

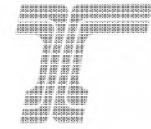
Tools for Reducing GHGs from the Transportation Sector

Cutting Carbs Workshop - Springfield
Oregon

Transportation Planning Analysis Unit

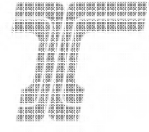
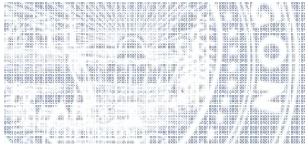
Brian Gregor

12/04/09



Outline

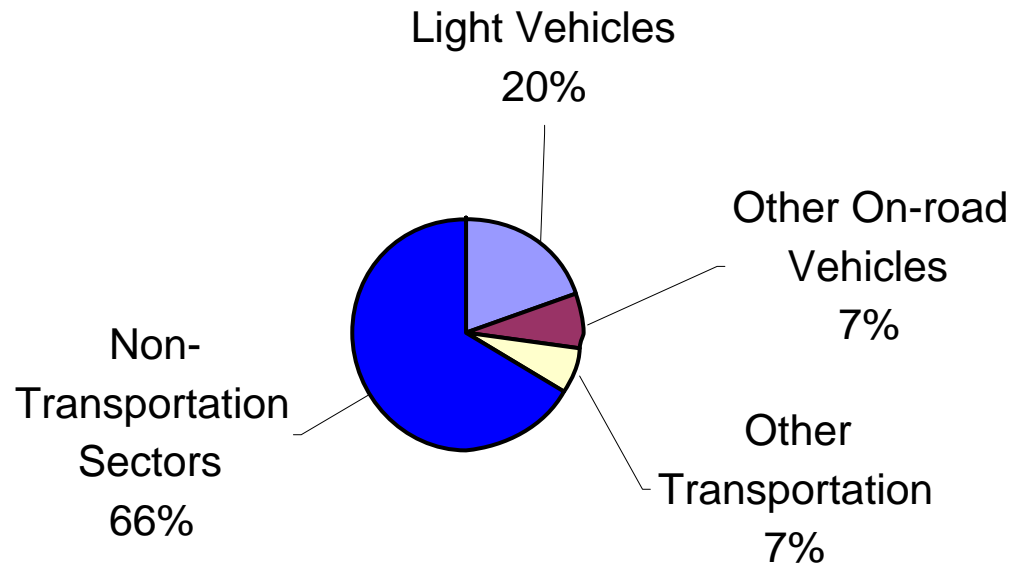
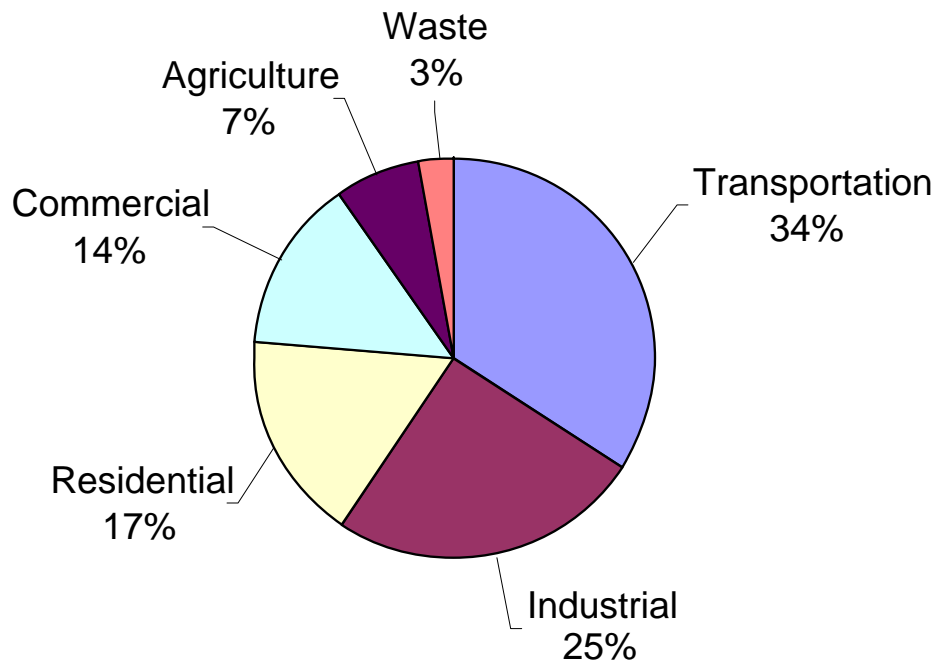
1. Greenhouse gas emissions from the transportation sector
2. Illustrative example of the magnitude of the problem
3. Opportunities for transportation sector GHG reductions
4. Modeling greenhouse gas mitigation actions

