



Benchmarking Air Emissions

Of the 100 Largest Electric Power Producers in the United States

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Summary Presentation

Full Report at: www.mjbradley.com

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2015 Benchmarking Report: Key Findings

- In 2013, power plant SO₂ and NO_x emissions were 80 percent and 74 percent lower, respectively, than they were in 1990 when Congress passed major amendments to the Clean Air Act.
- In 2013, power plant CO₂ emissions were 14 percent higher than they were in 1990. However, in recent years, from 2008 through 2013, power plant CO₂ emissions decreased by 12 percent. Some of the factors driving this trend include slow economic growth, energy efficiency improvements, and the displacement of coal generation by natural gas and renewable energy resources.
- Mercury emissions from power plants have decreased 50 percent since 2000, and will decline further as the first-ever federal limits on mercury and other hazardous air pollutants from coal-fired power plants go into effect in 2015.

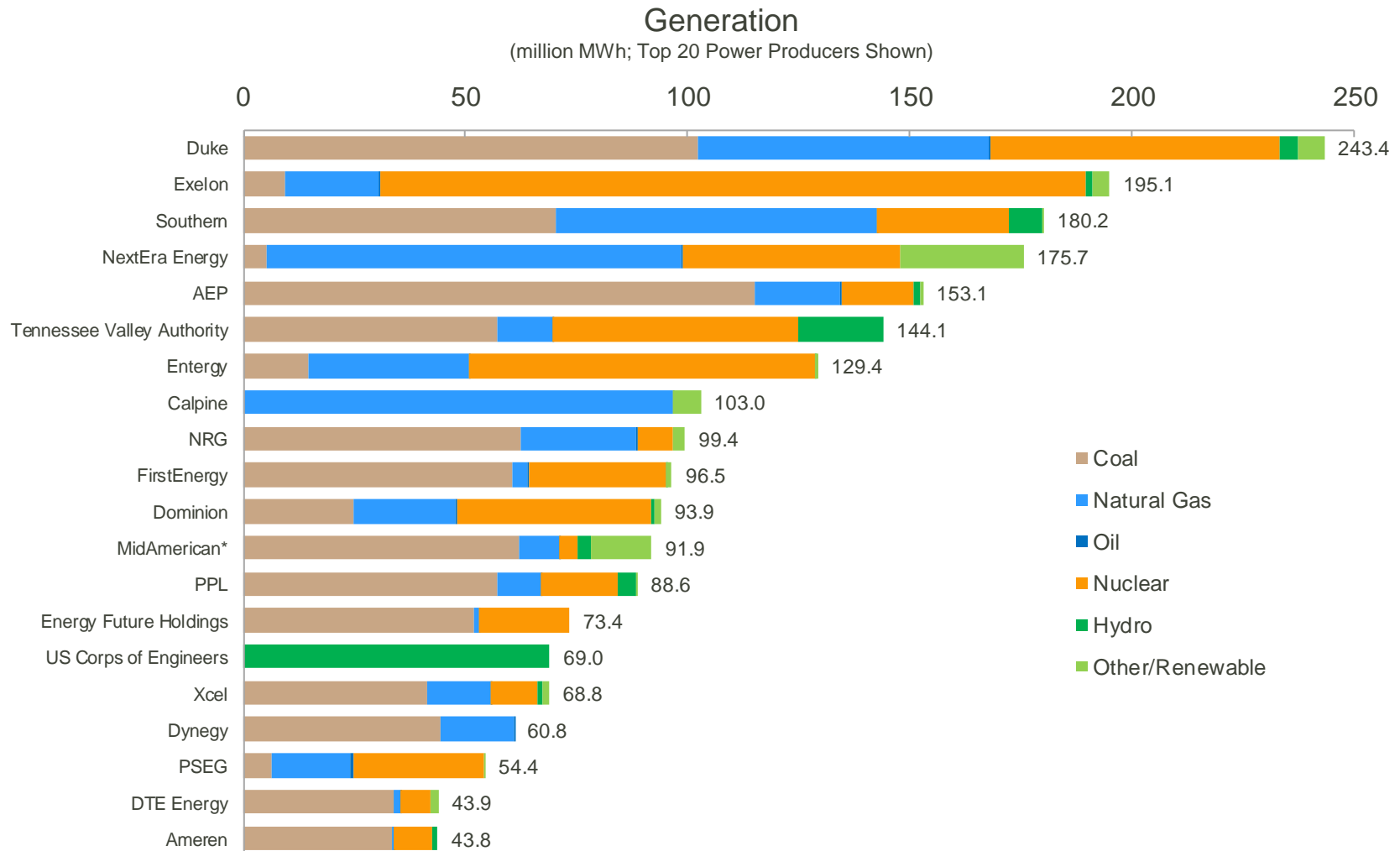
BENCHMARKING AIR EMISSIONS

OF THE
100 LARGEST
ELECTRIC POWER
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IN THE
UNITED STATES



Download the full 2015 Benchmarking Air Emissions report and plant level data at: www.mjbradley.com

2015 Benchmarking Report: Rankings by Generation



NOTE: Only the top 20 producers shown.

*On April 30, 2014, MidAmerican Energy Holdings (MidAmerican) changed its name to Berkshire Hathaway Energy.

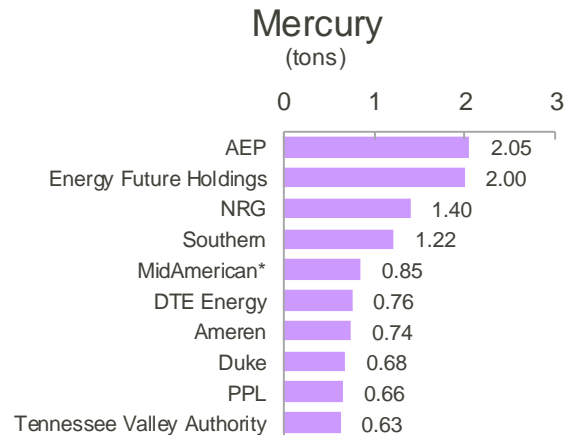
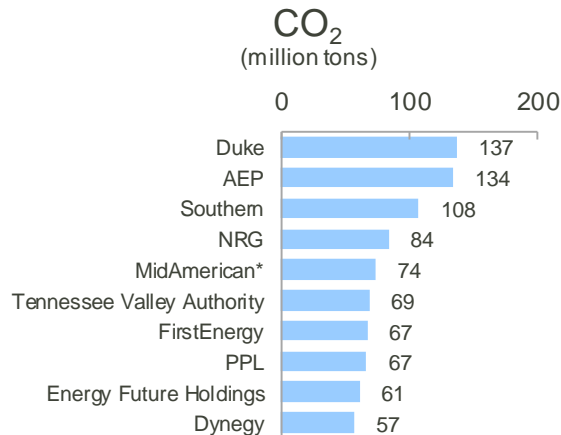
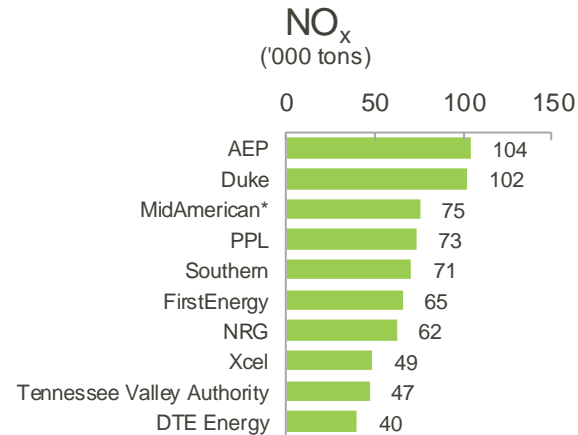
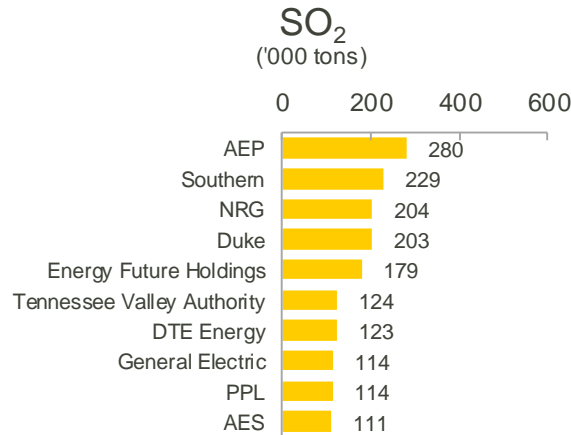
2015 Benchmarking Report: Emission Contributions

