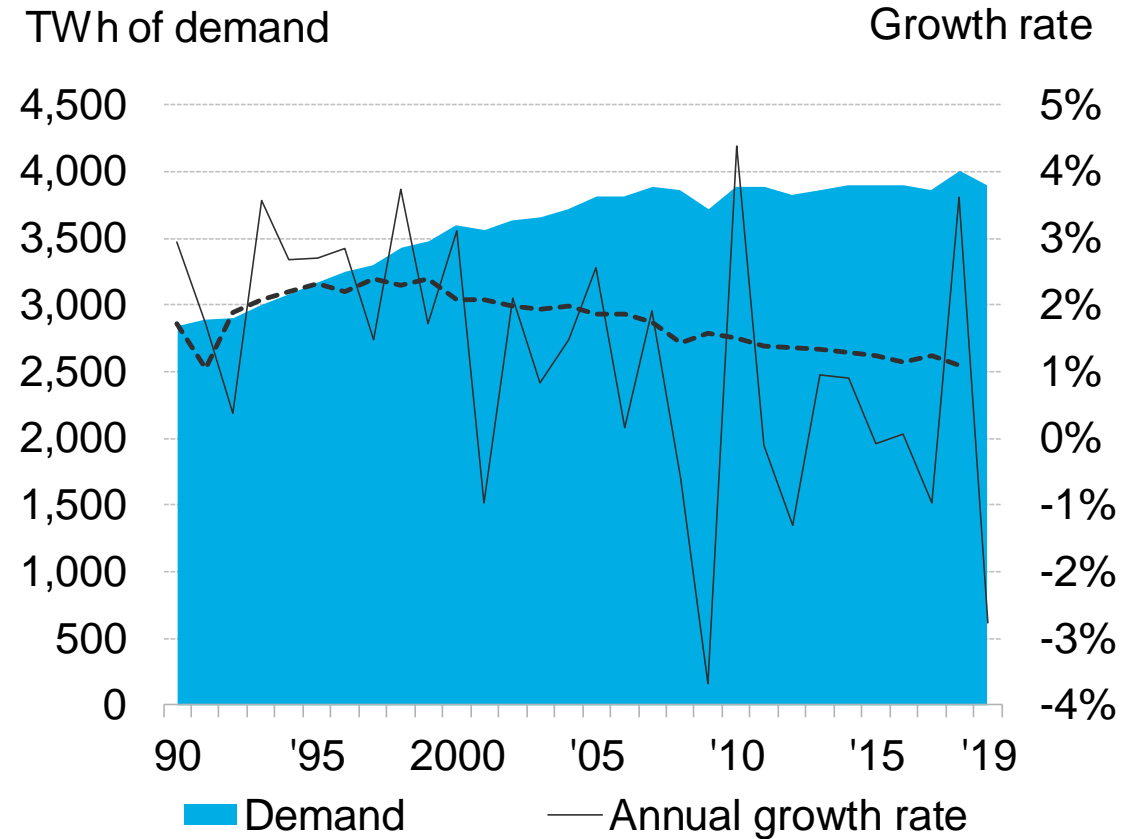
Source: Bureau of Economic Analysis, BloombergNEF

