



Cleveland

US and Canada Green City Index

Background indicators

Total population ¹⁾	430,000
Administrative area (miles ²) ¹⁾	77
GDP per person (real) (US\$) ²⁾	41,400
Temperature (24-hour average, annual) (°F) ¹⁾	50
Goods employment (%) ²⁾	16
Services employment (%) ²⁾	84

Geographical basis: 1) City, 2) MSA

Located on the shores of Lake Erie, Cleveland is one of the smaller cities in the US and Canada Green City Index in terms of population, at 430,000 people, and area, at 77 square miles. Cleveland's economy is more oriented towards industry compared with other cities in the Index, with nearly 16% of jobs generated in the goods sector. However, more than half of the city's manufacturing jobs vanished between 1950 and 1990, along with nearly half of the population, which left Cleveland with daunting economic challenges; currently it is in the lower half of the Index for income, with a per capita GDP of \$41,400. Looking ahead, Cleveland hopes to make sweeping changes in its economy and environmental performance through the many programs being initiated at the municipal level. Although getting there will not be easy, Cleveland benefits from the support of Mayor Frank Jackson, who has made a strong public case for the relevance of climate action and sustainability. Most of the data for Cleveland came from the city and the

wider metropolitan area, which has a population of 2.1 million. Cleveland ranks 25th overall among the 27 cities in the Index, and performs best in the category of energy, where it ranks 14th. Because Cleveland, as well as the state of Ohio, has committed to renewable energy targets, prospects for its continued strong performance in this area are favorable. Cleveland has also introduced some innovative programs and policies to improve transportation and more generally address environmental performance. However, the city faces sizeable challenges in the areas of CO₂ emissions, land use, buildings and waste. Political will for environmental action is one encouraging aspect of the city's current planning strategy, and only the future will tell if it will succeed in leading to tangible improvements.

CO₂: 27th, 1.2 points

This category is one of Cleveland's weakest performances in the Index. Per capita CO₂ emissions

are 29.1 metric tons per person, compared with the Index average of 14.5 metric tons, while CO₂ emitted per \$1 million of GDP totals 721 metric tons, a dramatically higher figure than the Index average of 296. The area's three coal-fired power plants, as well as the region's economic orientation towards metal-related and other carbon-heavy manufacturing, are among the primary reasons behind Cleveland's large carbon footprint.

Green initiatives: Though it has not made a specific commitment to CO₂ reduction, the city has started to take action and is seeking to procure energy efficient LED streetlights and traffic lights from a local supplier. The municipal government hopes this initiative will reduce the city's carbon emissions by 25,000 tons each year. The city, along with local charitable foundations, runs the Cleveland Carbon Fund, which accepts donations from businesses and individuals, and then distributes grants for local projects that improve energy efficiency, water conservation and residential weatherization. One initial project will fund the installation of 10,000 compact fluorescent light bulbs in two Cleveland neighborhoods.

Energy: 14th, 68 points

Cleveland consumes the lowest level of electricity in the Index on a per capita basis, at an estimated 10 gigajoules annually, compared with the Index average 52 gigajoules. Electricity consumption per unit of GDP is also better than the Index average, at 247 gigajoules per \$1 million,

of power generated from renewable energy sources are expected to have a positive impact on the city's energy profile.

Green initiatives: Cleveland has adopted an energy portfolio standard requiring Cleveland Public Power, one of the city's utilities, to use energy sources that are more efficient, cleaner or renewable to supply 15% of electricity by 2015, 20% by 2020 and 25% by 2025. In 2010, through a partnership with the non-profit organization First Suburbs Development Council, the city legally demarcated and contributed \$100,000 to a new so-called special improvement district in the hopes of making energy efficient retrofits more affordable to residents. The initiative aims to increase resident-financed energy efficiency projects by providing low-cost financing to be repaid through tax assessments. This will, it is hoped, help residents cut utility costs while avoiding new debts. In late 2010 the Greater Cleveland Energy Alliance, a public-private partnership between the municipal government and ShoreBank Enterprise, a non-profit business development organization, received \$150,000 to develop an energy efficiency retrofit program for commercial and residential customers.

Land use: 27th, 28.1 points

Green space comprises only 6% of the city's area, compared with the Index average of 12%. Cleveland's population density, at 5,600 people per square mile, is also below the average of 8,100. Although Cleveland faces a sprawl challenge familiar to other cities in North America, municipal officials have had a measure of success in revitalizing the downtown area. Between 1990 and 2000 Cleveland's downtown population increased by one-third.