	SO₂ (million ton)	NOx (million ton)	Mercury (Hg) (ton)	CO₂ (billion ton)
100%	3.21	1.73	23.71	2.28
	100 largest producers			
	90%	84%	87%	85%
	No. of producers			
75%	24	44	30	49
50%	9	15	11	16
25%	3	5	3	5
	AEP Southern NRG	AEP Duke MidAmerican* PPL Southern	AEP Energy Future Holdings NRG	Duke AEP Southern NRG MidAmerican*

Air pollution emissions from power plants are highly concentrated among a small number of producers. For example, nearly a quarter of the electric power industry's SO₂ and CO₂ emissions are emitted by just three and five top 100 producers, respectively.

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2015 Benchmarking Report: Rankings by Total Emissions



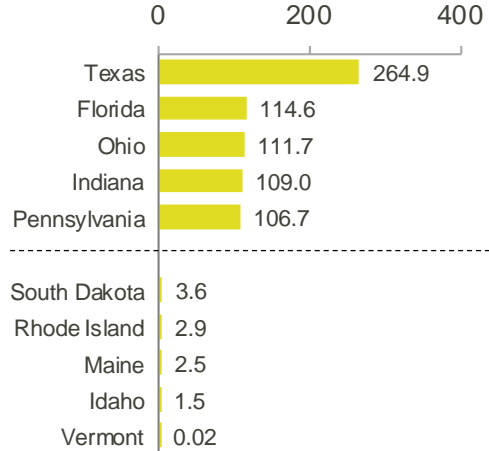
NOTE: Only the top 10 for each category shown.

*On April 30, 2014, MidAmerican Energy Holdings (MidAmerican) changed its name to Berkshire Hathaway Energy.

2015 Benchmarking Report: State-by-State CO₂ Emissions

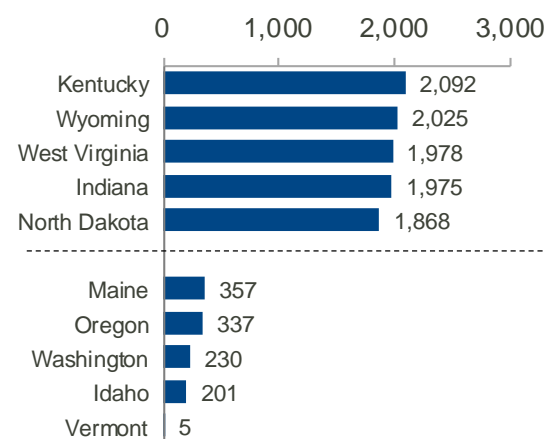
Total CO₂ Emissions by State

(million tons; top 5 and bottom 5 are shown)



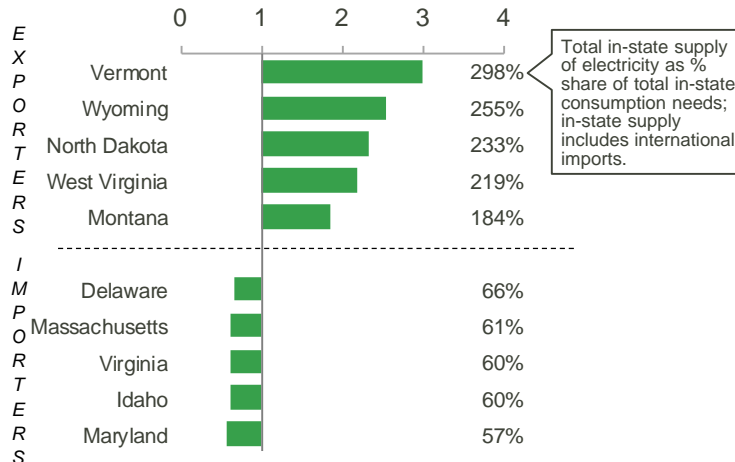
All Sources – CO₂ Emission Rate

(lb/MWh; top 5 and bottom 5 are shown)



