

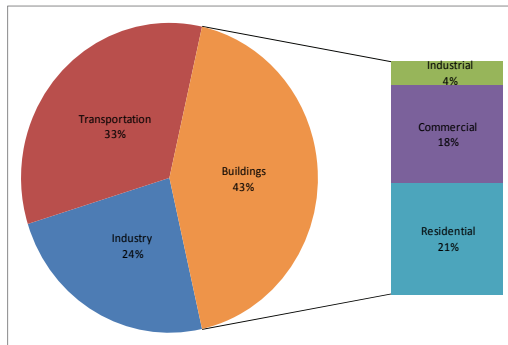


## Transportation and Greenhouse Gas Emissions: Measurement, Causation and Mitigation

### Center for Transportation Analysis (CTA) Research Areas

- Aviation Safety
- Air Traffic Management Analysis
- Data, Statistical Analysis
- Geo-Spatial Information Tools
- Defense Transportation
- Energy Policy Analysis
- Environmental Policy Analysis
- Highway Safety
- Intelligent Transportation Systems
- Logistics Management
- Supply Chain Management
- Modeling and Simulation
- Transportation Operations
- Planning and Systems Analysis
- Transportation Security

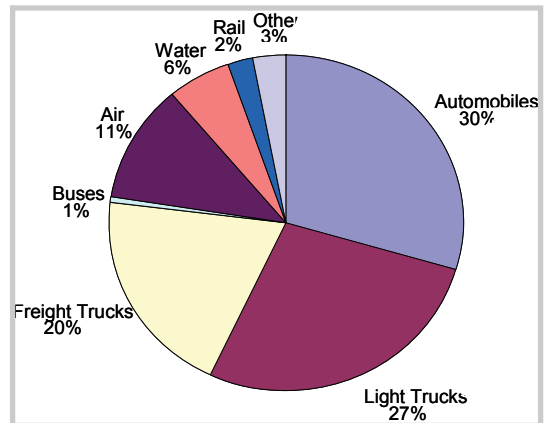
Nationally, the transportation sector is believed to be responsible for 28.4% of our greenhouse gas emissions (see figure), including 33% of the carbon dioxide we produce. As such it is a leading candidate for greenhouse gas ((GHG) (CO<sub>2</sub>, NH<sub>4</sub>, HFCs, CFCs, N<sub>2</sub>O, SF<sub>6</sub>), reductions.



U.S. CO<sub>2</sub> emissions sources.

The CTA is in a unique position to develop such estimates of the transportation sector's contribution to GHG emissions. It can do so by combining (1) the many national passenger and freight flow databases CTA staff regularly prepare for federal government with (2) the latest estimates of GHG emission rates for transportation activities, and by (3) using our expertise in supply chain analysis to capture complete cradle-to-grave GHG emissions, including both the upstream and downstream processes associated with

alternative vehicle fuel infrastructure supply technologies, in addition to the end use or "tailpipe" emissions that are directly correlated with vehicle miles of travel. As carbon trading legislation comes into force jurisdictions across the country will need to compute their own *carbon footprints*, with trading of carbon credits further increasing the demand for a well designed *and mutually acceptable* set of accounting practices.



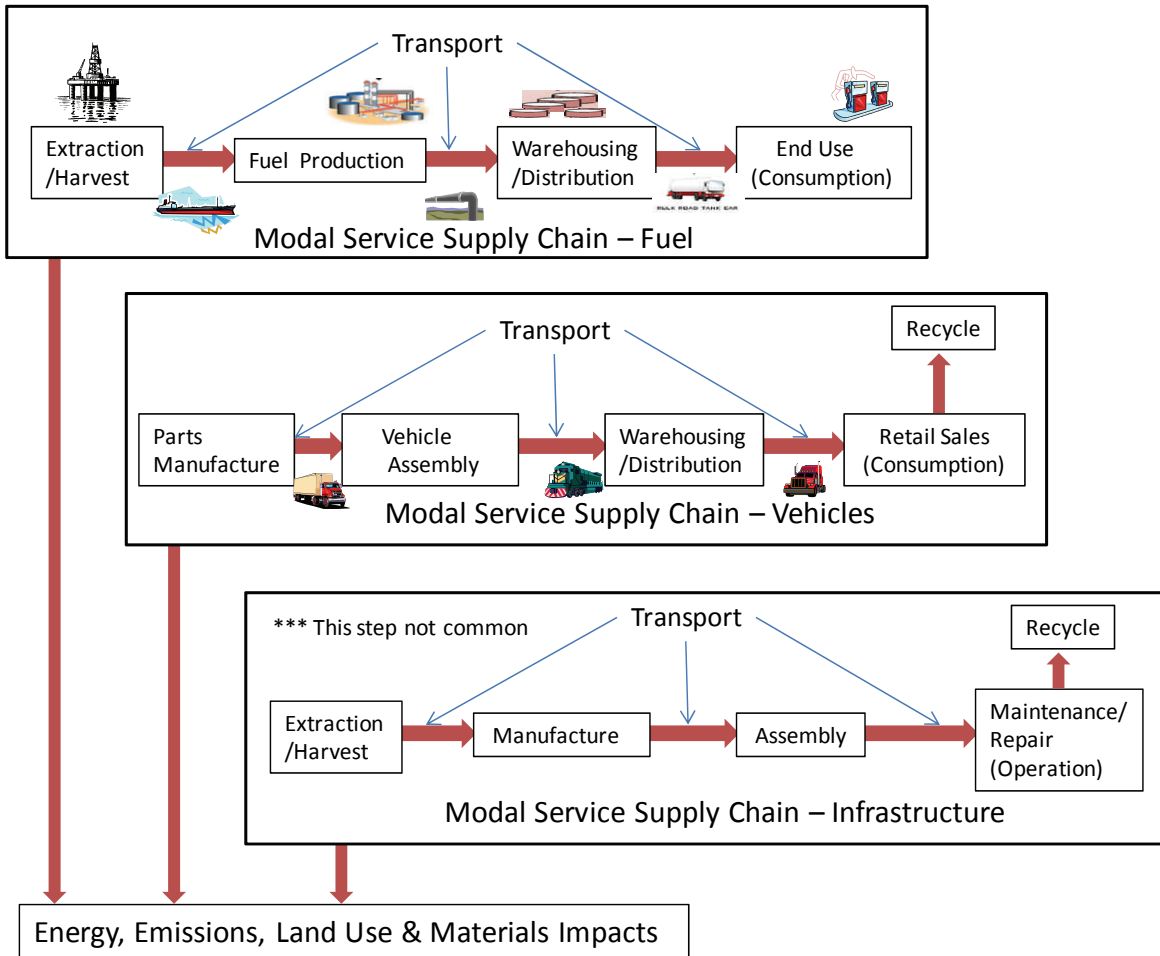
U.S. CO<sub>2</sub> transportation emissions sources by mode.

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Once consistent carbon accounting has been achieved it is possible to simulate alternative solution proposals, including the adoption of more efficient vehicle technologies, the use of alternative fuels, and the implementation of policies to encourage shifts to more energy

efficient modes of travel and reductions in vehicular travel demand. CTA planning and policy staff can work with research sponsors to place such comparisons squarely within policy relevant contexts.



Life cycle analysis of transportation alternatives.

**For more information regarding this research contact Dr. Frank Southworth (Southworthf@ornl.gov, 404-894-0171).**