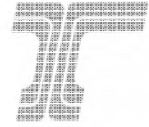


Greenhouse gas emissions from the transportation sector

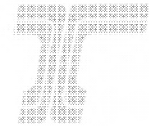


GHG Emissions By Sector

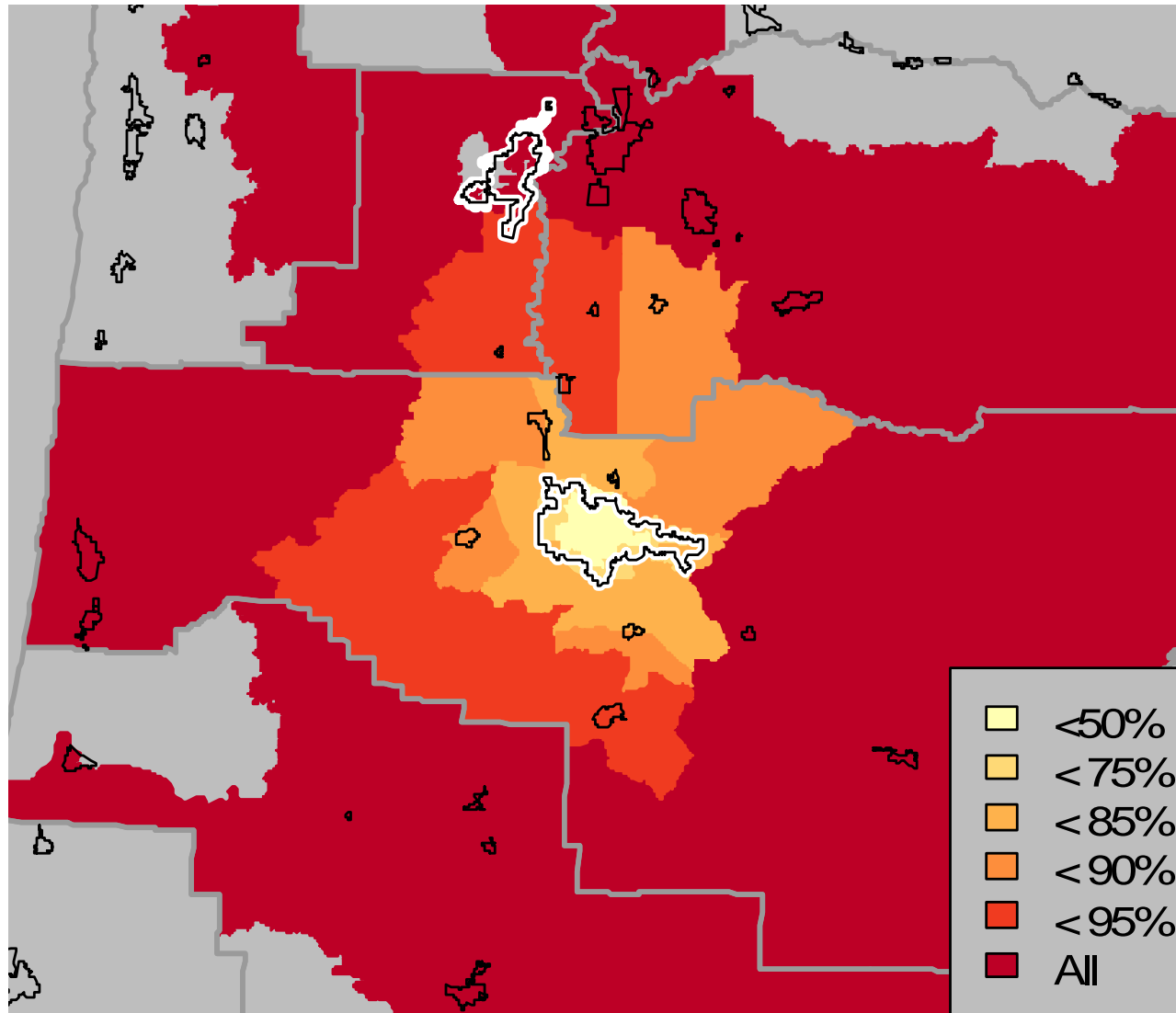


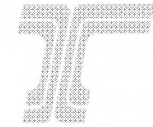


Effect of travel distance: A commuting example

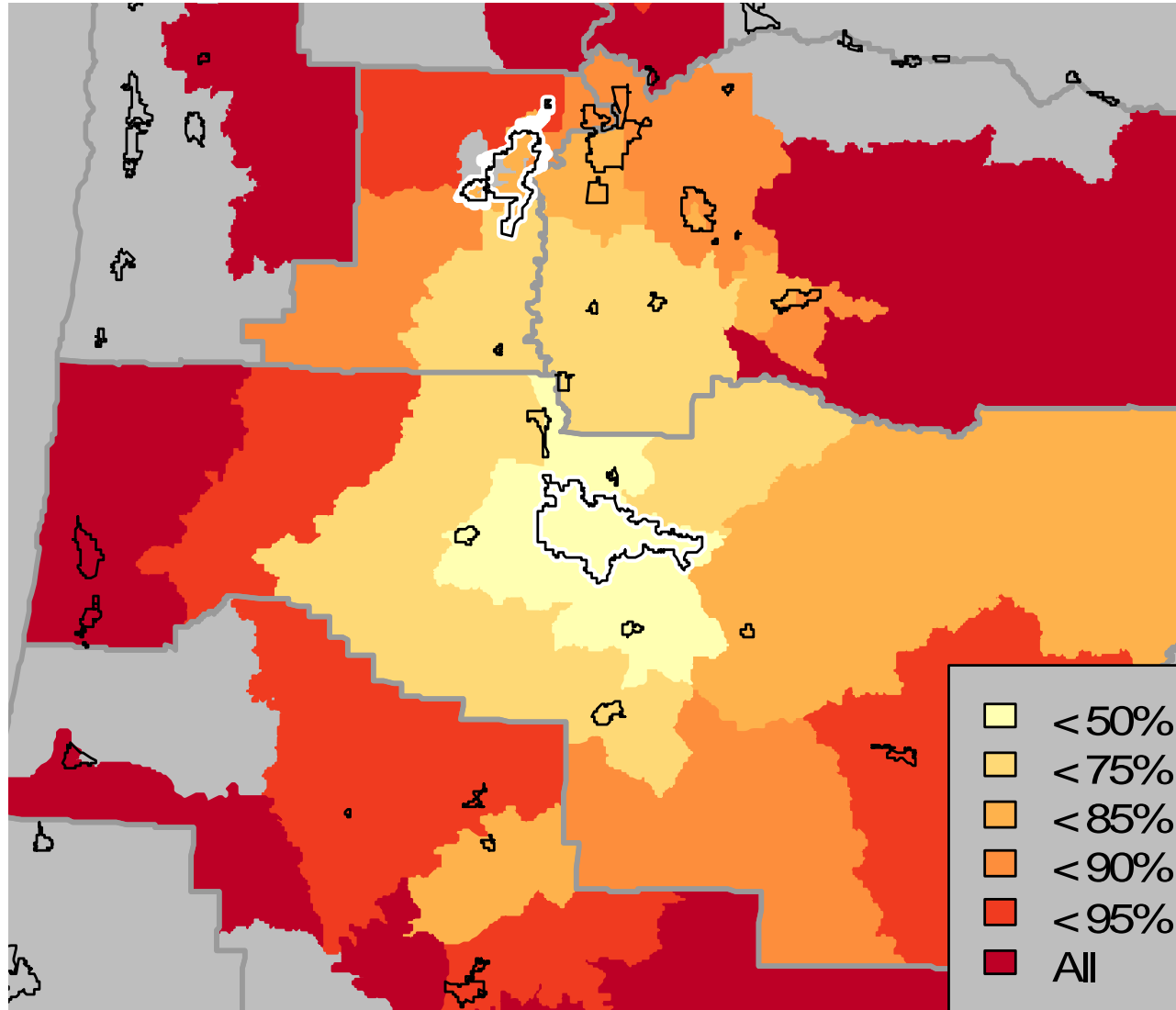


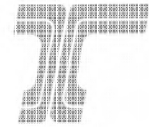
Proportions of Workers to CLMPO Jobs