U.S. energy overview: Energy and electricity consumption

U.S. primary energy consumption, by fuel type



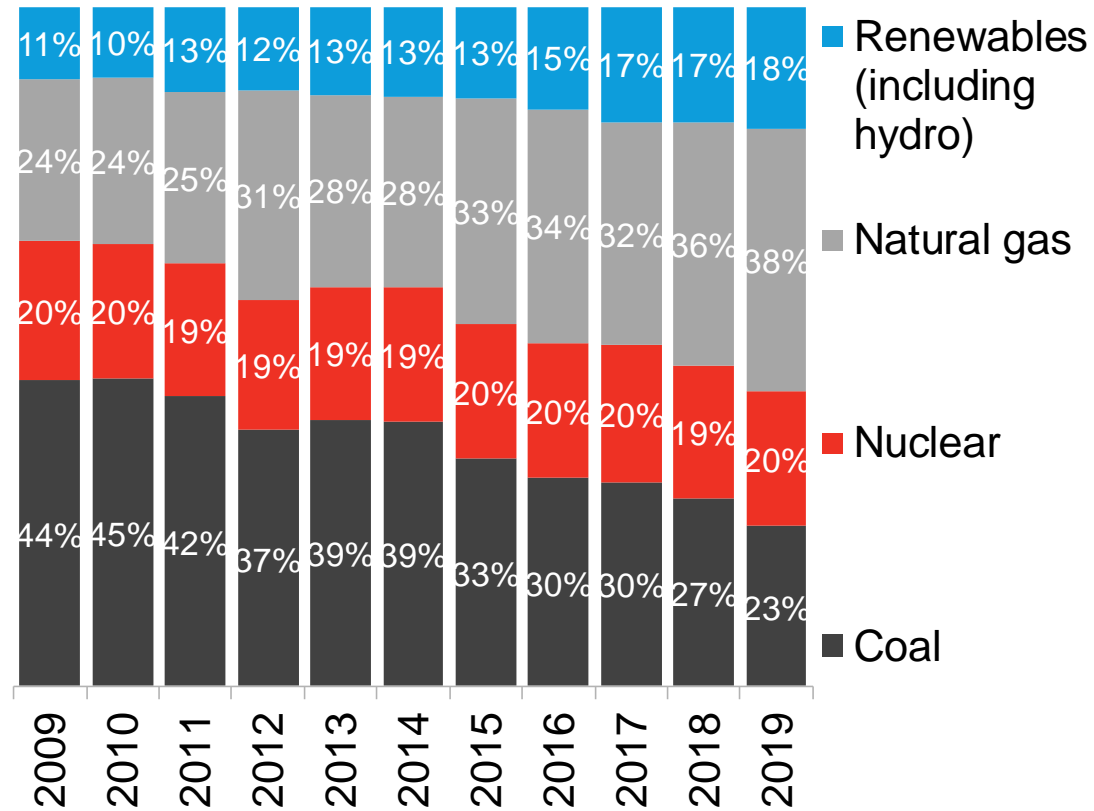
U.S. electricity demand



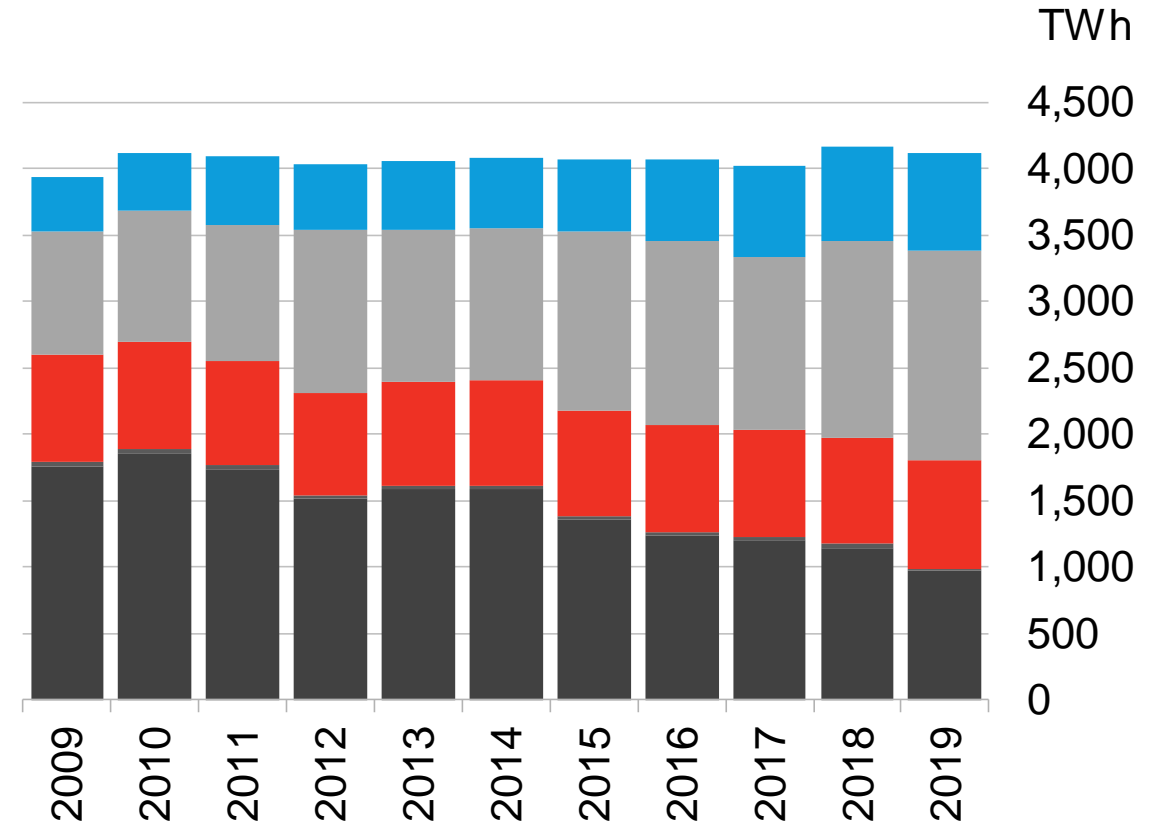
Source: EIA, BNEF Notes: "CAGR" on the right hand side graph is compound annual growth rate. Values for 2019 are projected, accounting for seasonality, based on the latest monthly values from EIA (data available through September 2019). BTU stands for British thermal units.

