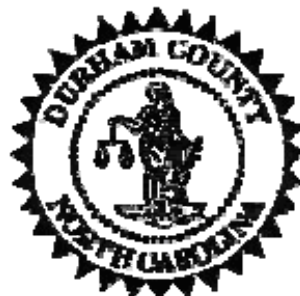




Environmental Sustainability Indicators: City and County of Durham, North Carolina

Produced by:
Healthy Environment Committee
Durham Environmental Affairs Board

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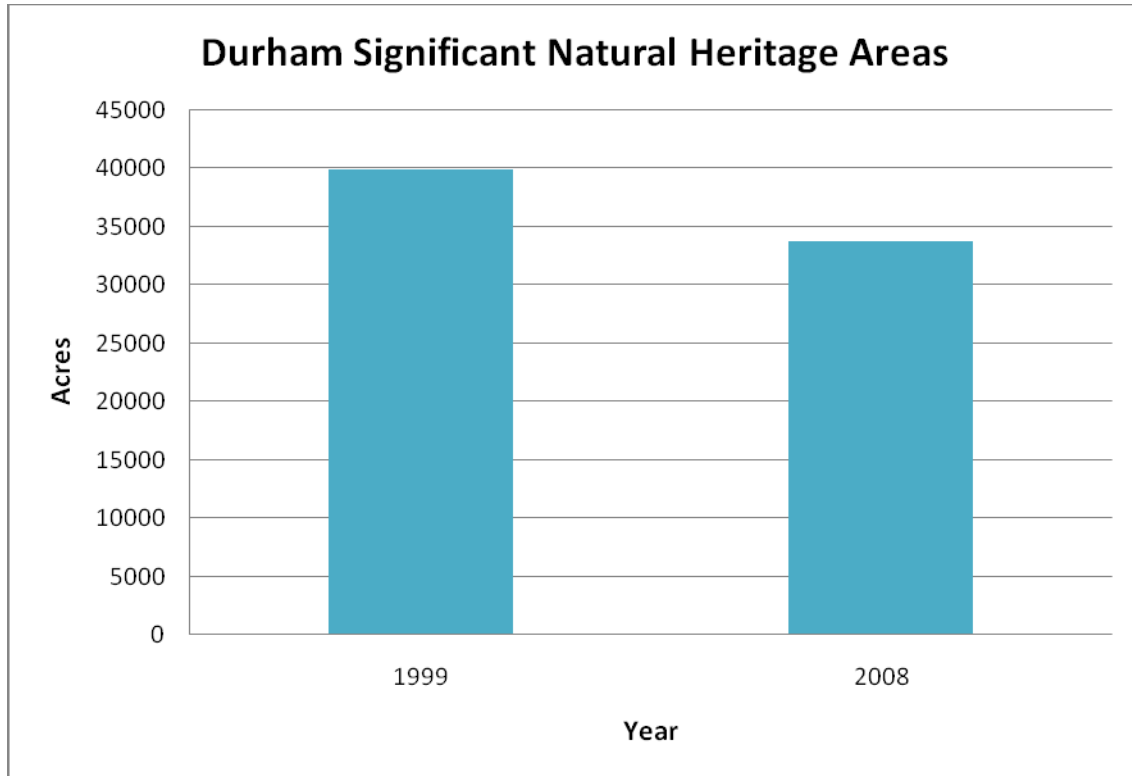


Contents

| | |
|--------------------------------------------|----|
| Ecology and Biodiversity Indicators | 3 |
| Significant Natural Heritage Areas | 3 |
| Transportation Indicators | 4 |
| Greenhouse Gas Emissions | 4 |
| Vehicle Miles Traveled | 5 |
| Air Quality Indicators | 7 |
| Ozone Concentration Levels | 7 |
| PM 2.5 concentration | 8 |
| Water Quality and Quantity Indicators..... | 9 |
| Water Quality Index..... | 9 |
| Water Use | 10 |
| Solid Waste Indicators | 11 |
| Municipal Solid Waste | 11 |
| Recycling | 12 |