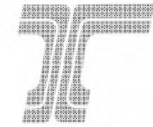


Proportions of Emissions to CLMPO Jobs





***Illustrative example of the
magnitude of the problem***



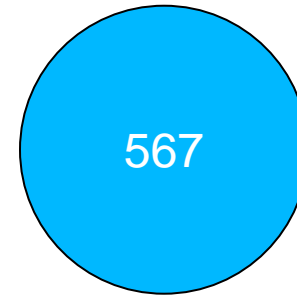
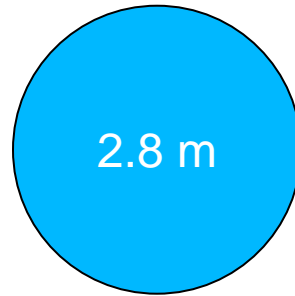
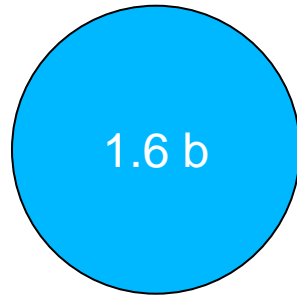
75% reduction in GHG emissions in fuel consumption terms

Fuel

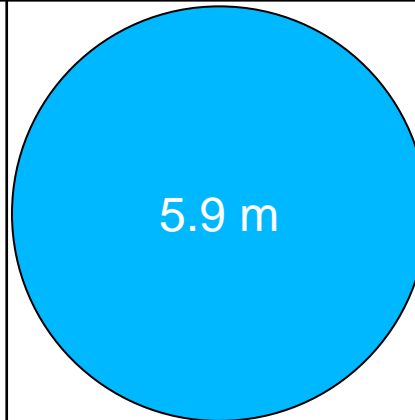
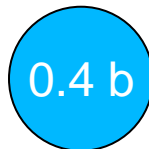
Population

