Philadelphia

US and Canada Green City Index

Background indicators

Total population [1]	1.6 million
Administrative area (miles^2) [1]	135
GDP per person (real) (US$) [2]	46,200
Temperature (24-hour average, annual) (°F) [1]	55
Goods employment (%) [2]	12
Services employment (%) [2]	88

Geographical basis: 1) City, 2) MSA

Philadelphia is the largest city in the state of Pennsylvania, with a population of 1.6 million. The metropolitan area, home to 6 million residents, flows into neighboring states New Jersey and Delaware, though city data are primarily used in the US and Canada Green City Index. Philadelphia, one of the oldest cities in the US and the home of the country's constitution. It hosts several important national monuments and attracts large numbers of tourists each year. The city has a broad-based economy that ranges from pharmaceuticals and financial services to shipping and manufacturing. Services account for about 88% of economic activity. Philadelphia's GDP per capita, at $46,200, places it among the mid-income cities in the Index.

Philadelphia ranks 13th overall in the Index. Its best rankings are in the categories of environmental governance, where it places fifth, and air quality, at sixth. These results are driven by the city's much lauded green action plan, strong public participation in environmental management, and low overall air pollution levels. Additionally, while it places seventh in land use, Philadelphia is first among middle-income cities in the land use category, a score driven by strong policies that are likely to positively influence the city's overall environmental performance in the coming years. Philadelphia's weakest ranking is in the water category, at 23rd, largely because it has one of the highest leakage rates in the Index.

CO_2: 12th, 78.4 points

Philadelphia's carbon emissions are slightly better than average both in terms of per capita emissions and per unit of GDP. With 11.3 metric tons of CO_2 emissions per person, the city emits less than the Index average of 14.5. With respect to economic output, Philadelphia emits 233 metric tons of CO_2 emissions per $1 million of GDP, again better than the overall average of 296 metric tons. For reasons of data availability and comparability, the CO_2 figures were taken from 2002 for all of the US cities in the Index, and according to city officials Philadelphia has in the meantime made progress reducing its emissions. Although a large percentage of Philadelphia's electricity is supplied by coal, the city's low overall electricity consumption (see "energy" section below) contributes to this better than average performance in carbon emissions. Still, city officials recognize room for improvement and have adopted an ambitious greenhouse gas reduction strategy (see "green initiatives" below) to reduce emissions by 20% by 2015, based on 1990 levels.

Green initiatives: In May 2009 the city introduced the Greenworks Philadelphia plan, which established its greenhouse gas emissions-reduction target. The city has been working to update an emissions inventory that will serve as a benchmarking tool for reduction goals. Officials are gathering information from local utility companies and calculating vehicle miles traveled to develop a citywide and regional greenhouse gas tracking and measurement system. The majority of Philadelphia's environmental programs fall under the umbrella of Greenworks and contribute to reducing the city's CO_2 emissions.

Energy: Tenth, 72.5 points

Better than average levels of electricity use boost Philadelphia's score in the energy category. The city consumes 28 gigajoules of electricity per person each year, versus the Index average of 52 gigajoules. Additionally, Philadelphia consumes just 154 gigajoules of electricity per $1 million of GDP, less than half the average of 332 gigajoules. When measured against other mid-income cities, Philadelphia has the best record for electricity consumption compared to economic output. Philadelphia's efforts at greening this consumption, however, are only just beginning. In 2009 the city set a goal to purchase and generate 20% of electricity from alternative energy sources, and in particular the city is planning to ramp up solar production (see "green initiatives" below). It has further plans for local geothermal and hydro production, but thus far these remain undeveloped.

Green initiatives: Philadelphia has plans for three large-scale solar installations, which together will provide enough electricity to power over 600 homes. By 2021 Philadelphia hopes to have solar generation capacity of over 57 megawatts, enough to power almost 9,000 homes.

Land use: Seventh, 67.7 points

This is one of Philadelphia's stronger categories. As one of the older cities in the Index, Philadelphia benefits from high population density that makes efficient use of its land – the city has 11,500 people per square mile compared with the Index average of 8,100. In terms of green space, Philadelphia is just above the average, with 13% of city territory classified as green space compared with the Index average of 12%. Philadelphia is working to improve this further (see "green initiatives" below), and has adopted policies to encourage tree planting and green-belt protection, including a series of greenways that connect parks and other green spaces throughout the Philadelphia metropolitan area.

Green initiatives: Green2015, launched by the city in 2010, aims to create new open space during ongoing neighborhood redevelopments and to make vacant lots green. In total, it plans to acquire and redevelop an additional 500 acres of green public space and to ultimately provide green space for the 202,000 residents who currently do not live within a ten-minute walk of a park. Additionally, in April 2010 the Department of Parks and Recreation launched Green Philly, Grow Philly with the goal of increasing tree coverage to 30% in all neighborhoods by 2025. As an immediate step, the city has revised its zoning code to allow public and private tree planting in additional areas, and performed a satellite assessment of the current urban tree canopy, with the goal of planting 300,000 trees by 2015.

