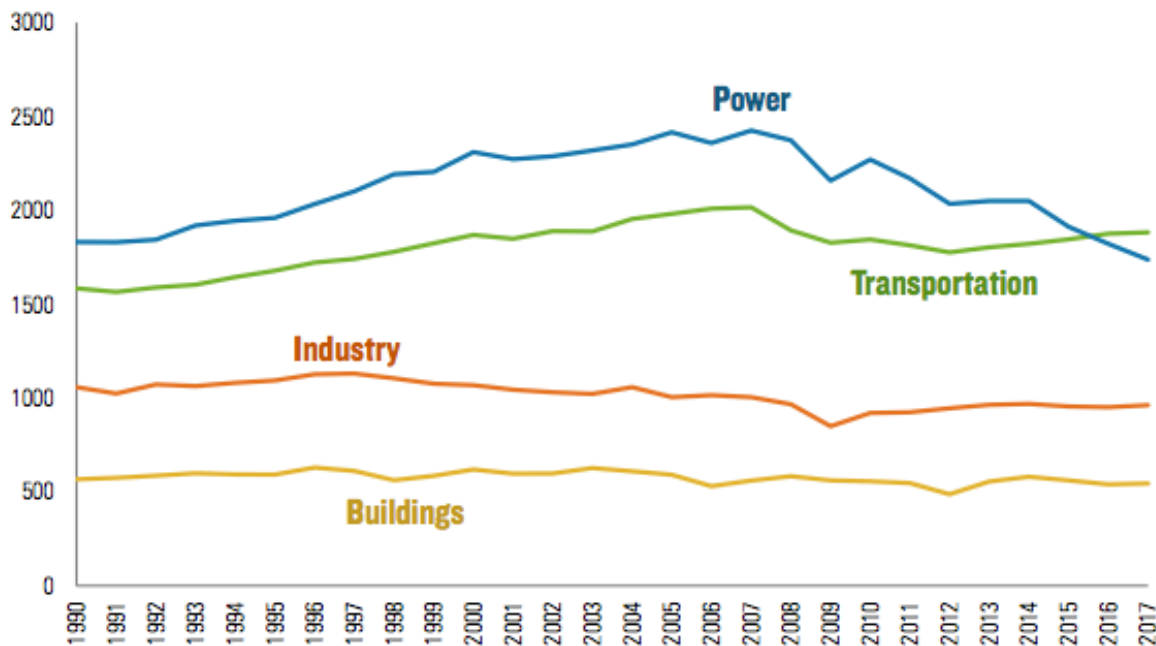


## GHG sources and the interconnection issues of problem and solutions (note: not exhaustive)

**Figure 4: Energy-related CO<sub>2</sub> emissions by sector**  
Million metric tons



Source: EIA, GenScape, OPIS and Rhodium Group estimates

## **TRANSPORTATION**

*How we get around, and where we live, work and play*

### • **Related to:**

- Health - physical and mental
- Land use/development - because sprawl increases vehicle miles travelled (VMT)
- Housing and housing affordability (location efficiency where people don't need to own a car to get to a job)
- Equity of access (do you have to own a car to serve daily needs, etc.)
- Stormwater management and flooding
- Resilience - what happens if gasoline is unavailable for a period of time? Do people have access to needs?

- **Vehicle-focused solutions** - electric vehicles (EVs), rail/trams etc.; improved fuel efficiency standards and clean fuel standards
- **Land use focused solutions** - support programs making walking, biking safer/easier; institute good transit systems, and; design/retrofit cities for people rather than cars, to decrease VMT through compact development around transit nodes (where you catch a bus), oppose expansion of highways and sprawling development

- **CoBenefits of actions**

- People who walk, bike and transit are healthier/thinner
- People are happier with easier/shorter commutes
- People can live with fewer cars/no car (cars cost around \$7,000/year to own and operate)
- Communities that are very walkable have more vibrant local economies
- Resilience - compact areas have less impervious surface, and so less stormwater/flooding problems and less urban heat island effect (which affects energy demand, ozone production, comfort)
- Can reserve more land for green space/ecosystem goods and services
- Equity - communities connected by transit are better for the young, the elderly and those unwilling or unable to drive