Ecology Indicators

Significant Natural Heritage Areas



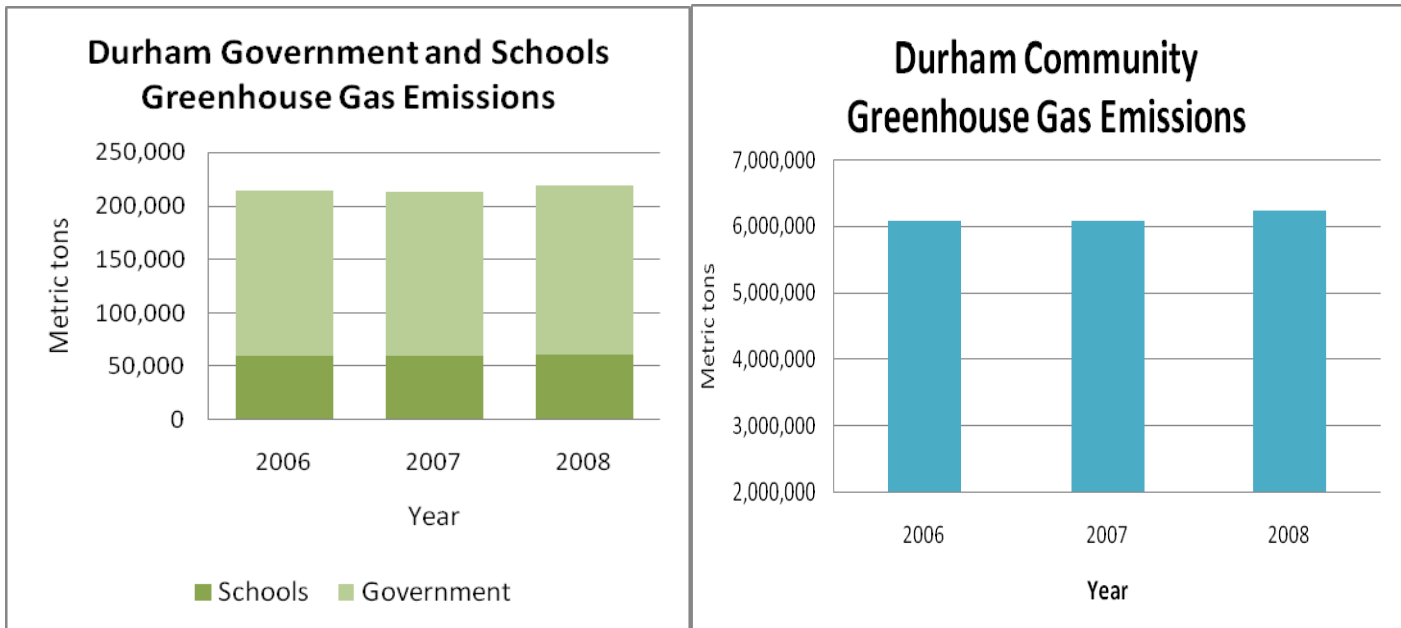
In general, significant natural heritage areas are sites that support rare species, high-quality natural communities, and have other important ecological features. The 1999 Durham County inventory identified 34 significant natural areas covering 39,963 acres.

As of 2008, the North Carolina Heritage Program has identified 47 significant natural heritage areas in Durham County. Of all the sites, 2 are considered of national importance, 12 are of state significance, 13 are of regional significance, and 20 are of county significance. The area of these sites total 33,735 acres, a drop in 6,228 acres from the 1999 inventory. During this time, some sites have been destroyed due to development, others have been merged together, and some new ones have been formed.

Source : Executive Summary, *Durham County Inventory of Important Natural Areas, Plants and Wildlife*