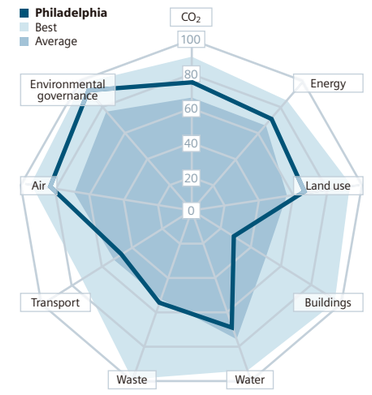
Buildings: 21st, 29.5 points

Philadelphia's placement in the buildings category is largely a reflection of slow policy implementation for energy efficiency standards in buildings. The city has implemented just one energy efficiency regulation – that new buildings use highly reflective roofing materials that meet or exceed Energy Star cool roof standards. City officials are in the process of drafting more comprehensive regulations, however. Although the city has implemented incentives for energy efficiency retrofits (see "green initiatives" below), it does not require energy efficiency audits. Furthermore, with just 2.5 Leadership in Energy and Environmental Design (LEED)-certified buildings per 100,000 people, Philadelphia ranks well below the Index average of 6.4.

Green initiatives: Philadelphia has set a goal to complete energy efficiency retrofits on 15% of its public housing by 2015. To highlight this goal, in 2010 the city held a neighborhood contest called the "RetroFIT Philly Coolest Block", a public-private partnership between the city and a private company, in which city blocks competed to see how much they could reduce energy expenses. Seventy-four blocks entered the contest to win cool roofs, air sealing and insulation upgrades. All told, these efforts aim to help Philadelphia meet its target of 100,000 houses retrofitted by 2015.

Transport: 21st, 47.2 points

Transport is another of Philadelphia's weaker



categories in the Index. The score is largely a reflection of a low number of public transport vehicles – the city has just three public vehicles per square mile compared with the Index average of nine. Similarly, Philadelphia has just 0.7 miles of public transit per square mile, versus the Index average of 1.1. The city places near the middle of the Index for the percentage of non-automobile commuters, at 14%, just above the average of 13%. Furthermore, Philadelphia's more ambitious projects to expand mass transport and implement car sharing and bicycle programs have yet to fully materialize, and remain instead future initiatives.

Green initiatives: In 2009 Philadelphia set a goal to reduce the number of miles residents drive annually by 10% by 2015 from a 2008 baseline of 6.4 million. The city government recently invested $191 million from the federal Recovery Act in improving subway tracks, and has secured funding for residential and commercial development along transit lines throughout the city that will encourage mass transit usage. In the next two to three years, Philadelphia plans to introduce new fare card technologies to make travel quicker and to expand its transit lines. In addition, to help reduce city government energy consumption, in 2009 Philadelphia created the largest municipal car sharing program in the US.

Water: 23rd, 70.4 points

This is Philadelphia's weakest placement in the Index, relative to other cities. While per capita water consumption in Philadelphia is better than average at 134 gallons per person per day, compared with the Index mean of 155 gallons, the city's score is hindered by an aging sewer system that has one of the highest percentages of leaks in the Index. At 27%, Philadelphia's leakage rate is more than double the Index average of 13%. The city has begun to implement new strategies for stormwater management to address not just large storms but the smaller, more frequent storms common in the area (see "green initiatives").

Green initiatives: Under the 2010 program "Green city, clean waters" Philadelphia has begun to strengthen its stormwater regulations and has approved stricter regulation for both new and existing drainage systems that will save over 1.3 billion gallons of water per year. In total, the city plans to invest $1.6 billion over the next 20 years to upgrade its stormwater infrastructure.

Waste: 13th, 57.6 points

Philadelphia's middling rank in this category comes despite recent efforts (see "green initiatives" below) to reduce waste and increase recycling. The city's recycling rate, as a result of these programs, is now 37%, well above the Index average of 26%. Meanwhile, Philadelphia has regulations in place regarding specific types of waste, such as hazardous or industrial, but admits that few residents or sanitation employees regularly follow the regulations. The city is weaker too, relative to other cities' efforts, in terms of taking steps to finding alternatives to landfills.

Green initiatives: In February 2010 the city government launched Philadelphia Recycling Rewards, an innovative partnership with the non-governmental organization RecycleBank. Under the program, residents receive points according to how much material they recycle, which they can redeem for discounts, gift cards, or charitable contributions at participating merchants and charities. Additionally, the city has added recycling facilities in commercial buildings, public spaces, at municipal events and at transit stations.