Green initiatives: Using federal Environmental Protection Agency funding, the city established a brownfield redevelopment program in 2005. The program's goals include identifying sites for re-use, helping developers and businesses determine costs associated with redevelopment, maintaining green space, and converting vacant properties to uses that can contribute taxes to city revenues. Entities eligible for financial incentives include public and non-profit organizations, and businesses and developers with existing projects in Cleveland. All parties that contributed to the sites' contamination are ineligible to receive funds. As of 2008 the city had used \$39 million in incentives, mostly low-interest loans and grants, to bring about \$440 million in investments, while creating nearly 4,000 jobs, according to one regional newspaper.

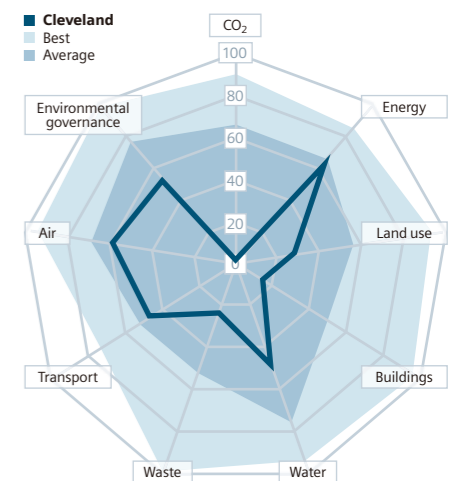
Buildings: 27th, 16.7 points

The city is placed in this rank because it has the lowest number of Leadership in Energy and Environmental Design (LEED)-certified buildings in the Index, and also lacks mandatory energy efficiency or auditing requirements. Cleveland's performance is no doubt affected by the fact that half of the city's housing units were built before World War II, a figure higher than in most other major cities in the US. However, though Cleveland faces real challenges in this area, the city's efforts to introduce green building standards (see "green initiatives" below) can be seen as an important starting point. Also, the fact that three Cleveland neighborhoods are trying to meet LEED neighborhood-development standards is a step forward.

Green initiatives: In 2007 the city introduced a green building standard. This requires projects receiving public funding or tax breaks to meet standards consistent with leading national green best practices such as the LEED silver certification. In addition, city officials have started conducting energy assessments of public facilities, such as water treatment plants, public utility buildings and City Hall, to identify opportunities to reduce carbon emissions and save money at the same time. The municipal government credits these efforts with over \$110,000 in annual savings in its water division alone. Finally, the city provides information on its website on how to reduce energy and conserve water in buildings.

Transport: 19th, 47.9 points

Cleveland has a relatively large light rail system, and a recent extension connected the downtown to University Circle, a cultural center on the east side of the city. Overall, the city's supply of public transport measures 0.2 miles per square mile, which is well below the Index





average of 1.1. As a consequence, only 6% of workers currently travel by public transportation, bicycle or foot, compared with the Index average of 13%. According to a city report, part of the problem stems from the fact that Cleveland's streets and bridges are more conducive to automobile traffic than to cyclists or pedestrians. Despite these challenges, Cleveland has initiated policies and programs aimed at improving area transit, like park-and-ride schemes and carpooling lanes. Cleveland has also set a goal to develop a 190-mile network of trails and bike routes. However, the fact that the state of Ohio is one of the lowest investing states in the US for public transportation means that the city will have to work that much harder to find funding sources to facilitate significant improvements in this area.

Green initiatives: The city has announced an overarching strategy to provide more transportation options that will promote economic development and quality of life. Within this strategy are commitments to developing mass transit, encouraging mixed-use development incorporating commercial and residential activities, and promoting non-motorized transport. However, city officials have not issued specific targets or initiated any major programs to achieve these goals. Using federal and municipal funding, the city has committed to undertaking a study on bus rapid transit, but the timeline is unclear. Cleveland spent over \$600,000 transforming part of a downtown parking garage into a station for bicycle parking, storage and repair, which is scheduled to open in 2011.

Water: 25th, 56.1 points

Water consumption in the city is not much higher than the Index average, at 165 gallons per person daily versus 155, but the 29% leakage rate in Cleveland's water distribution system is well above the Index average of 13%. Cleveland has

faced challenges in improving its water system, especially in preventing sewer overflows during heavy storms, which is a problem for many other North American cities with aging infrastructure. However, the regional sewer district plans a \$3 billion upgrade that will include building large underground holding tanks aimed at lessening the incidence of sewerage overflows.

Green initiatives: The city's water department announced plans in early 2011 to connect more than 425,000 water meters to homes and businesses. The project is expected to take three years to complete and to significantly reduce leaks and energy consumption, which have been persistent problems for the city.

Waste: 26th, 22.2 points

The city's recycling rate is only 9%, compared with the Index average of 26%. This figure was estimated by a city of Cleveland official, based on county-level waste figures. Improving waste management has been a challenge for the city, in part because it is administered at the county level. However, Cleveland's growing recycling program is a positive step (see "green initiatives" below).