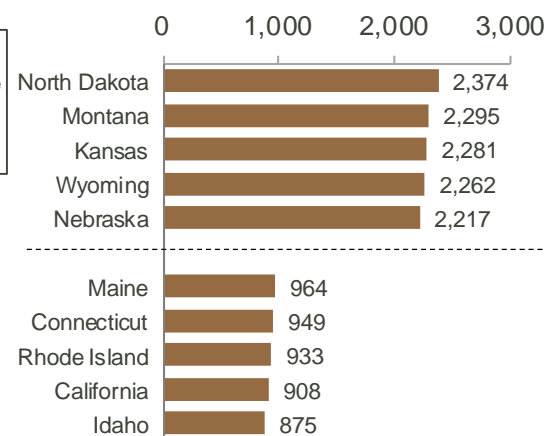
Electricity Exporters/Importers

(2012 Net Trade Index; top 5 exporters and importers are shown)



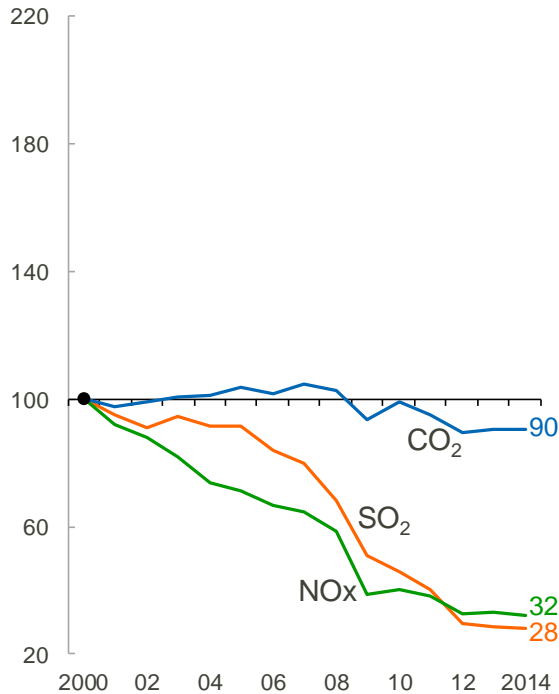
Fossil – CO₂ Emission Rate

(lb/MWh; top 5 and bottom 5 are shown)

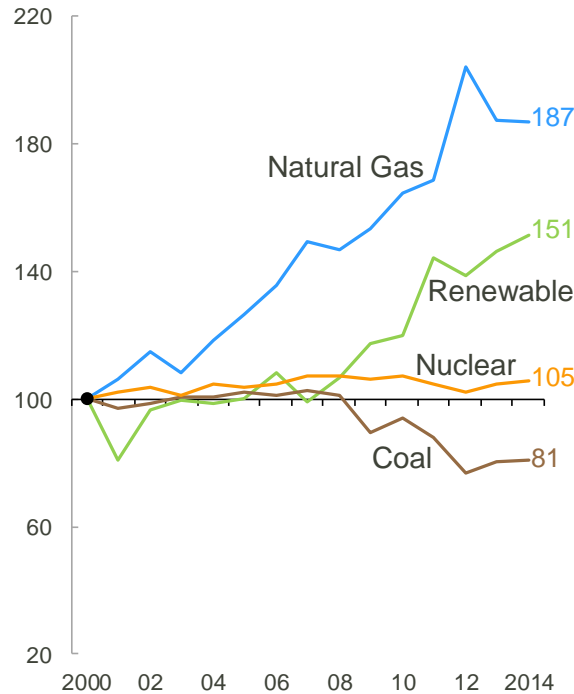


2015 Benchmarking Report: Annual Trends

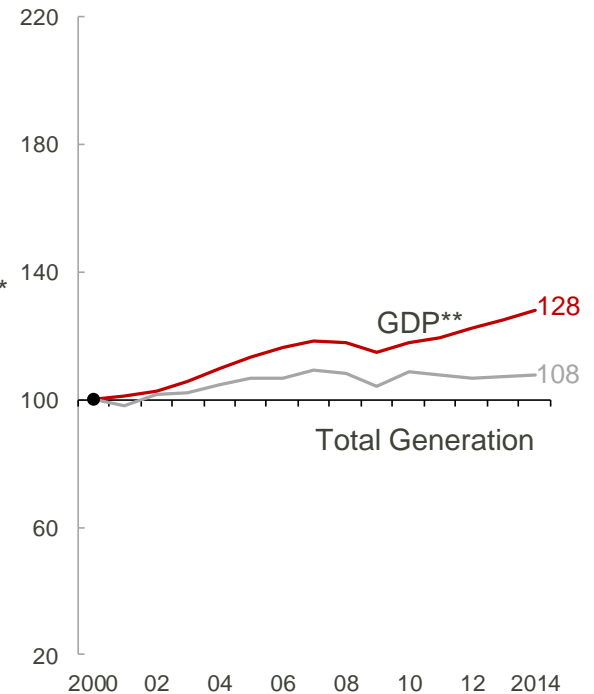
Electric Sector Emissions
(Indexed; 2000 = 100)



