

Environmental Performance Metrics

2016 Electricity Generated and Generation Capacity¹

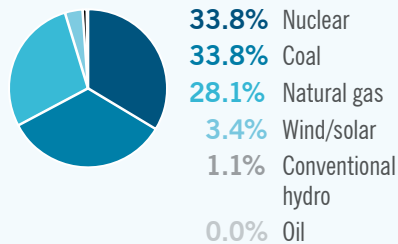
	Electricity Generated (Net megawatt hours)		Generation Capacity (Megawatts)	
	MWh (thousands)	Percent	MW	Percent
Coal	74,055	33.8%	17,948	34.4%
Natural gas	61,695	28.1%	4,584	8.8%
Oil	97	0.0%	402	0.8%
Natural gas/oil			13,922	26.7%
Total fossil	135,848	62.0%	36,856	70.6%
Nuclear	74,160	33.8%	8,850	16.9%
Wind	6,417	2.9%	2,311	4.4%
Conventional hydro	2,431	1.1%	1,415	2.7%
Solar	1,205	0.5%	660	1.3%
Total carbon-free	84,213	38.4%	13,236	25.3%
Pumped-storage hydro ²	(776)	-0.4%	2,140	4.1%
Total	219,285	100.0%	52,232	100.0%

- 1 All data based on Duke Energy's ownership share of generating plants as of Dec. 31, 2016. Data exclude the Duke Energy International assets sold in 2016. Totals may not add up exactly because of rounding.
- 2 Pumped-storage hydro helps meet peak demand and, like other storage technologies, consumes more energy than it produces.

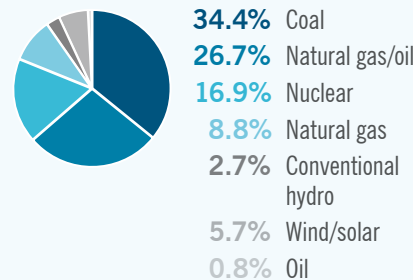
2016 electricity generated and generation capacity

Duke Energy has a diverse, increasingly clean generation portfolio. Approximately 38 percent of the electricity we generated in 2016 was from carbon-free sources, including nuclear, wind, hydro and solar. Nuclear generation surpassed coal by a small margin, and over 28 percent was from natural gas, which emits about half as much carbon dioxide as coal when used for electric generation. Duke Energy Renewables sells the electricity and/or Renewable Energy Certificates (RECs) it generates to its customers.

2016 Electricity Generated*



2016 Generation Capacity*



* Excludes pumped-storage hydro.

Fuels Consumed For Electric Generation³

	2008	2014	2015	2016
Coal (million tons)	63.1	44.0	32.6	31.7
Oil (million gallons)	230.6	53.6	44.1	29.5
Natural gas (billion cubic feet)	163.4	525.3	501.1	545.2

- 3 All data based on Duke Energy's ownership share of generating assets as of the end of each calendar year. Data exclude the Duke Energy International assets sold in 2016.

Fuels consumed for electric generation

Since 2008, the use of coal and oil as generation fuels has significantly decreased. These fuels have been replaced primarily by natural gas, mostly because it has become a relatively less expensive fuel and we have added natural gas generation capacity.

Environmental Performance Metrics *continued*

Water withdrawn and consumed for electric generation

Water withdrawn is the total volume removed from a water source, such as a lake or a river. Because of the once-through cooling systems on many of our coal-fired and nuclear plants, almost 99 percent of this water is returned to the source and available for other uses. *Water consumed* is the amount of water removed for use and not returned to the source.

Emissions from electric generation

Many factors influence emissions levels and intensities, including generation diversity and efficiency, demand for electricity, weather, fuel availability and prices, and emissions controls deployed. Since 2005, our carbon dioxide (CO₂) emissions decreased by 29 percent, sulfur dioxide (SO₂) emissions decreased by 94 percent and nitrogen oxides (NO_x) emissions decreased by 70 percent. These decreases are primarily due to addition of pollution control equipment, decreased coal generation, increased natural gas generation, and replacement of higher-emitting plants.

Methane emissions from pipeline operations

Methane (CH₄) is the primary component of natural gas, and is a greenhouse gas. We work to minimize methane emissions, but some is released during pipeline operations and maintenance. Duke Energy is a founding partner of the U.S. EPA's Natural Gas Star Methane Challenge program, which is aimed at cost-effective technologies and practices that improve operational efficiency and reduce methane emissions.

Water Withdrawn and Consumed for Electric Generation⁴ (billion gallons)

	2011	2014	2015	2016
Withdrawn	5,900	5,789	5,723	5,341
Consumed	105	92	79	74
Consumption Intensity (gallons per MWh generated)	456	376	361	337

⁴ Data exclude the Duke Energy International assets sold in 2016.