Transportation Indicators

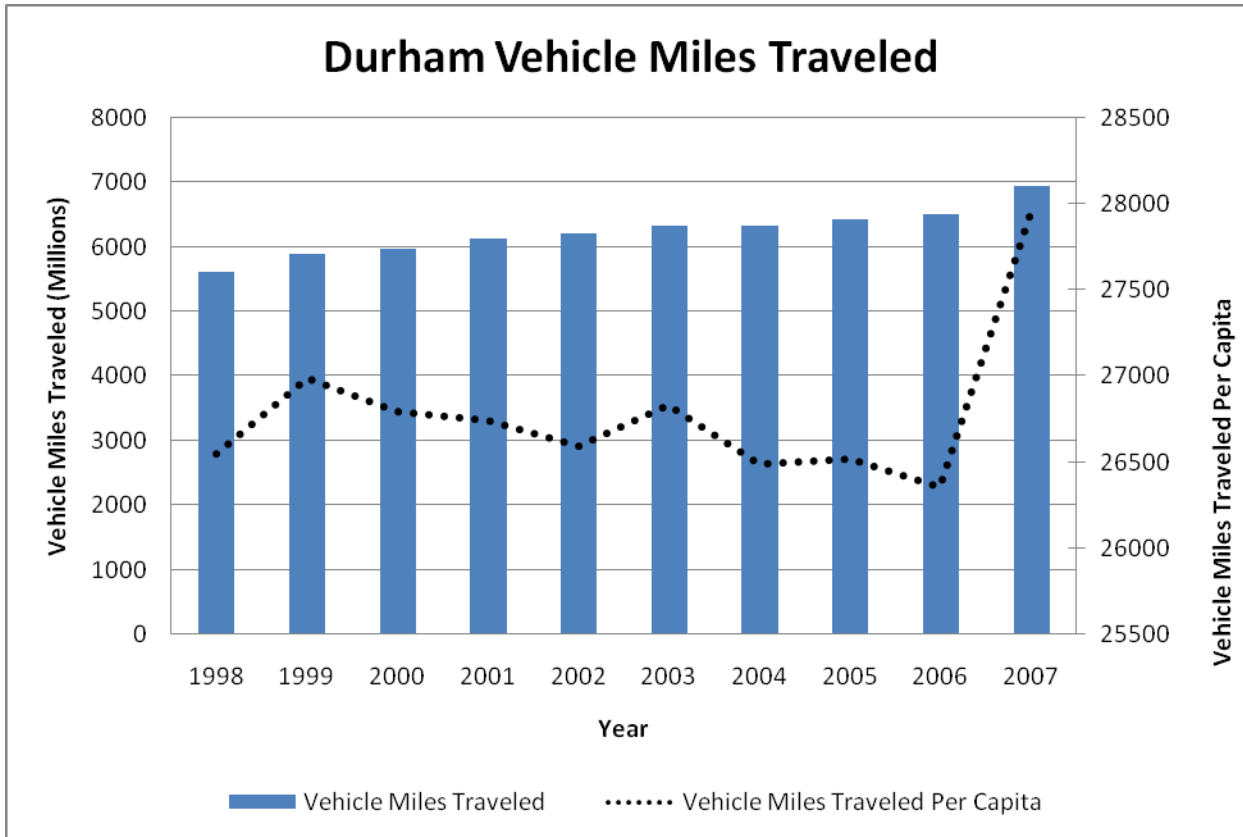
Greenhouse Gas Emissions



Greenhouse gases (GHG) are responsible for trapping heat in the atmosphere. Some greenhouse gases are released into the atmosphere through natural processes, but a higher percentage is emitted through human activity, including carbon dioxide, methane, nitrous oxide, and fluorinated gases. The City of Durham began its first greenhouse gas inventory and action plan in 1999. In 2007, the City of Durham and Durham County adopted an updated and more comprehensive inventory and action plan. This plan includes targets for a 50% government reduction and a 30% community reduction in GHG emissions from 2005 baseline levels by 2030. The City and County hired a Sustainability Manager in April 2008 to help implement the action plan. The Sustainability Manager is currently creating an update to the inventory for 2006-2008.

As of January 2009, some of the data for 2006, 2007, and 2008 are not available so the numbers presented in this graph are still preliminary. In addition, the more recent years' data are not entirely comparable to the 2005 baseline due to differences in methodology and the availability of some of the data sources. However, with the data that is available it is evident that greenhouse gases have increased slightly between 2006-2008. This is mostly due to increases in government fleet fuel use, streetlights, and water treatment electricity on the government side and vehicle miles travelled, residential electricity use, and commercial diesel fuel use on the community side.