U.S. energy overview: Electricity generation mix

U.S. electricity generation, by fuel type



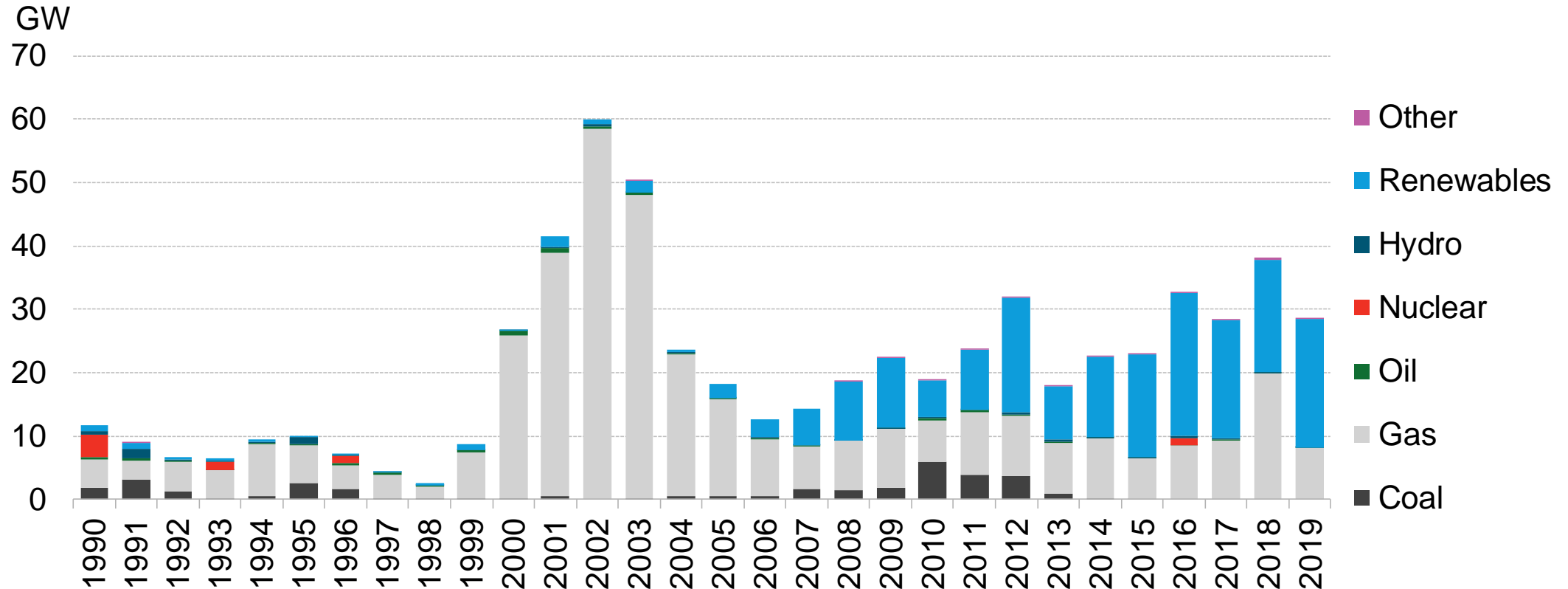
U.S. electricity generation, by fuel type



Source: EIA, BloombergNEF Note: Values for 2019 are projected, accounting for seasonality, based on latest monthly values from EIA (data available through October 2019)

