

# AEO2020: Alternative Renewables Cost Cases



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*For*

*Resources for the Future*

*March 5, 2020 | Washington, DC*

*By*

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## AEO2020 includes higher and lower renewable cost cases

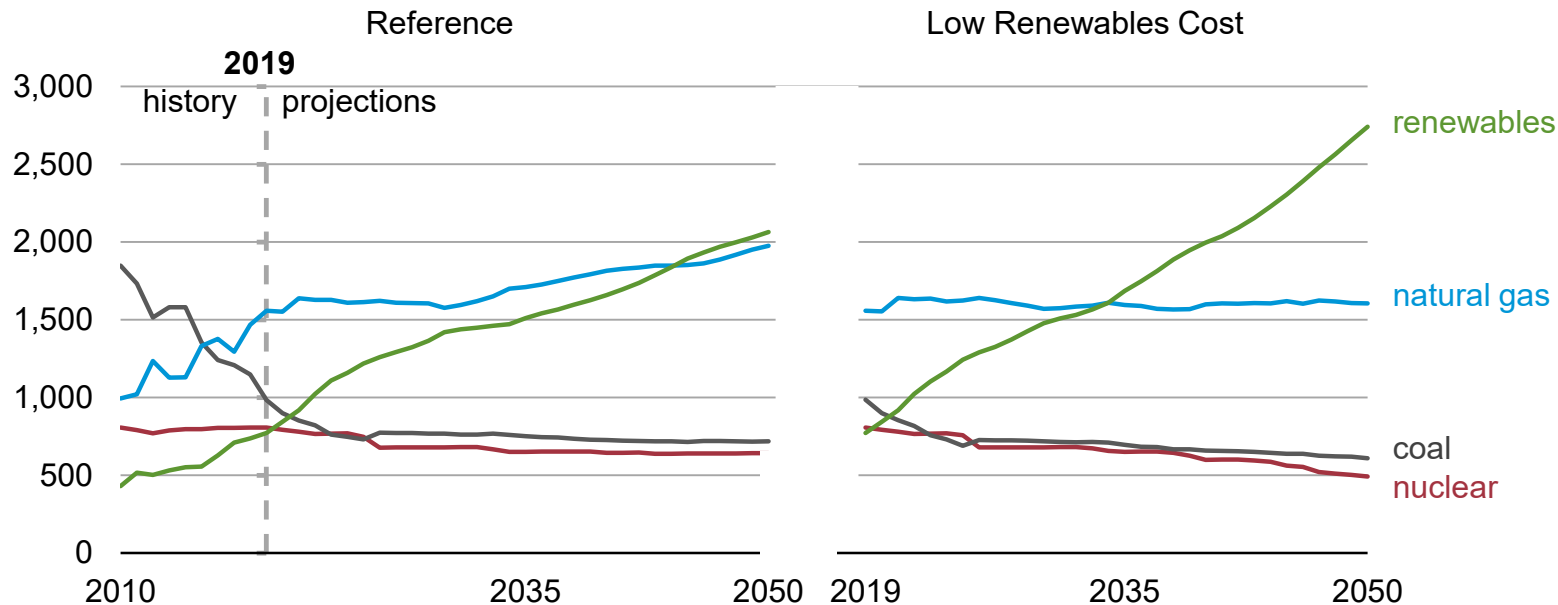
AEO2020 Case	Treatment of renewables costs
Reference	Costs decline according to learning curves specific to each renewable technology <sup>1</sup>
High Renewables Cost	Costs held fixed at 2019 levels
Low Renewables Cost	Costs decline according to learning curves that take each renewable technology to 40% lower than the same technology in the Reference case by 2050

<sup>1</sup> Renewable technologies include conventional hydropower, geothermal, biomass, municipal solid waste (MSW, biogenic), solar (thermal and photovoltaic), onshore and offshore wind, as well as small wind and solar technologies in the end-use sectors.

