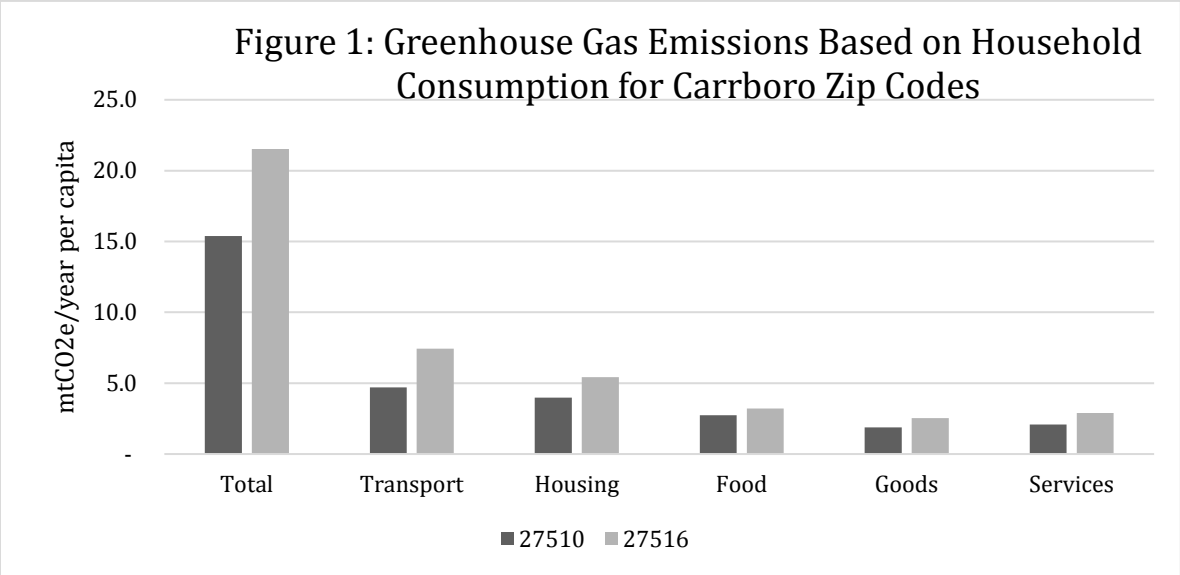
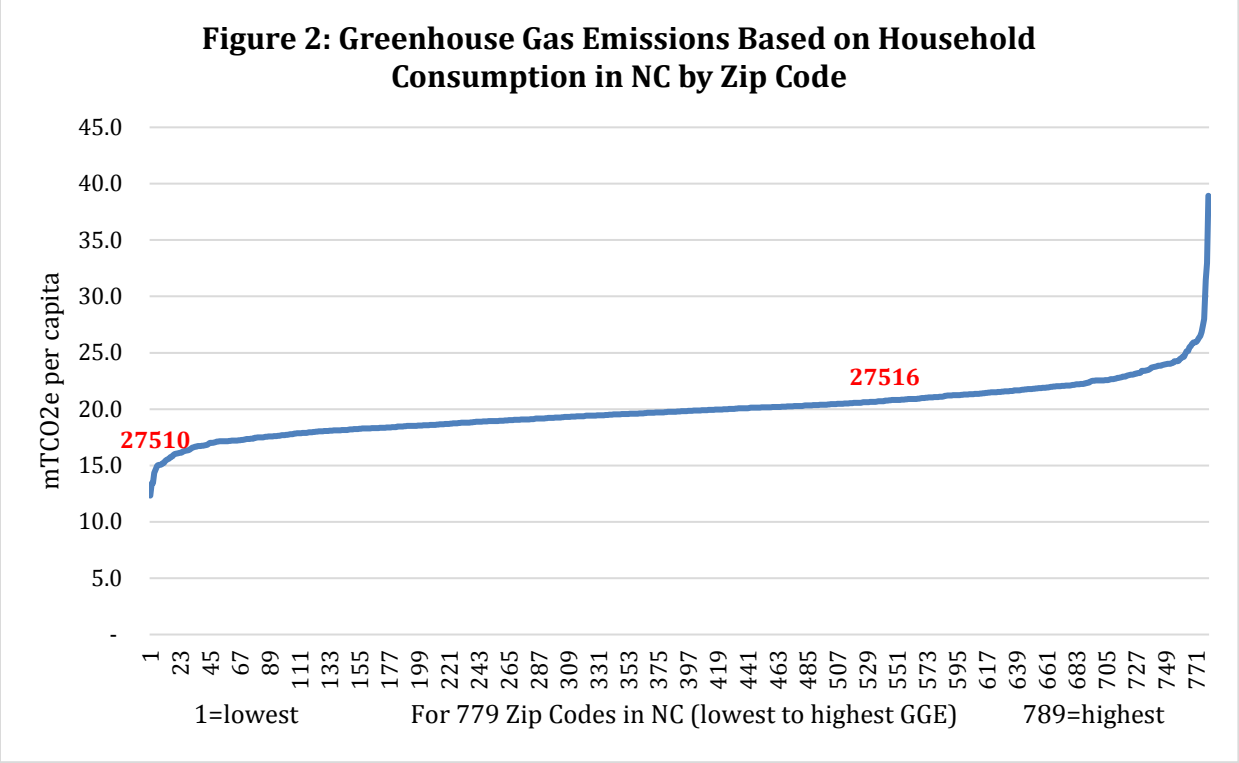
Emissions Estimates Based on Household Consumption