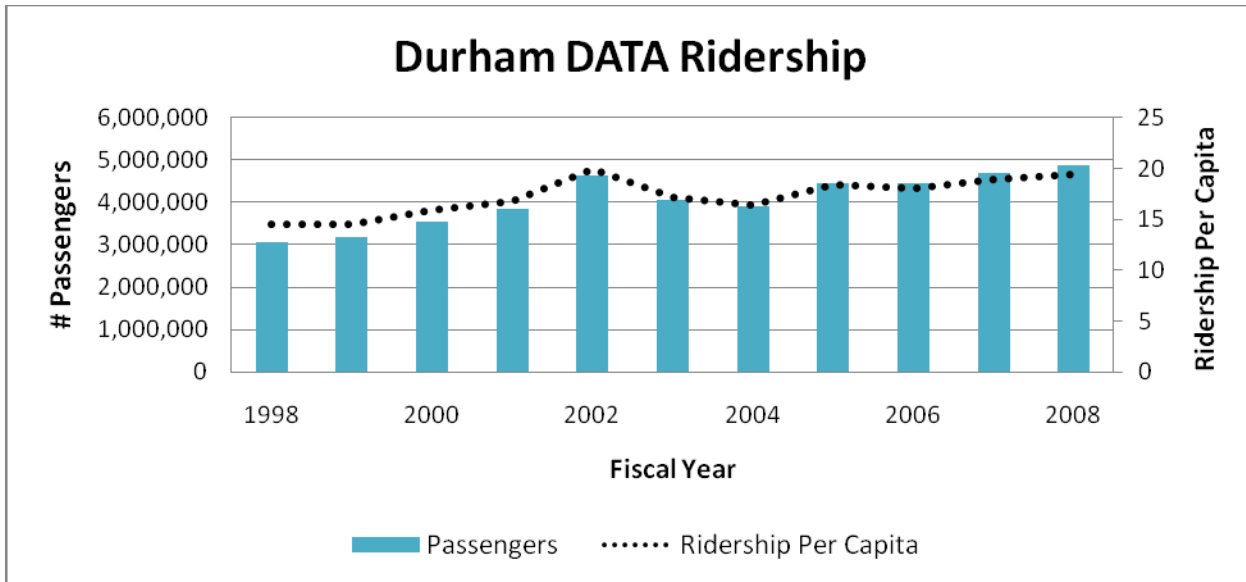
Vehicle Miles Traveled



Vehicle miles traveled (VMT) can have a significant impact on air pollution and greenhouse gas emissions. According to the US Department of Transportation, the amount of highway vehicle miles traveled is projected to increase 60% between 2005 and 2030. Durham County's VMT has grown consistently since 1997, reaching an all-time high of 6.9 billion vehicle miles traveled in 2007. On average, VMT per capita was falling gradually until 2007.

Source: City of Durham Department of Transportation

Indicator: DATA ridership

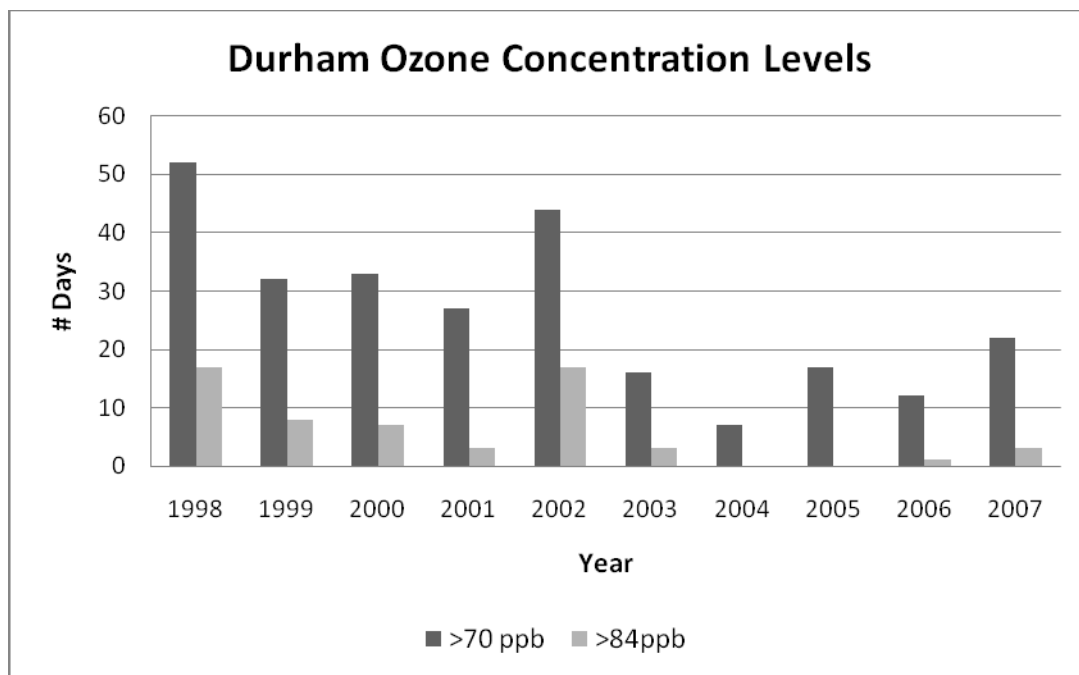


Public transportation is a valuable tool for decreasing the need for driving and mitigating traffic congestion. With fewer vehicles on the road, communities enjoy cleaner air and a higher quality of life. In FY 2006-2007, the City of Durham ranked third among all North Carolina cities in total bus ridership behind Charlotte and Chapel Hill. On average, the number of passengers and the per capita ridership continues to grow. Total ridership reached 4,872,936 in 2008, an all time record.

Source: Durham Area Transit Authority (DATA)

Air Quality Indicators

Ozone Concentration Levels



Ground-level ozone or “bad” ozone is formed when oxides of nitrogen (NO_x) and volatile organic compounds (VOC) from vehicle exhaust and industrial emissions react in the presence of sunlight. This type of ozone is the primary component of smog and forms in dangerous concentrations during hot weather. Breathing in ozone can induce health problems ranging from chest pain to throat irritation and can worsen cases of emphysema and asthma.