# Low renewables cost leads to lower generation from natural gas, coal, and nuclear compared with the Reference case

## All-sector electricity generation from selected fuels by case, 2010–50

billion kilowatthours

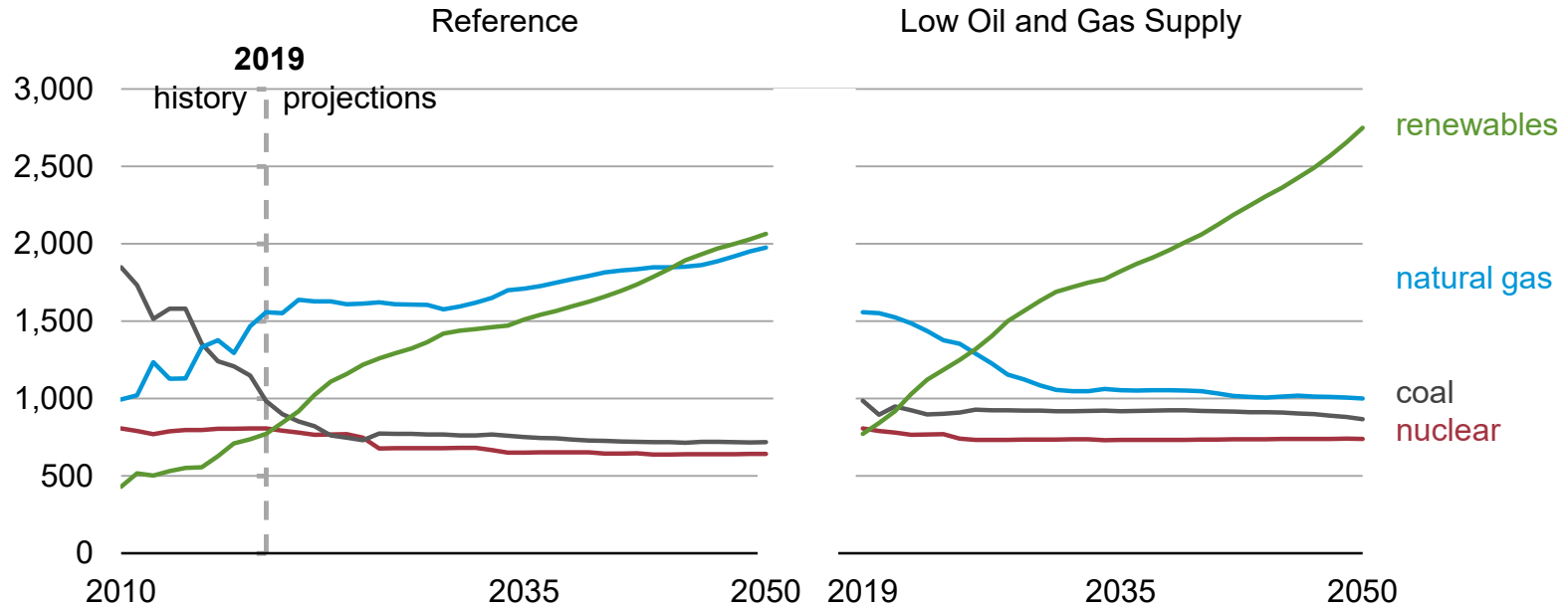


Source: U.S. Energy Information Administration, Annual Energy Outlook 2020

# High natural gas prices also lead to more renewables generation, as well as coal and nuclear compared with the Reference case