Fuel Per Capita

1990



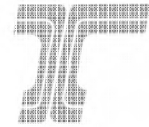
2050



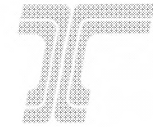
	Fuel	Population	Fuel Per Capita
1990	1.6 b	2.8 m	567
2050	0.4 b	5.9 m	68



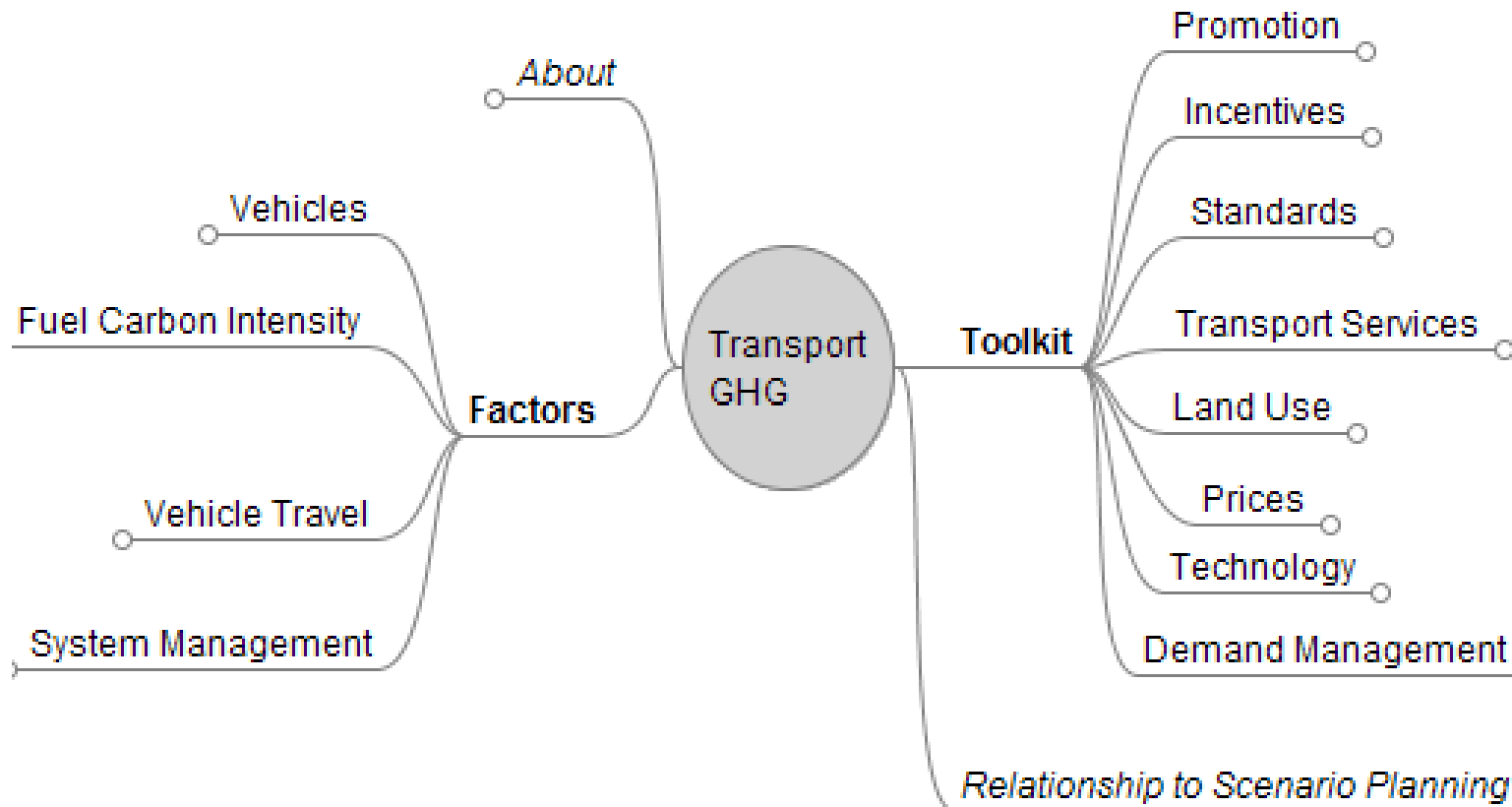
Oregon Department of Transportation



***Opportunities for
transportation sector
GHG reductions***

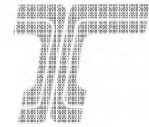


Transportation GHG Factors and Toolkit