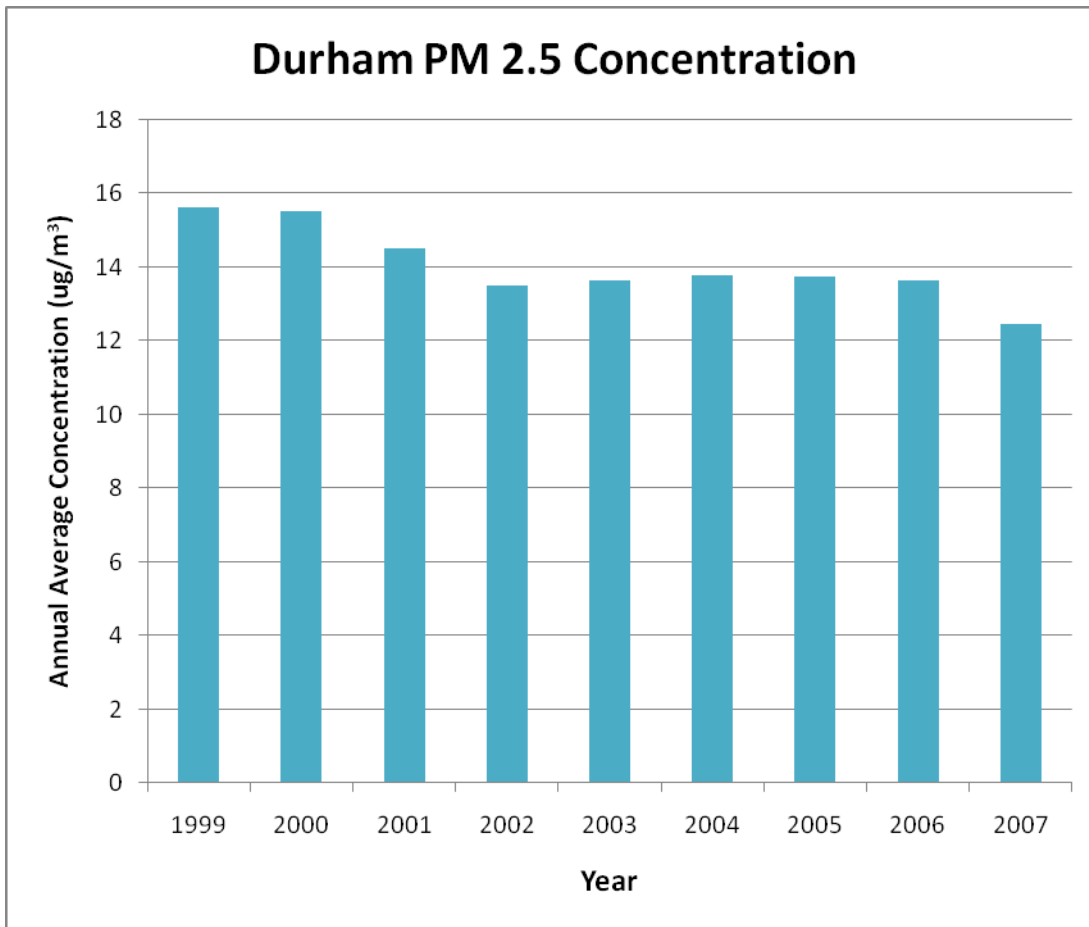
Under the EPA’s Air Quality Index (AQI), the new national standard for ground-level ozone concentration for an 8-hour day is 75 parts per billion (ppb). When levels exceed the standard, the air quality is considered unhealthy for sensitive groups.

For Durham County, two indicators are used to track changes in ozone levels: 1) number of days with an 8-hour maximum greater than 70 ppb and 2) number of days with an 8-hour maximum greater than 84 ppb. As some science suggests, there may be health effects at levels down to 70 ppb. Therefore, the first indicator represents a stricter estimate of healthy ozone levels relative to the national standard. The second indicator, which represents the national standard prior to March 2008, aims to highlight extreme ozone events.

From 1998 to 2004, there was a downward trend in the number of unhealthy ozone days for both indicators, with the exception of a peak in 2002. After 2004, the number of days with ozone levels greater than 70 ppb has increased. It is worth noting that weather plays a significant role in ozone level concentration. Ozone levels are exacerbated during years with higher than average temperatures.