Green initiatives: In late 2010 Cleveland rolled out a \$2.5 million curbside recycling program, which provided 150,000 households with special bins that are equipped with computer chips connected to the city's computer system. The system allows officials to monitor household recycling by weighing the bin. In addition, the city's water department recycles at least 50% of the construction and demolition waste generated from capital improvement projects, a practice that other departments are expected to adopt shortly. Also, the city wants to build a \$180 million waste-to-energy plant and the plans are currently being reviewed at state level.

Air: 20th, 60 points

Cleveland has higher than average nitrogen oxides levels, at 76 lb per person compared with the Index average of 66 lb, but its levels for sulfur dioxide and particulate matter are better than the Index averages. With many environmental challenges, air quality is not the city's most urgent priority, but implementing measures such as air quality targets could help Cleveland achieve a stronger performance in the future.

Green initiatives: In 2007 the city replaced 60 vehicles in the municipal fleet with diesel-electricity hybrid vehicles, and the city has an anti-idling policy for city vehicles and equipment, but the extent to which the policy is enforced is unclear.

Environmental governance: 25th, 56.7 points

Although Cleveland has not set environmental targets or committed to regular environmental reporting, the city has formulated a partial environmental strategy, set up a dedicated environmental authority, and initiated public awareness campaigns. In addition, Cleveland is assisted by the strong support of Mayor Frank Jackson, who in 2006 signed the US Mayors Climate Protection Agreement, acknowledging a commitment to try to reduce the city's carbon footprint.



Green initiatives: In 2005 Cleveland established an Office of Sustainability to help the city become more efficient, reduce consumption and waste generation, and use sustainability as an economic development tool. The department's website includes information about the

various municipal efforts in different areas. In addition, the city organized "Sustainable Cleveland 2019" summits in 2009 and 2010, three-day, 700-participant events wherein residents weighed in on their vision for long-term sustainability planning and voted on priority issues. The

third annual summit will take place in September 2011. Finally, Cleveland is one of only two US municipal signatories to the UN Global Compact (the other is Milwaukee), which includes three principles specifically related to improving the environment.

Quantitative indicators

Category	Indicator	Average	Cleveland	Year	Basis	Source	Comments
CO ₂	CO ₂ emissions per unit of GDP (metric tons/US\$m)	296.4	721.3	2002	MSA	Purdue University – The Vulcan Project; US Bureau of Economic Analysis	Using MSA GDP
	CO ₂ emissions per person (metric tons)	14.5	29.1	2002	MSA	Purdue University – The Vulcan Project; US Census Bureau	Using MSA population
Energy	Electricity consumption per unit of US\$ GDP (TJ/US\$m)	0.33	0.25	2008	Mixed	Energy Information Administration; US Bureau of Economic Analysis	State retail electricity sales scaled down to city level using population data; Indicator constructed using MSA GDP
	Electricity consumption per person (GJ)	52.2	10.3	2008	Mixed	Energy Information Administration; US Census Bureau	State retail electricity sales scaled down to city level using population data
Land use	Green spaces as % of total area (%)	11.9	6.4	2008	City	Trust for Public Land; US Census Bureau	Using area of city in 2000
	Population density (persons/miles ²)	8,106.8	5,602.2	2009	City	US Census Bureau	
Buildings	Number of LEED certified buildings (silver, gold or platinum) (buildings/100,000 persons)	6.4	0.0	2010	City	US Green Building Council; US Census Bureau	Using city population
Transport	Share of workers traveling by public transport, bicycle, or foot (%)	13.0	6.3	2009	MSA	US Census Bureau American Community Survey	
	Length of public transport (miles/miles ²)	1.1	0.2	2009	Metro-area	National Transit Database	Using service area square miles
	Annual vehicle revenue miles (miles/person)	24.4	16.7	2009	Metro-area	National Transit Database	Using service area population
	Maximum public transport vehicles available per square mile (vehicles/miles ²)	9.0	1.6	2009	Metro-area	National Transit Database	Using service area square miles
	Average commute time from residence to work (minutes)	28.9	24.4	2009	MSA	US Census Bureau American Community Survey	
Waste	Recycled municipal waste (%)	25.8	8.5	2007	County	Cuyahoga County (Ohio) Solid Waste Management District	Residential waste only; Data point is for county
Water	Total water consumption per person per day (gallons)	155.1	165.3	2005	MSA	USGS	Using USGS publicly supplied population
	Water leakages in water distribution system (%)	12.8	28.7	2003	City	EPA	
Air	Nitrogen oxides emissions per annum (pounds/person)	66	76	2005	County	EPA; US Census Bureau	Using county population
	Particulate matter (PM10) emissions per annum (pounds/person)	25	14	2005	County	EPA; US Census Bureau	Using county population
	Sulfur dioxide emissions per annum (pounds/person)	22	20	2005	County	EPA; US Census Bureau	Using county population