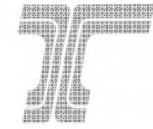




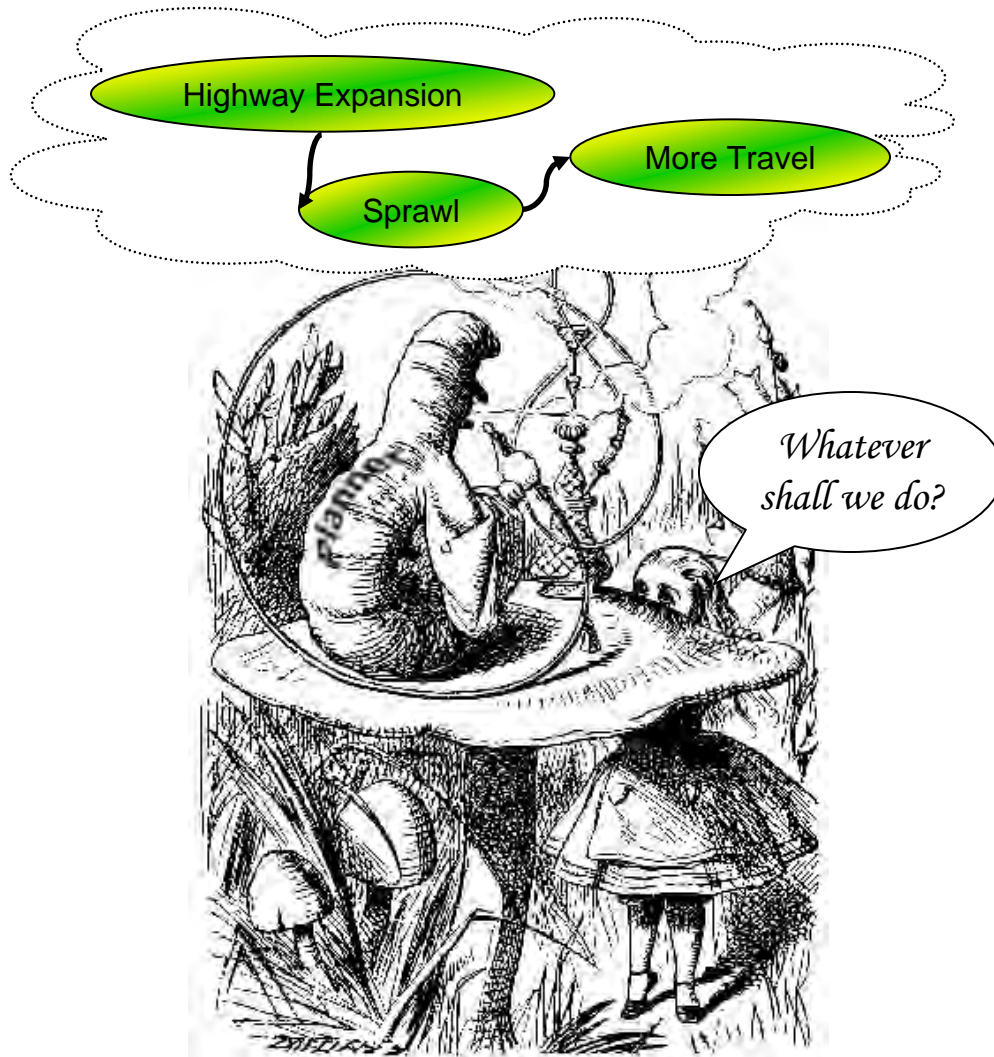
Oregon Department of Transportation



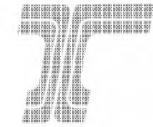
Modeling GHG Mitigation Actions



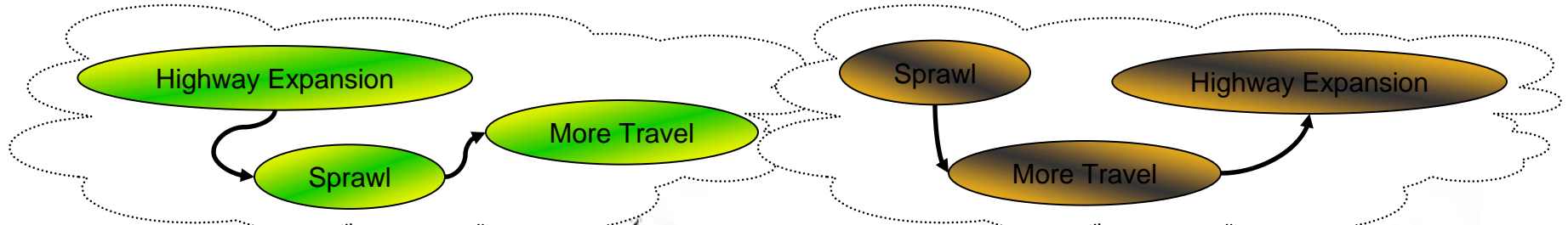
We Are All Modelers



Any time that logic is used to predict the consequences of decisions, a model is used to structure the reasoning process. Most often that is a mental model.