Source: US EPA

PM 2.5 concentration



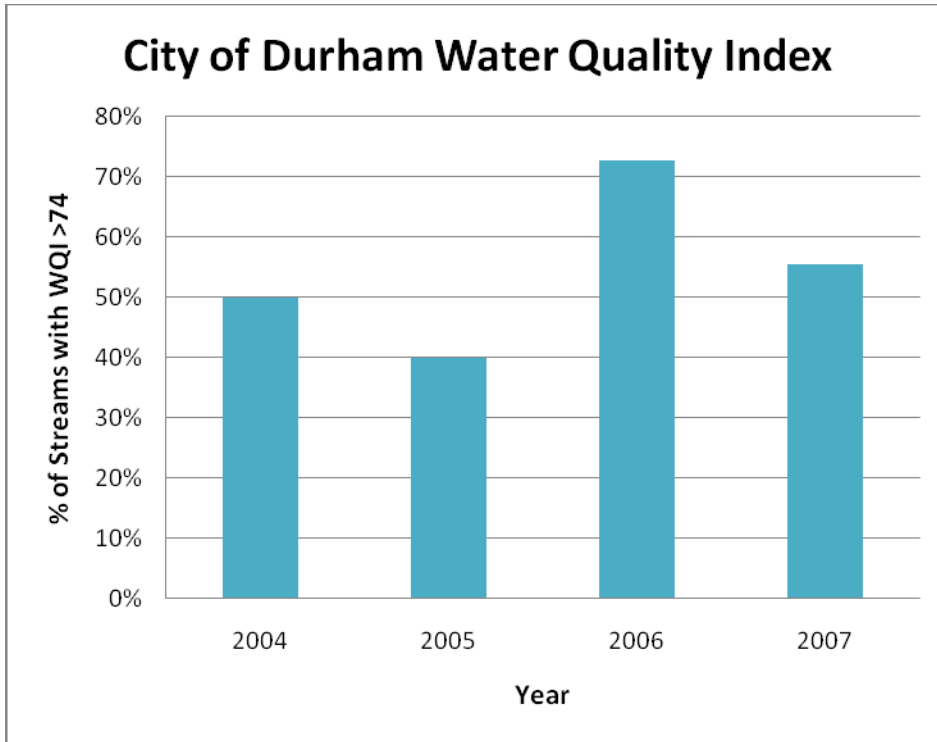
Another measure of air quality is the concentration of particulate matter in the air. Particulate matter 2.5 or PM 2.5 refers to particles or droplets in the air that measure 2.5 microns or less. These particles are most often emitted through motor vehicle exhaust and the burning of fuels, such as wood and coal. Particulates are a health concern as they can enter the respiratory tract causing throat and lung irritation and worsening medical conditions including asthma and heart disease.

US EPA's standard for PM 2.5 is 15 ug/m³, when measured over an annual basis. The levels of PM 2.5 have been below the standard since 2001. Although there was a slight increase in concentration between 2002 and 2004, the levels fell to all time low of 12.5 ug/m³ in 2007.