## All-sector electricity generation from selected fuels by case, 2010–50

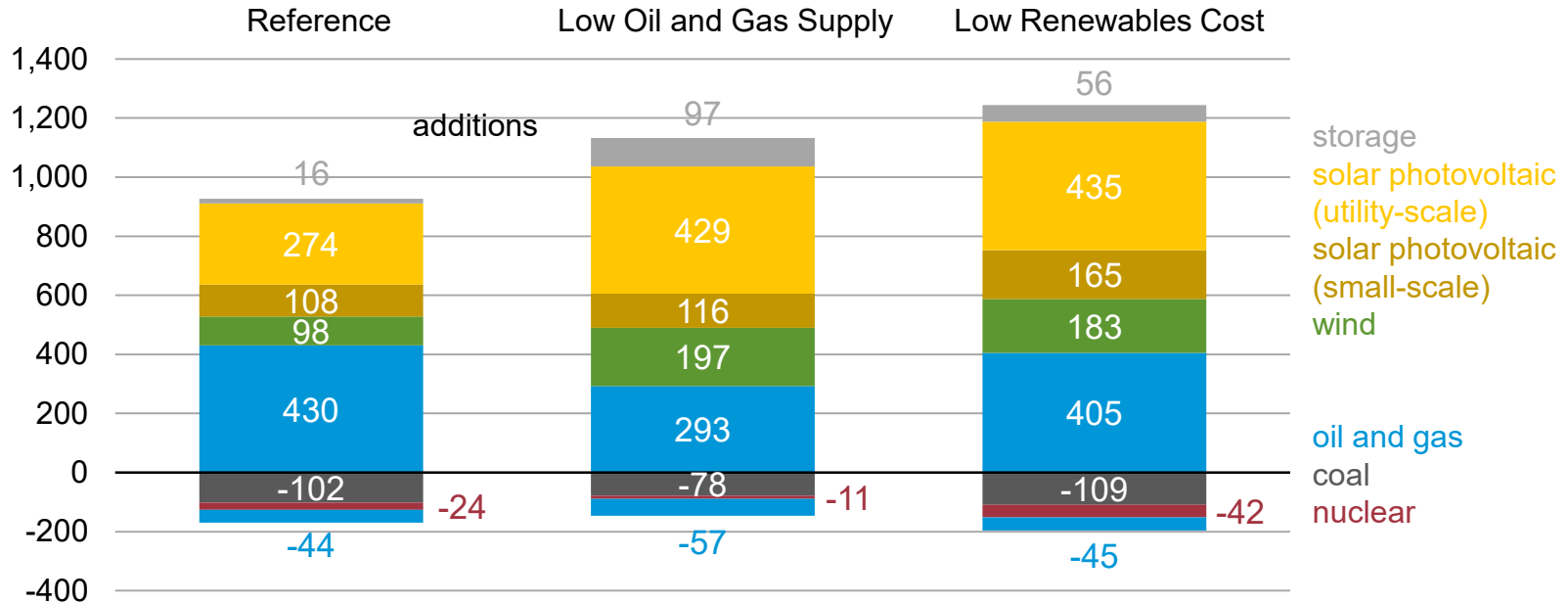
billion kilowatthours



Source: U.S. Energy Information Administration, Annual Energy Outlook 2020

# High renewables penetration can be achieved under different assumptions

All-sector cumulative electricity generating capacity additions and retirements, 2019–50  
gigawatts

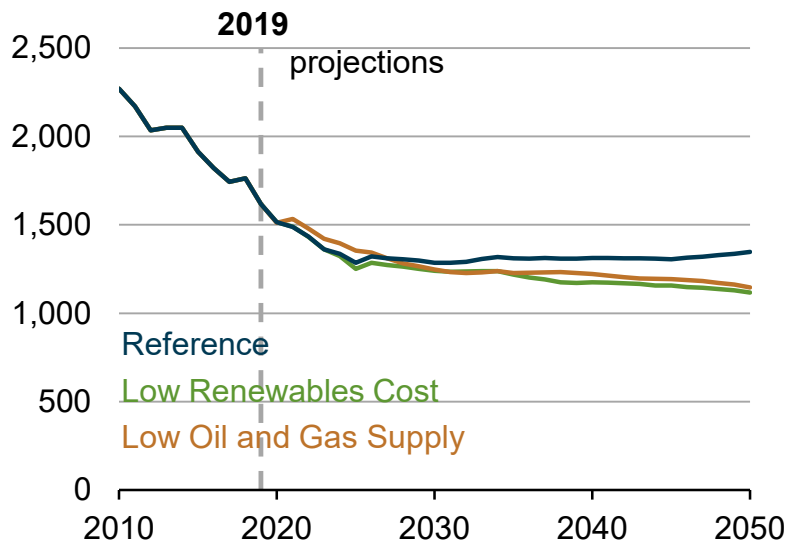


Source: U.S. Energy Information Administration, Annual Energy Outlook 2020

# High renewables penetration leads to lower electricity generation-related emissions

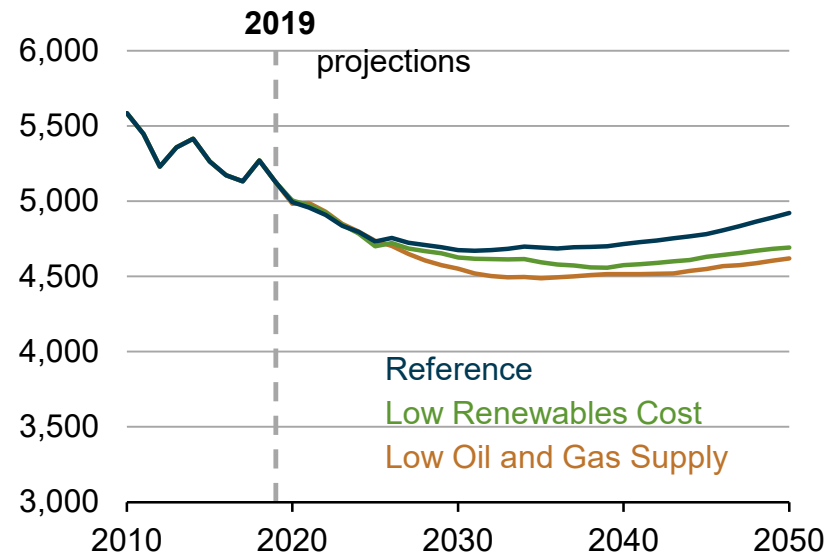
**Electricity generation-related carbon dioxide emissions by case, 2019–50**