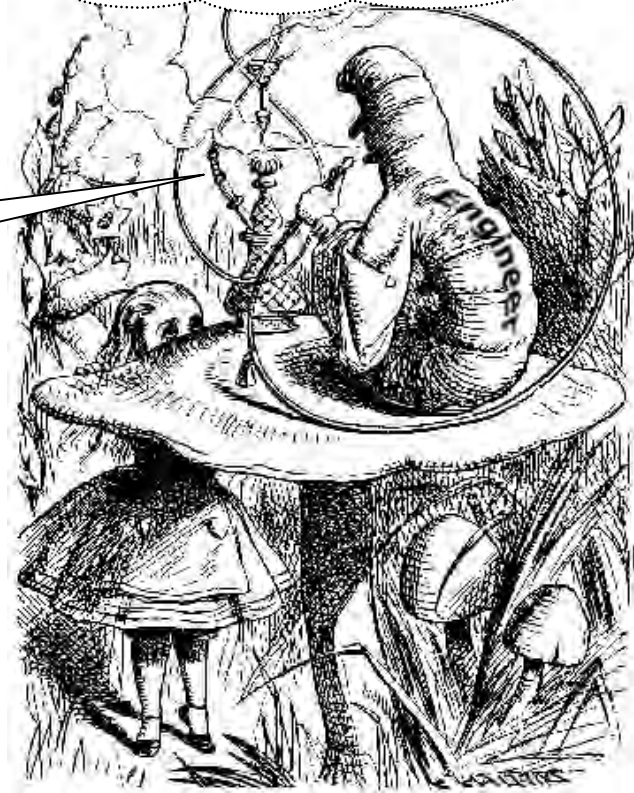


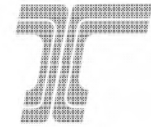
Conflicts Arise from Differences in Mental Models



You're wrong!

No You Are!

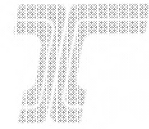




Formal Models are Needed for Analyzing Complex Systems

- To account for many complex interactions
- To maintain logical consistency
- To provide a more complete accounting
- To allow more policies to be tested
- To help resolve conflicts

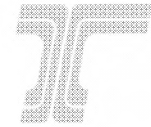
Formal models are developed using procedures to check their validity.



Greenhouse Gas State Transportation Emissions Planning Model

GreenSTEP is a statewide transportation GHG planning model with sensitivity to a large number of land use, transportation, vehicle, price, fuels and other inputs.

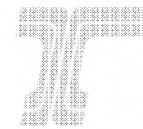
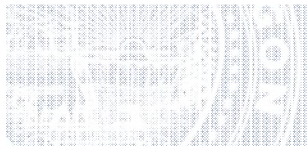
It was created to help develop a statewide strategy on how to meet targets for reducing greenhouse gas (GHG) emissions from the transportation sector



Description

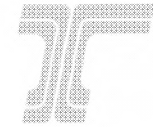
GreenSTEP has been peer reviewed by a panel of state and national experts

Some GreenSTEP model components can be added to urban models and the statewide integrated model to evaluate GHG emissions