U.S. energy overview: Electric generating capacity build by fuel type

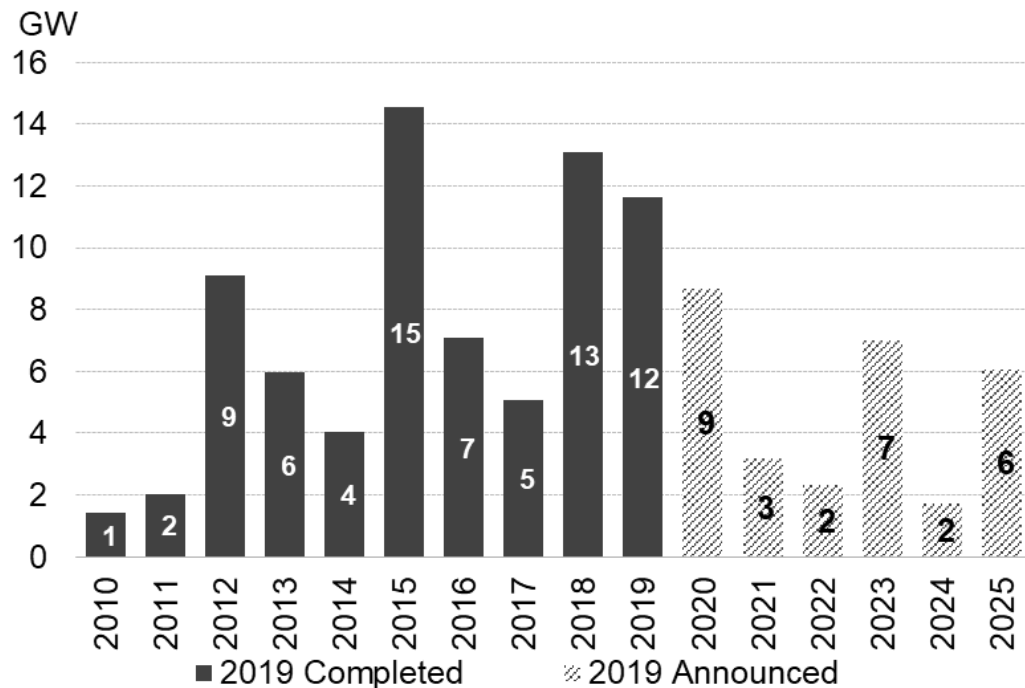
U.S. electric generating capacity build, by fuel type



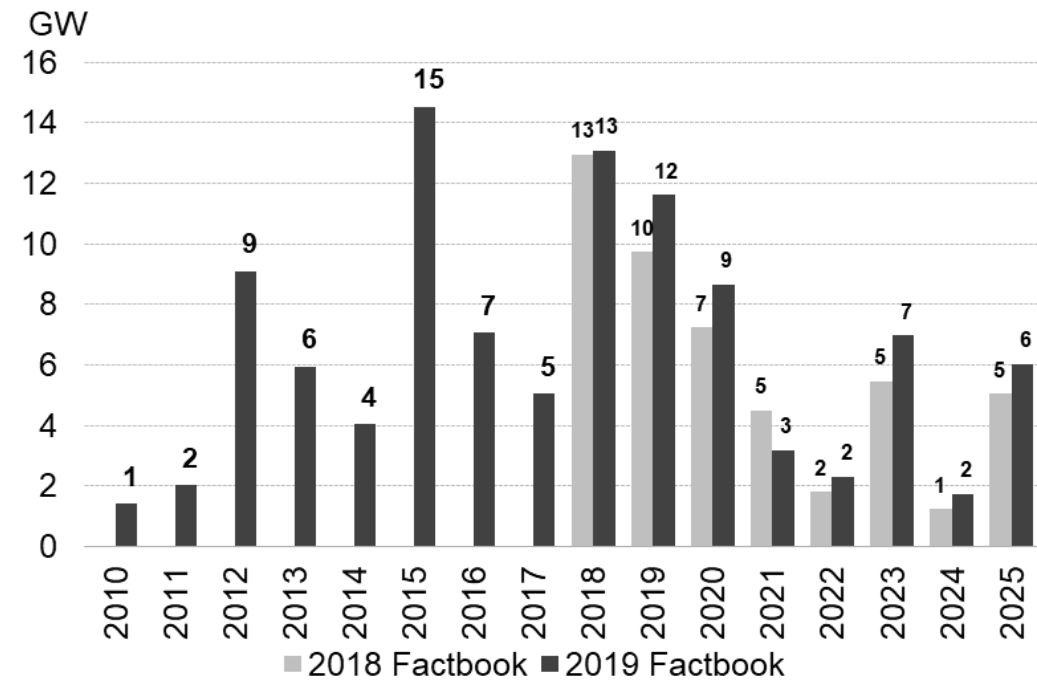
Source: EIA, BloombergNEF Note: All values are shown in AC except solar, which is included as DC capacity. "Renewables" here does not include hydro, which is shown separately. All capacity figures represent summer generating capacity. Includes installations or planned installations reported to the EIA through October 2019, as well as BloombergNEF projections.