Researchers at UC-Berkeley have developed emissions estimates for the entire U.S., using a different method than in the community inventory that accounts for the entire "lifecycle" ("cradle to grave") of activities that households pursue that lead to emissions.[1] These estimates are shown below for Carrboro for five different sectors associated with individual households: transportation, dwellings, food, goods, and services, by zip code (Figures 1 and 2; the emissions shown are for the entire zip code areas across jurisdictional boundaries).



[1] Christopher M. Jones and Daniel M. Kammen, Spatial Distribution of U.S. Household Carbon Footprints Reveals Suburbanization Undermines Greenhouse Gas Benefits of Urban Population Density. Environ. Sci. Technol., 2013, dx.doi.org/10.1021/es4034364. Sponsored by UC-Berkeley Renewable and Appropriate Energy Laboratory, California Air Resources Board, National Science Foundation. Online calculator and maps available at http://coolclimate.berkeley.edu/calculator



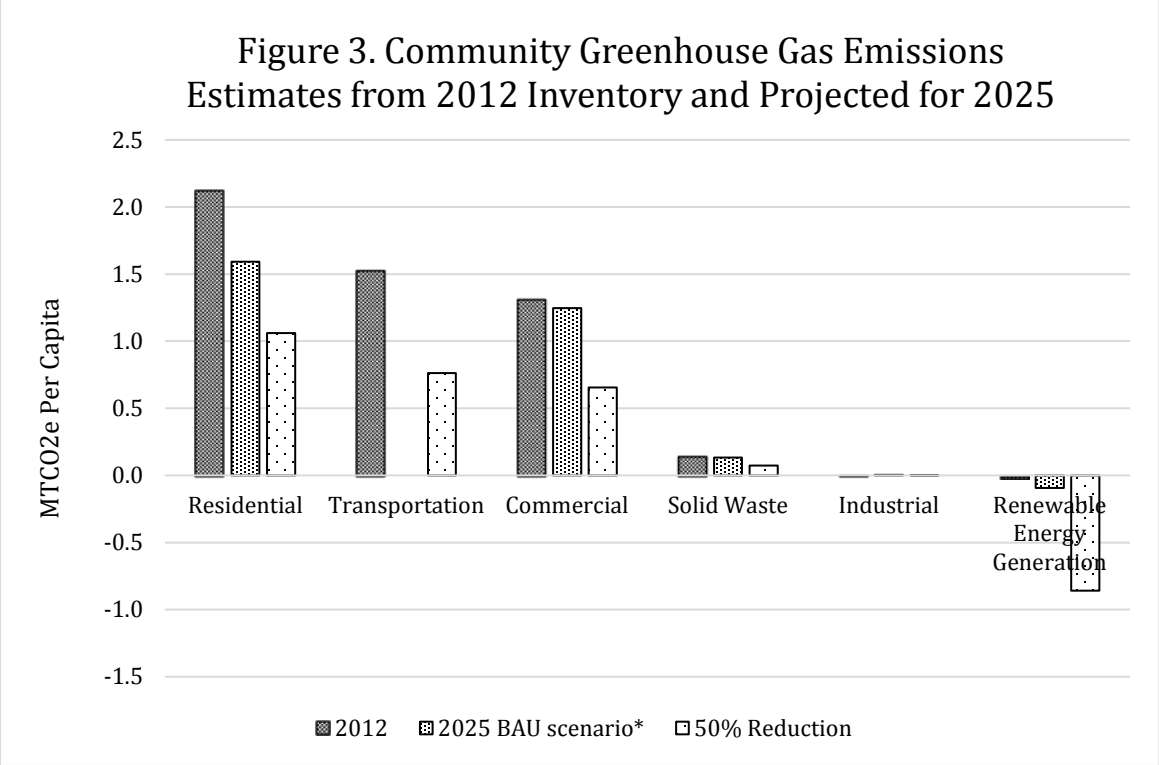
A few points are worth emphasizing from this work:

1) The total emissions per capita relative to the community based methodology results in about 3 times higher estimates. Conceptually, this is a function of geographically limiting community based emissions estimates to activities within the municipal limits and to direct emissions and a limited portion of the indirect emissions. For example, the increase in transportation emissions is mostly due to the increase in vehicle miles travelled to account for trips outside of Carrboro. In addition, the food, goods, and services emissions are not accounted for in the community based estimates.