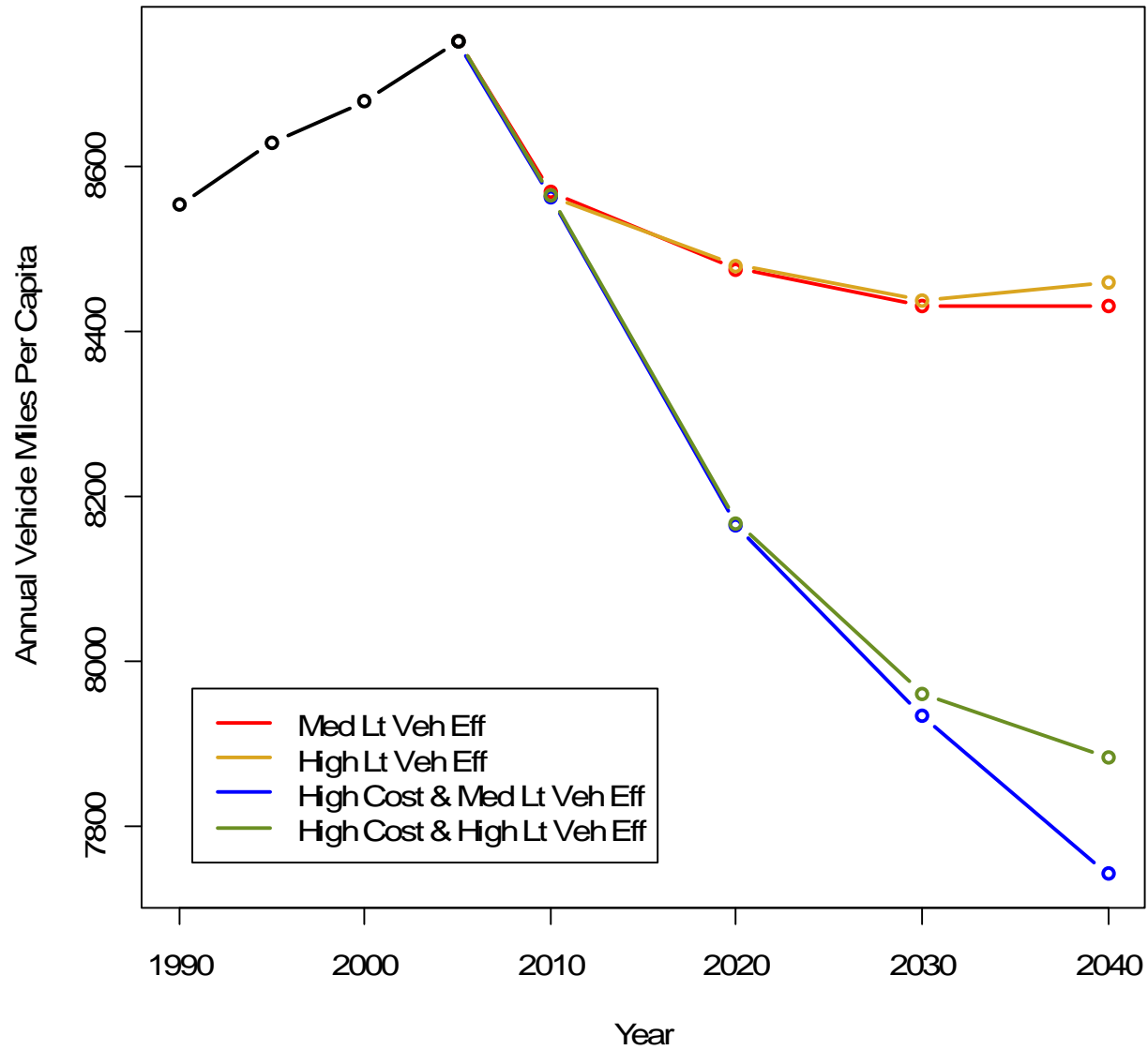


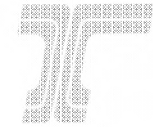
Model sensitivity

- Demographic changes
- Relative amounts of development occurring in urban and rural areas
- Metropolitan and other urban area densities
- Urban form
- Amounts of metropolitan area public transit service
- Highway capacity
- Vehicle fuel efficiency
- Vehicle ages
- Electric vehicles
- Fuel prices
- VMT pricing
- Demand management
- Effects of congestion on fuel economy
- Carbon content of fuels – including well to wheels impacts
- CO2 production from electrical power use for transportation