Generation Fuel Mix
(Indexed; 2000 = 100)



Macroeconomic Indicators
(Indexed; 2000 = 100)

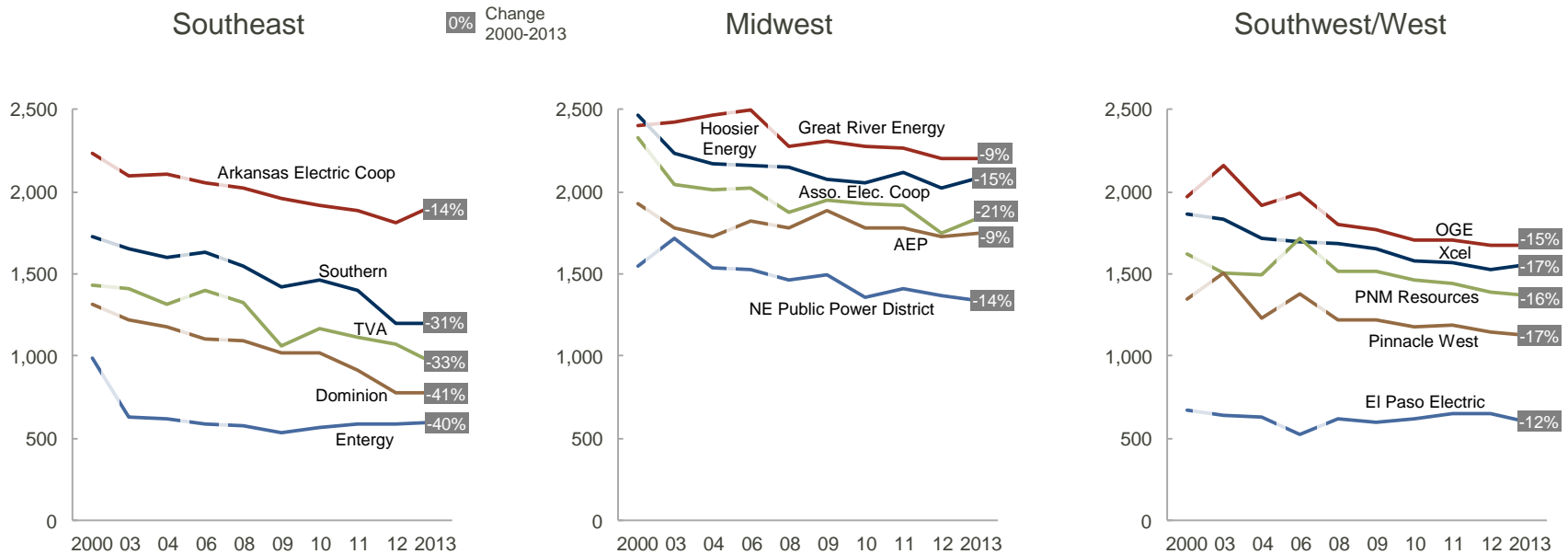


*Includes hydroelectric, wind, solar, biomass, geothermal and other renewable sources.
**GDP in chained 2009 dollars.

The electric power sector has made significant progress in terms of reducing its NO_x and SO₂ emissions over the past decade.