million metric tons of CO<sub>2</sub>



**Total energy-related carbon dioxide emissions by case, 2019–50**

million metric tons of CO<sub>2</sub>

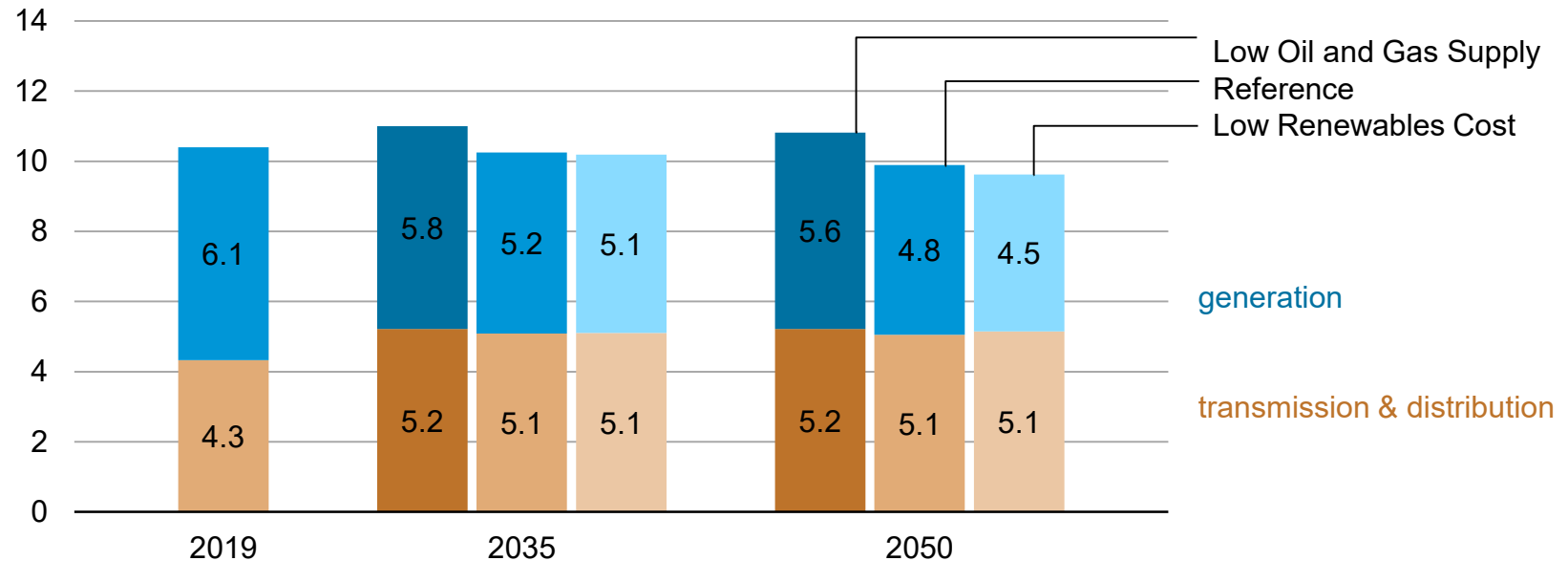


Source: U.S. Energy Information Administration, Annual Energy Outlook 2020

# Generation cost component responds to changes in natural gas prices and renewable cost assumptions

## U.S. average electricity prices by service category by case, 2019, 2035, and 2050

2019 cents per kilowatthour



Source: U.S. Energy Information Administration, Annual Energy Outlook 2020

## Contact and additional information

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U.S. Energy Information Administration | <https://www.eia.gov/>

Annual Energy Outlook | <https://www.eia.gov/outlooks/aeo/>

*Levelized Cost and Levelized Avoided Cost of New Generation Resources in the Annual Energy Outlook 2020* | [https://www.eia.gov/outlooks/aeo/electricity\\_generation.php](https://www.eia.gov/outlooks/aeo/electricity_generation.php)

International Energy Outlook | <https://www.eia.gov/outlooks/ieo/>