U.S. energy overview: Completed and announced coal-fired plant retirements

U.S. coal retirements, by type

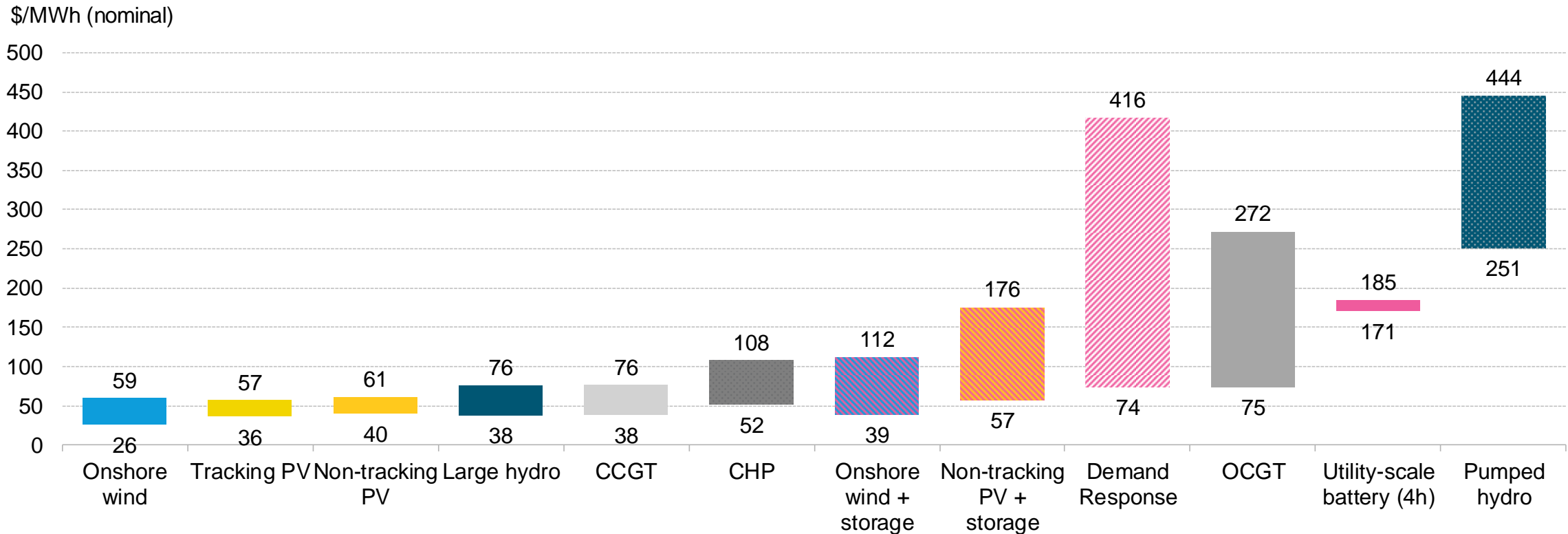


Total U.S. coal retirements, 2018 vs 2019



Source: EIA, company announcements, BloombergNEF Notes: “Retirements” does not include conversions from coal to natural gas or biomass; includes retirements or announced retirements reported to the EIA through October 2019. All capacity figures represent summer generating capacity.

Economics: U.S. levelized costs of electricity (unsubsidized for new build, 2H 2019)



Source: BloombergNEF. Note: The LCOE range represents a range of costs and capacity factors. Battery storage systems (co-located and stand-alone) presented here have four-hour storage. In the case of solar- and wind-plus-battery systems, the range is a combination of capacity factors and size of the battery relative to the power generating asset (25% to 100% of total installed capacity). All LCOE calculations are unsubsidized. Categorization of technologies is based on their primary use case.