Air: Sixth, 82.9 points

One of Philadelphia's strongest categories, this performance is largely a reflection of the city's low levels of air pollution across the board, particularly for having the third lowest levels of particulate matter, at just 12 lb per person, compared with an Index average of 25. Additionally, Philadelphia emits 46 lb of nitrogen oxides per person, compared with an average of 66 lb, and 12 lb of sulfur dioxide, compared with the average of 22 lb. A combination of comprehensive air quality policies, including a wide-ranging program to retrofit diesel vehicles in Philadelphia's municipal fleet (see "green initiatives" below), and the city's largely service-based economy contribute to its good air quality.

Green initiatives: In 2009 Philadelphia began reducing the amount of high-polluting diesel used in the city. The main effort involved a retrofit of all city-owned diesel vehicles, including replacing existing filters and adding diesel oxidation catalyst equipment. As of 2010, 1,680 out of 2,400 diesel vehicles had been retrofitted. The city also replaced 70% of its police vehicles with more fuel-efficient vehicles, helping reduce overall gasoline consumption. Additionally, in 2009 the city government deployed 676 biodiesel vehicles, purchasing 906,497 gallons of biodiesel; Philadelphia hopes to expand the use of the fuel by 5% every year.

Environmental governance: Fifth, 94.4 points

Philadelphia ties with Houston and Los Angeles in the environmental governance category, with a strong score and its best placement in the Index. Led by its Greenworks initiative (see "green initiatives" below), Philadelphia has a comprehensive environmental strategy, including targets, reporting and baseline reviews, with support from the mayor. The city also has been active in involving citizens in its decisions, although its openness on environmental performance is more limited than leading cities such as New York and Washington DC.

Green initiatives: Greenworks, Philadelphia's sweeping environmental plan, encompasses the majority of the city's green programs – from energy reduction to park space to water management – and diverse stakeholders from throughout the city were involved in the plan's development. The Office of Sustainability spent a year researching municipal sustainability and publicly consulting with residents while it drafted the plan. The city also conducted surveys of energy and transportation use in the city, and held a number of community meetings and public hearings about proposed changes in advance of launching the plan. Finally, the city continues to review its progress on an annual basis and solicits public input on proposed changes.

Quantitative indicators

Category	Indicator	Average	Philadelphia	Year	Basis	Source	Comments
CO_2	CO_2 emissions per unit of GDP (metric tons/US$m)	296.4	**232.9**	2002	MSA	Purdue University – The Vulcan Project; US Bureau of Economic Analysis	Using MSA GDP
	CO_2 emissions per person (metric tons)	14.5	**11.3**	2002	MSA	Purdue University – The Vulcan Project; US Census Bureau	Using MSA population
Energy	Electricity consumption per unit of US$ GDP (TJ/US$m)	0.33	**0.15**	2006	City	City of Philadelphia; US Bureau of Economic Analysis	Using MSA GDP
	Electricity consumption per person (GJ)	52.2	**27.5**	2006	City	City of Philadelphia; US Census Bureau	Using city population
Land use	Green spaces as % of total area (%)	11.9	**12.6**	2008	City	Trust for Public Land; US Census Bureau	Using area of city in 2000
	Population density (persons/miles^2)	8,106.8	**11,461.5**	2009	City	US Census Bureau	
Buildings	Number of LEED certified buildings (silver, gold or platinum) (buildings/100,000 persons)	6.4	**2.5**	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	**13.7**	2009	MSA	US Census Bureau American Community Survey	
	Length of public transport (miles/miles^2)	1.1	**0.7**	2009	Metro-area	National Transit Database	Using service area square miles
	Annual vehicle revenue miles (miles/person)	24.4	**26.7**	2009	Metro-area	National Transit Database	Using service area population
	Maximum public transport vehicles available per square mile (vehicles/miles^2)	9.0	**3.2**	2009	Metro-area	National Transit Database	Using service area square miles
	Average commute time from residence to work (minutes)	28.9	**28.0**	2009	MSA	US Census Bureau American Community Survey	
Waste	Recycled municipal waste (%)	25.8	**37.4**	2009	City	City of Philadelphia	
Water	Total water consumption per person per day (gallons)	155.1	**134.4**	2005	MSA	USGS	Using USGS publicly supplied population
	Water leakages in water distribution system (%)	12.8	**26.5**	2009	City	Philadelphia Water Department	
Air	Nitrogen oxides emissions per annum (pounds/person)	66	**46**	2005	County	EPA; US Census Bureau	Using county population
	Particulate matter (PM10) emissions per annum (pounds/person)	25	**12**	2005	County	EPA; US Census Bureau	Using county population
	Sulfur dioxide emissions per annum (pounds/person)	22	**12**	2005	County	EPA; US Census Bureau	Using county population