Source: US EPA

Water Quality and Quantity Indicators

Water Quality Index

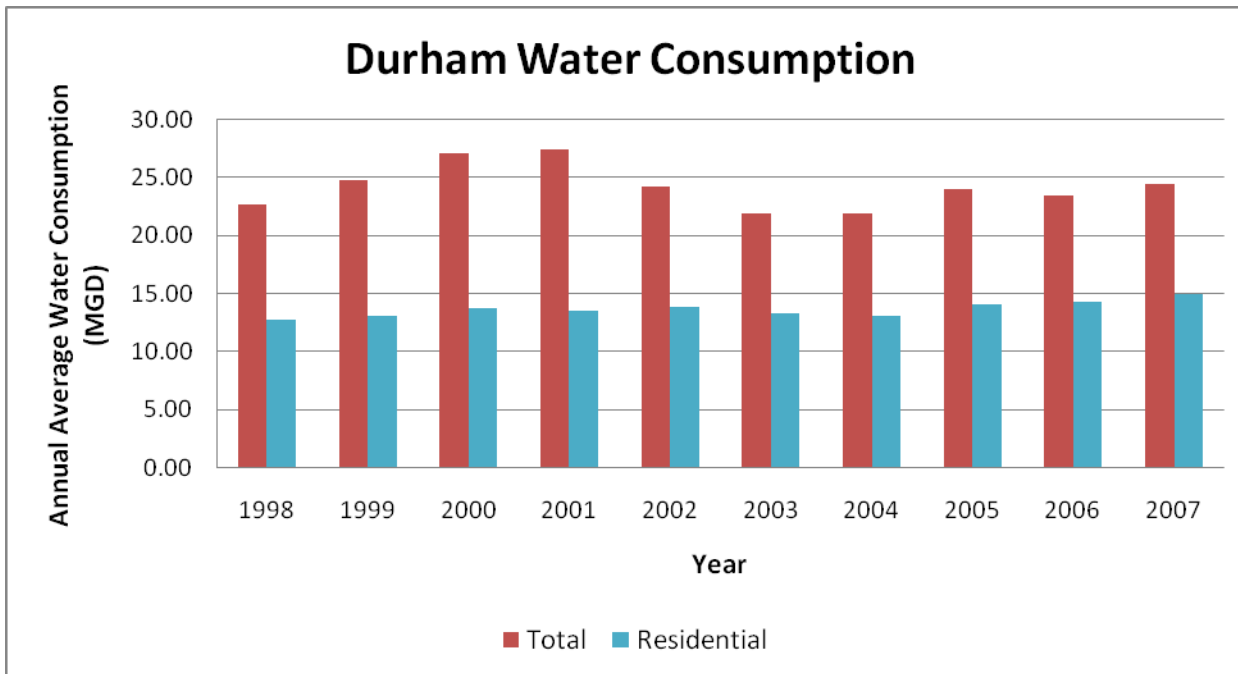


Durham’s Stormwater Services has developed a water quality index (WQI) to give an overall picture of the health of the city’s streams. The index is measured on a 0-100 scale and the score is based on chemical data (i.e. dissolved metals, nutrients, etc.) collected at 25 locations around the city. The City of Durham uses the WQI identify the streams with the most severe pollution issues, to decide what streams to target for cleanup, and to assess whether cleanup efforts are having an impact on stream health.

The indicator for healthy streams is the percentage of streams that have a water quality index of 75 or above. The Eno River has consistently received the highest grade out of the nine streams measured, scoring more than 85 since 2004. Conversely, Stirrup Iron Creek has scored the lowest and has yet to receive a WQI rating of 75. WQI can vary substantially based on annual rainfall patterns.

Source: City of Durham Stormwater Services

Water Use



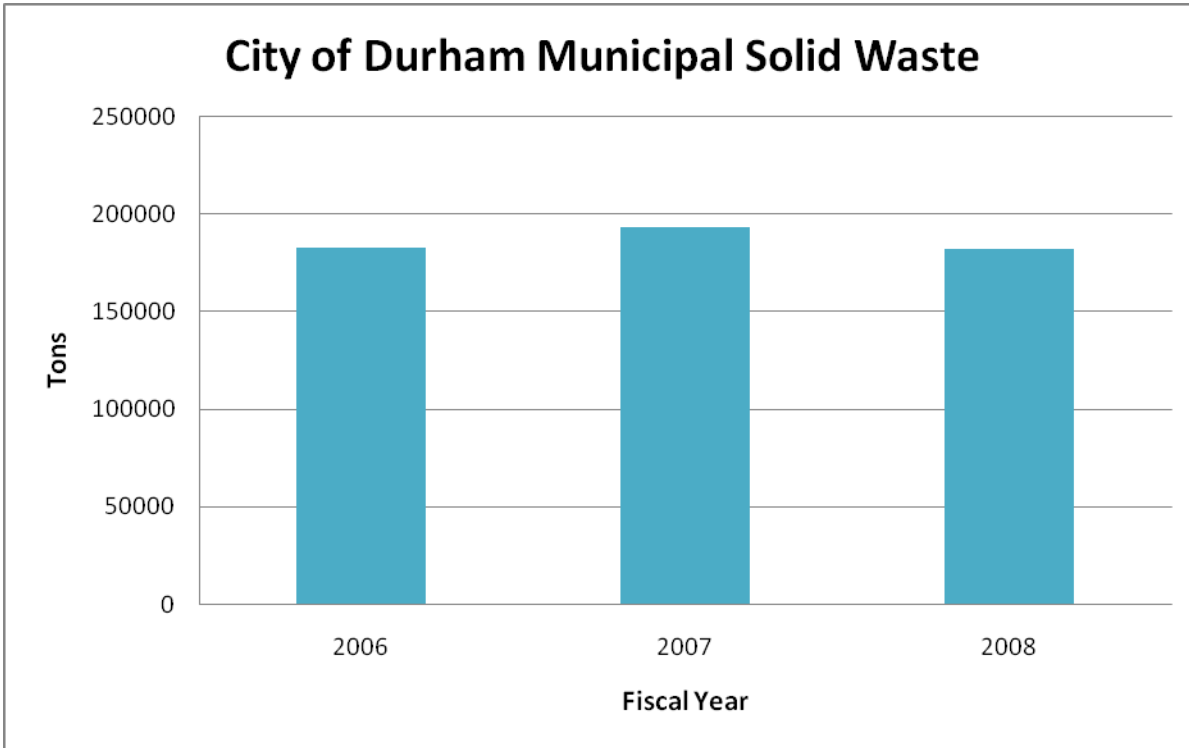
Besides providing the citizens with safe drinking water, Durham's Department of Water Management is committed to protecting the environment through infrastructure maintenance and water conservation. The department tracks annual water sold across Durham County. The data does not contain water used in private wells.