- **Actions for Citizens:**

- Walk, bike and take transit to lower your individual carbon footprint
- Offset your fossil-fueled trips (especially air trips) by contributing to renewable or energy efficiency programs like Native Energy or PV in Puerto Rico
- Advocate at the state and local levels for more spending on transit, bike and pedestrian modes of travel
- Oppose highway expansions that will facilitate sprawl
- Support state and local interconnected transit projects
- Support local land use policies and codes that will keep growth more compact
- Support bike/ped infrastructure that will make walking and biking safer, easier and connected to transit

## **ENERGY SUPPLY**

*Where the power in our homes, offices, hospitals, schools, etc. comes from*

- **Related to:**

- Water use (uses more water to provide electricity to a home than people in the home use for flushing, washing, etc.)
- Conventional air pollution, water pollution, and waste like coal ash and radioactive waste
- Health - Asthma, COPD, Lung Cancer
- Resilience - what happens locally to people/business if power goes out

- **Supply-side solutions** - renewable energy (RE)

- **Demand-side solutions** - energy efficiency (EE) (building retrofits), energy efficient appliances, demand management (DM) to minimize peak use (which drives building expensive new plants)

- **CoBenefits of actions**

- Less conventional air pollution and other pollution
- Less water use (significant drought issues)

- Savings on power bills
- Improve public health

- **Actions for citizens:**

- Install more efficient appliances in our homes
- Advocate at State and local levels for programs for increasing energy efficiency (especially for low income and rental housing) and installation of renewables
- Advocate at the state level for utility commission members who will work towards what is best for North Carolinians, not the utilities (verify need for increased capacity and don't give away rate increases or allow new plants if RE/EE/DM options can address the needs)
- Support State environmental regulation/enforcement of conventional pollution and adequate budgets for state departments
- Empower individuals or organizations to make buildings more energy efficient or install renewables (e.g. Solarize Carrboro program or local energy efficiency programs funded by the ARA during the Obama administration)

## **AGRICULTURE**

- **Related to**

- Off road vehicle emissions of farm equipment (with low emission controls)
- Transportation (food often trucked across country or flown/shipped internationally)
- Industry (food processing, packaging manufacturing, etc.)
- Waste management:
  - packaging is a huge fraction of waste produced, all of which was mined/harvested/transported/fabricated/transported again and then thrown away after one use (being transported again) — think of the packaging for single serving foods, or look at a grocery aisle and think about all the packaging
  - we waste about 1/2 the food grown (and so also all the fuel, electricity and packaging that went into the food system chain)
  - food waste decomposition produces methane, which is a more potent GHG than CO<sub>2</sub>)

- **Diet side solutions** - Choose a vegetarian or partially-vegetarian diet; localize food systems, waste less food (there is a difference between wasted food (like ugly fruit that people don't buy) vs food waste (like peels and bones));

- **Production-side solutions** - convert waste to energy, energy efficient food production, composting waste, compostable packaging

- **CoBenefits of action:**

- Local food economies and restaurants
- Opportunities for food related industrial ecosystems (using waste products to produce other products, e.g. waste cooking oil turned into biodiesel)

- **Actions for citizens:**

- Support your local farmers
- Eat less meat
- Waste less food (buy what you will use, use what you buy, take home restaurant leftovers)
- Compost
- Support local agriculture through farmers markets and community-supported agriculture programs (CSAs)
- Advocate for/support programs that find wasted food and make it available to food banks or homeless shelter kitchens
- Encourage schools and businesses to use less plastics and packaging

## **Waste management**

- **Related to:**

- food
- transportation
- industry

- **High tech solutions** - waste to energy production

- **Low tech solutions** - recycling, avoiding disposables, bottle bills

- **CoBenefits of Action:**

- Less plastic in the ocean
- Lower waste disposal costs
- Less land needed for landfills
- Less pollution from garbage trucks

- **Actions for citizens:**

- Individual actions to minimize packaging, food waste, single use plastics, buy and use reusable items like cloth napkins, cleaning rags, etc.
- Advocate for local composting programs
- Advocate locally for actions like plastic bag bans
- Advocate state for actions like bottle bills

## **OVERALL:**

- Be informed by facts/evidence - not assumptions or “it seems like...” arguments
  - climate issues are complicated and sometimes counterintuitive
- Vote and campaign for people who will act on climate change
- Be an active, vocal citizen and advocate - call, postcards, letters to the editor
- Attend lobby days on climate issues
- Lower your personal carbon footprint with the actions suggested above

- (most impactful are eating a more vegetarian diet, be more efficient in energy use, and lower your personal VMT and air travel)