2015 Benchmarking Report: Regional CO₂ Emission Rate Trends

CO₂ Emission Rates of Select Power Producers in Three Regions
(all fuels across entire portfolio; lb/MWh)

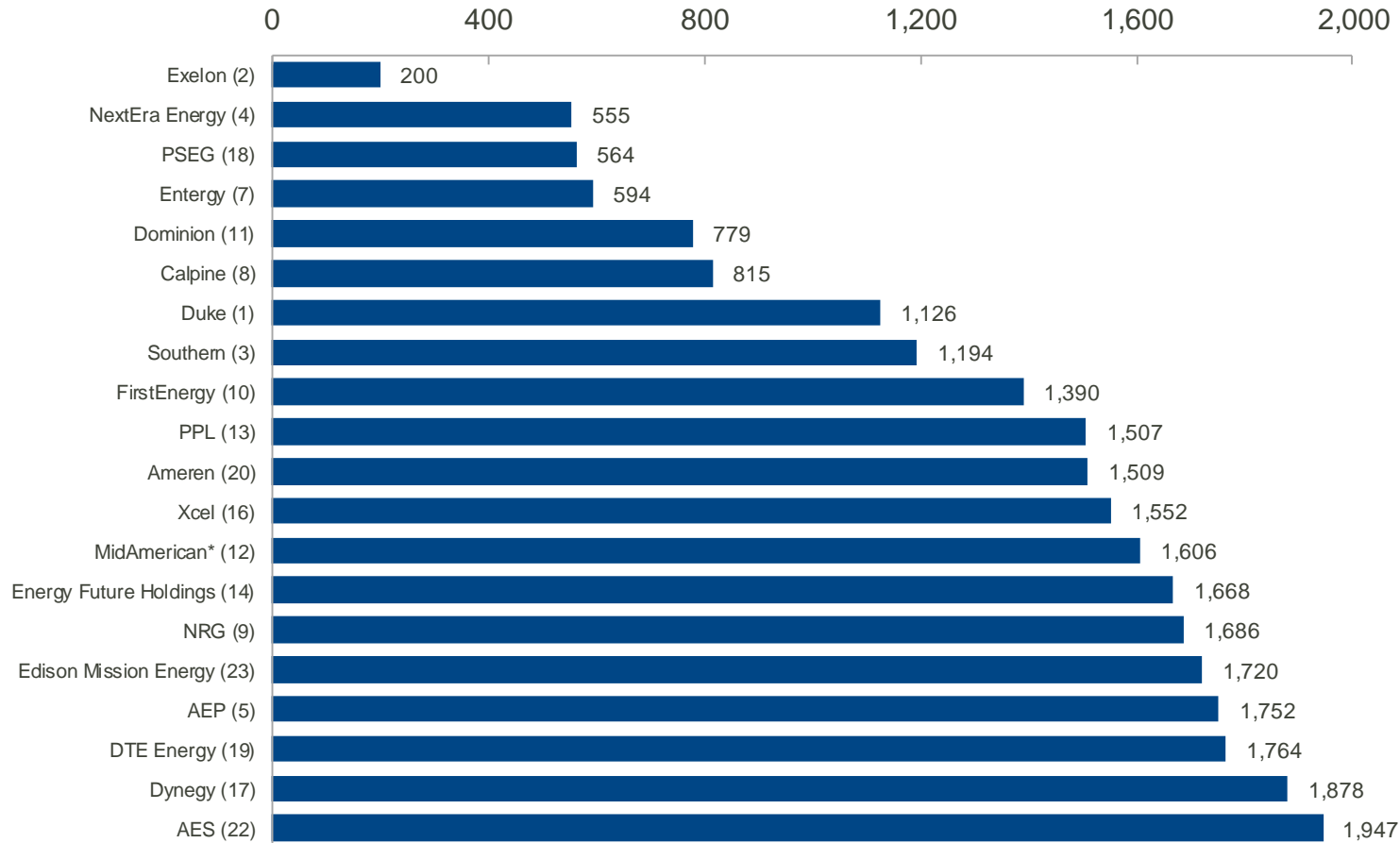


NOTE: The x-axes in the charts above do not denote equal intervals. Data for years 2001, 2002, 2005, and 2007 are not shown in the charts above.

Over time a wide range of factors influences a company's CO₂ emissions: plant utilization, share of low-carbon generation, new builds, nuclear uprates, plant divestitures and retirements, and mergers and acquisitions.

2015 Benchmarking Report: Rankings by CO₂ Emission Rate for the top 20 privately/investor owned power producers

All Sources – CO₂ Emission Rate
(lb/MWh)



NOTE: Ranking by generation shown in parentheses next to power producer name.

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