Annual average total water sold, measured in millions of gallons per day (MGD), measures the average annual volume of water consumed by residents and commercial, industry and institution facilities combined. This number has fluctuated widely between 1998 and 2007. Focusing on annual average residential water sold, the volume has increased gradually by 3.4 MGD from 1996 to 2007.

Source: City of Durham Department of Water Management

Solid Waste Indicators

Municipal Solid Waste

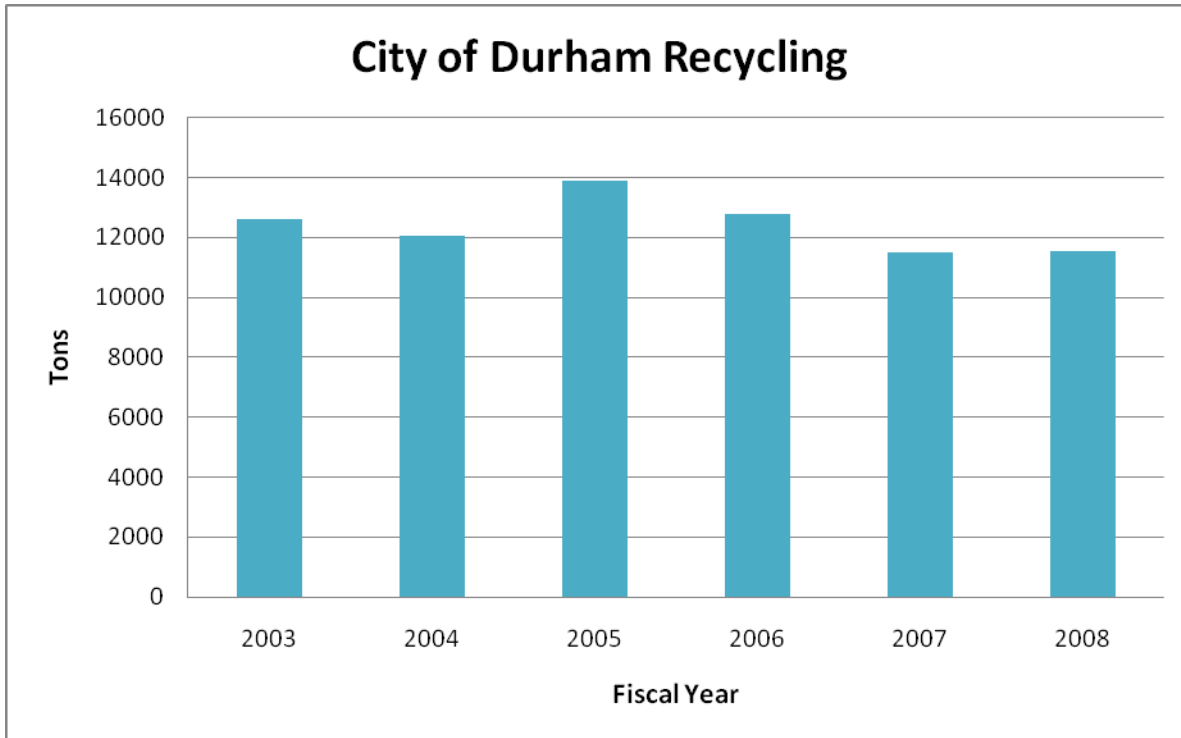


Every day, the citizens and businesses of Durham generate solid waste that must be disposed of in an environmentally sound and safe way. Decreasing the amount of waste produced in the city would minimize the environmental impacts and costs to dispose of the solid waste. Currently, the city does not have an active landfill and currently ships all solid waste out of state to Virginia.

The City of Durham municipal solid waste total represents the tons of garbage that pass through the transfer station on Club Boulevard. This garbage comes from many city sources including residential, commercial and institutional settings, but does not account for all the garbage generated in the city or county. In the last three years, the total amount of waste and waste generated per capita at the transfer station has been variable.

Source: City of Durham Solid Waste Management Department

Recycling



Recycling reduces the amount of solid waste sent to landfills and can capture and reuse materials at a fraction of the energy needed to produce new materials. The City of Durham recycles glass bottles and jars, aluminum and steel cans, newspaper, corrugated cardboard and several other items. Besides curbside recycling, Durham also has a number of drop-off centers.

The graph shows the tonnage of curbside recycling, but also includes data from drop-off centers and cardboard from some commercial locations. Private recycling arrangements at apartments, townhomes, and businesses are not captured in the data. On average, 12,407 tons of materials are recycled every year. The total amount of material recycled has dropped since FY 2003 and reached a low in FY 2007 and the per capita recycling rate has decreased by 10 pounds from 2003 to 2008.

Source: City of Durham Solid Waste Management Department