2) There is a notable difference between emissions estimates for the 27510 and 27516 zip codes. The greater emissions in 27516 is due to differences between contributing factors such as vehicle fuel use and economic indicators (e.g., property value, income).

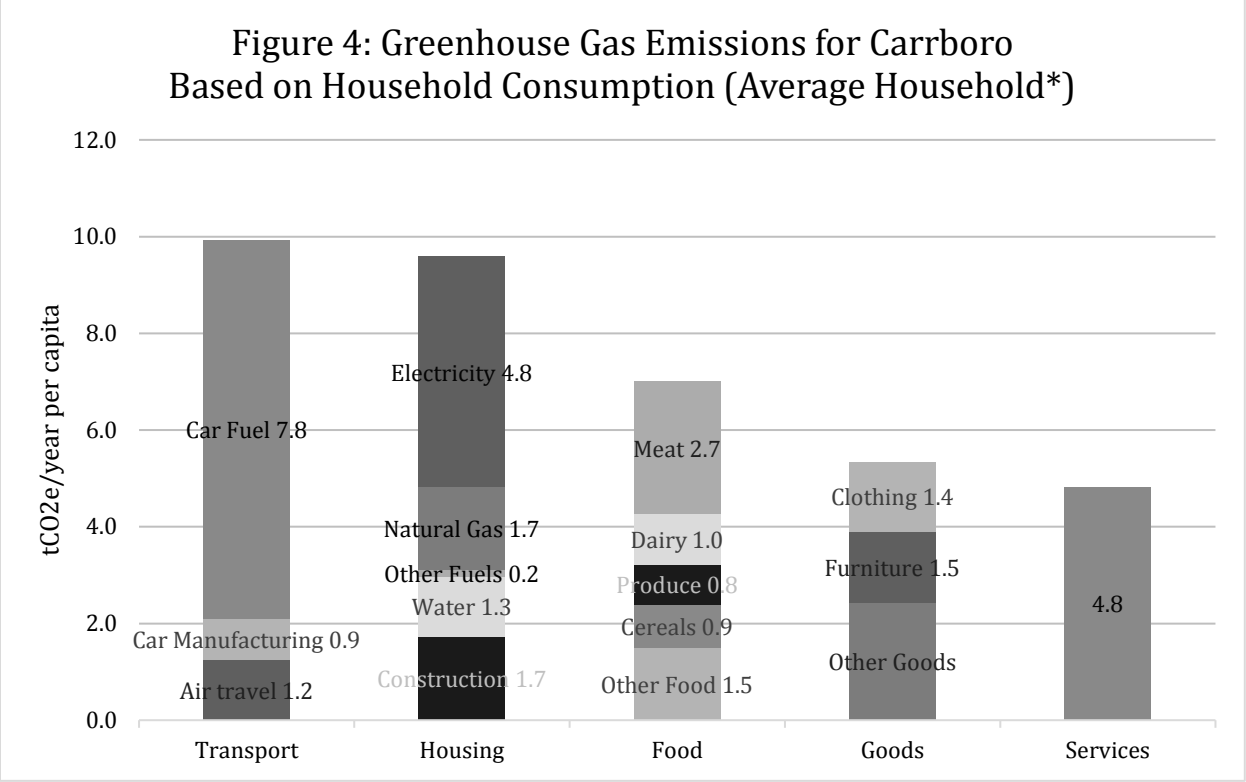
Summarizing Potential Reductions

Current and potential emissions are summarized in Figures 3 and 4. Figure 3 presents emissions for the 2012 baseline from the community inventory along with future "business as usual" and 50% reduction scenarios. A "business as usual" transportation estimate is not included given the difficulty in completing this estimate with currently available data. Figure 3 graphically depicts the magnitude of changes expected and needed to approach the CCAP reduction goal for the different sectors and within the context provided by the 2012 inventory data and methodology.



* "business as usual" inferring no major changes to status quo.

Figure 4 is based on the household consumption approach from UC-Berkeley researchers and available data for an "average" Carrboro household. No attempt has been made to forecast these lifecycle based emissions estimates forward. The estimates and related information do suggest potential alternative strategies that can be considered with finer resolution than is possible with data from the community inventory. For example, household emissions can be calculated for Carrboro that indicate that the lowest (<$10k) annual income households have about one half of the footprint of the highest (>$110k) annual income households. The data and methods have sufficient detail to offer fairly granular assessments to help an individual household understand specific elements of their footprint and create a climate action strategy that fits that household.



* 2.3 persons/household with average gross annual household income ($50k) for Carrboro.
\+ From http://coolclimate.berkeley.edu/calculator

The online resources (calculators, maps, research) available from the Berkeley researchers[+] also offer potentially helpful support with outreach and education.

In summary, this household based data and analysis emphasizes the complexity and many elements that contribute to greenhouse gas emissions footprints from personal to household to community scales, and the importance of thinking holistically.