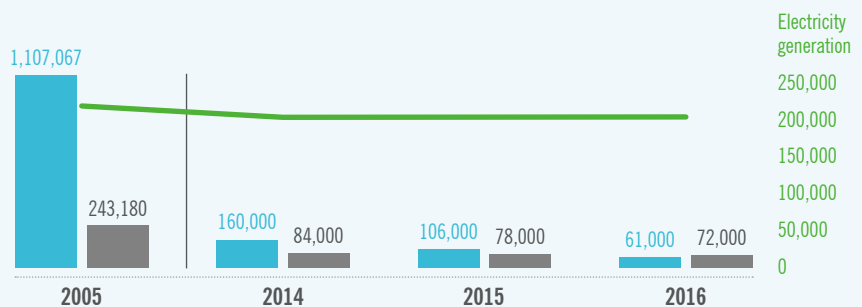
Emissions From Electric Generation⁵

	2005	2014	2015	2016
CO₂ emissions (thousand tons)	152,147	114,854	108,463	106,763
CO₂ emissions intensity (pounds per net kWh)	1.29	1.05	0.99	0.97
SO₂ emissions (tons)	1,107,067	160,000	106,000	61,000
SO₂ emissions intensity (pounds per net MWh)	9.4	1.5	1.0	0.6
NO_x emissions (tons)	243,180	84,000	78,000	72,000
NO_x emissions intensity (pounds per net MWh)	2.1	0.8	0.7	0.7
CH₄ emissions (CO ₂ equivalent) (thousand tons)	420	281	243	236
N₂O emissions (CO ₂ equivalent) (thousand tons)	731	482	415	401

⁵ All data based on Duke Energy's ownership share of generating assets as of Dec. 31, 2016. Data exclude the Duke Energy International assets sold in 2016. Totals may not add up exactly due to rounding.

Sulfur Dioxide and Nitrogen Oxides Emissions (tons)⁶ and Electricity Generation (thousand net megawatt-hours)

■ Sulfur dioxide emissions ■ Nitrogen oxides emissions — Electricity generation



⁶ SO₂ and NO_x reported from Duke Energy's electric generation based on ownership share of generating assets.

Methane Emissions from Pipeline Operations (thousand tons)

	2014	2015	2016
CH₄ emissions (CO ₂ equivalent)	201	184	184

Environmental Performance Metrics *continued*

Sulfur Hexafluoride Emissions from Electric Transmission and Distribution Operations (thousand tons)

	2014	2015	2016
SF ₆ emissions (CO ₂ equivalent)	456	291	570

Toxic Release Inventory (thousand pounds)⁷

	2007	2013	2014	2015
Releases to air	97,969	22,400	18,297	10,396
Releases to water	257	131	152	145
Releases to land	22,052	12,449	12,948	9,666
Off-site transfers	155	2,924	3,579	1,363
Total	120,434	37,904	34,976	21,570

⁷ Data pertain to electric generation facilities Duke Energy owns or operates and where Duke Energy is the responsible reporting party. Totals may not add up exactly due to rounding.

Waste

	2013	2014	2015	2016
Solid waste				
■ Total generated (tons) ⁸	84,083	85,490	88,000	102,257
■ Percent recycled	69%	71%	72%	76%
Hazardous waste generated (tons) ⁹	51	48	317	570
Low-level radioactive waste (Class A, B and C) generated (cubic feet) ¹⁰	88,994	104,636	200,667	—

⁸ Weights are estimated based on volumes where necessary. Excludes Duke Energy Renewables, Piedmont Natural Gas and large nonreplicable projects such as plant demolitions.

⁹ Excludes Duke Energy Renewables and Piedmont Natural Gas.

¹⁰ Total of Class A, B and C waste disposal as reported to the Nuclear Regulatory Commission. Crystal River Unit 3 is not included in these statistics, because it is not part of the operating fleet, and is retired. Data for 2016 will be available later in 2017.

Reportable Oil Spills¹¹

	2012	2013	2014	2015	2016
Spills	48	65	26	23	23
Gallons	10,800	4,823	12,006	3,425	3,970

¹¹ Excludes Piedmont Natural Gas.

Environmental Regulatory Citations¹²

	2012	2013	2014	2015	2016
Citations	16	16	33	9	9
Fines/penalties (dollars)	\$ 128,562	\$ 1,006,935	\$ 236,058	\$ 114,585,735	\$ 7,114,090

¹² Includes international and U.S. federal, state and local citations and fines/penalties. Excludes Piedmont Natural Gas.

Sulfur hexafluoride emissions from electric transmission and distribution operations

Sulfur hexafluoride (SF₆) is an insulating gas used in high voltage electric transmission and distribution switchgear equipment, and is a greenhouse gas. We work to minimize SF₆ emissions, but some is released during transmission and distribution operations and maintenance.

Toxic Release Inventory (TRI)

Duke Energy's TRI releases for 2015 were down 82 percent from 2007, primarily due to the significant investments we've made in environmental controls for our power plants, and decreased coal generation. (Data for 2016 will be available in August 2017.)

Waste

We are on track to meet our goal of increasing the percentage of solid waste that is recycled from 69 percent in 2013 to 80 percent in 2018. (This goal excludes Duke Energy Renewables and Piedmont Natural Gas.)

Reportable oil spills

Oil spills include releases of lubricating oil from generating stations, leaks from transformers, or damage caused by weather or by third parties (typically because of auto accidents).

Environmental regulatory citations

Fines/penalties were relatively large in 2013 because of the November 2013 settlement agreement addressing golden eagle fatalities at wind power facilities; in 2015 because of the May 2015 coal ash enforcement agreement; and in 2016 because of a 2014 oil spill at the Beckjord Station in Ohio, and a 2014 coal ash spill. See the "Migratory Bird Settlement Agreement" article in the 2013 Sustainability Report, and "Legal Cases Resolved" article in the 2015 Sustainability Report.