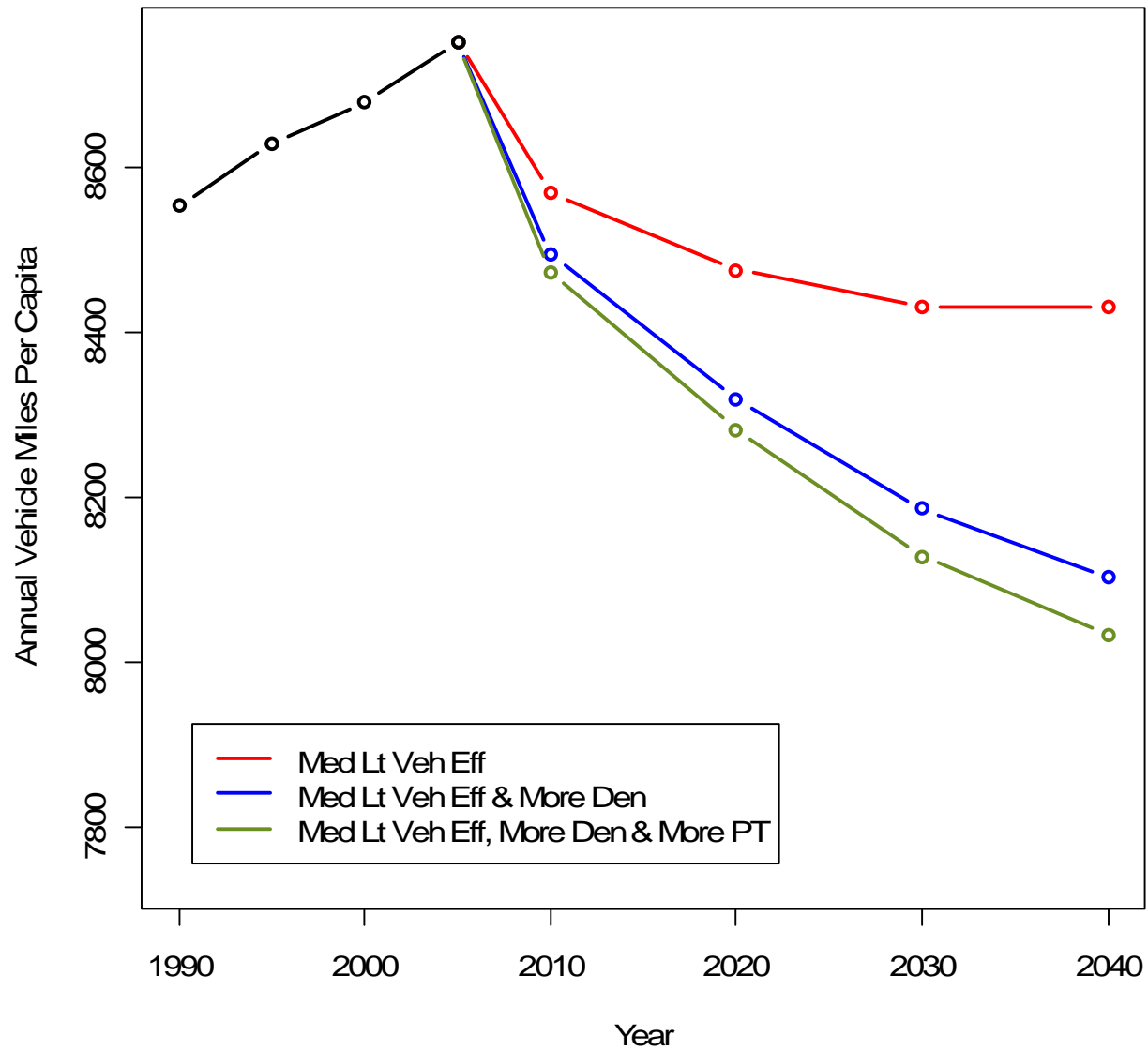


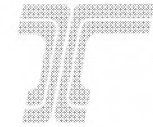
Per Capita Light Vehicle VMT Price Scenarios



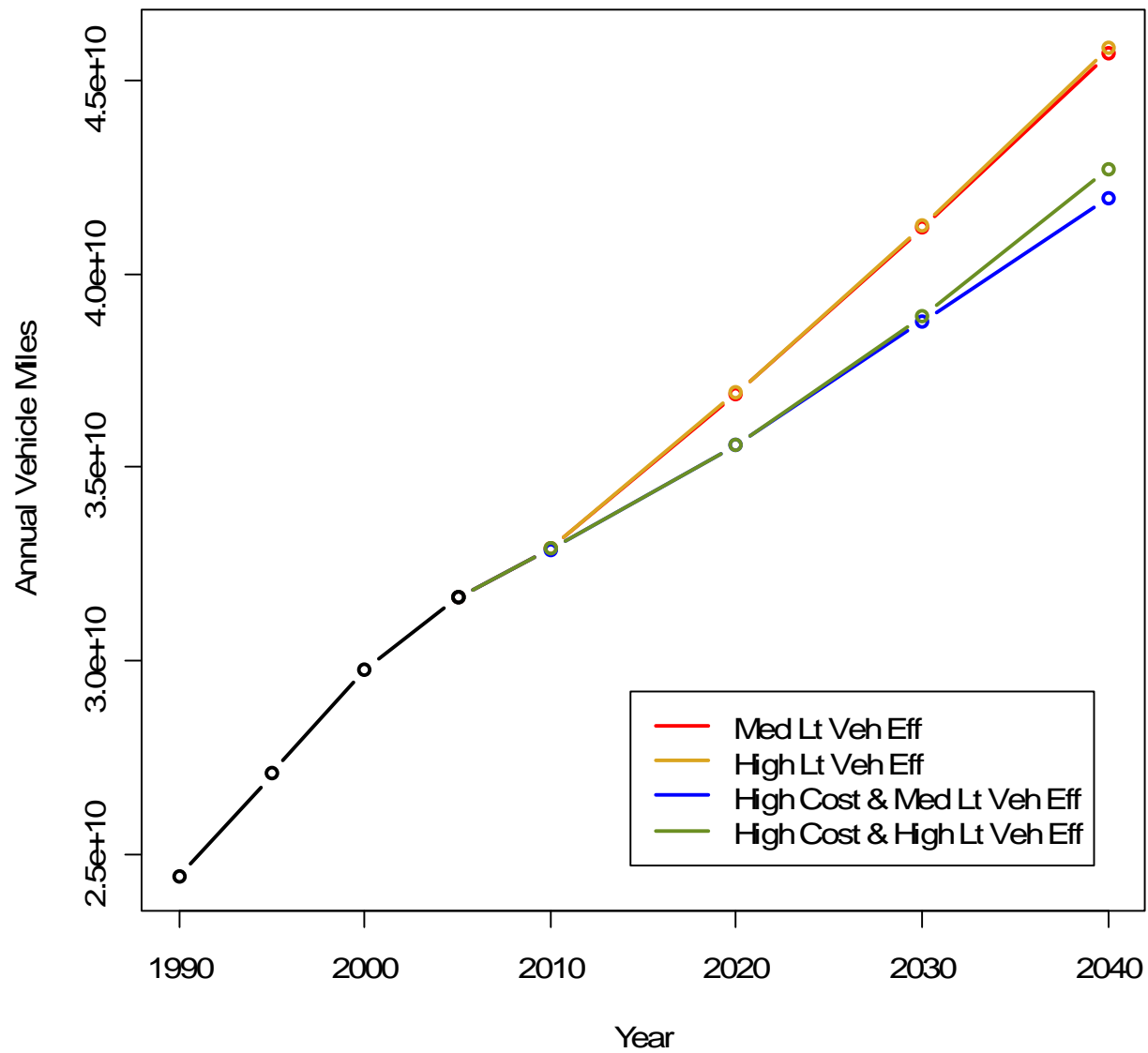


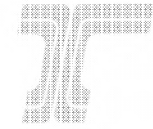
Per Capita Light Vehicle VMT Density Scenarios



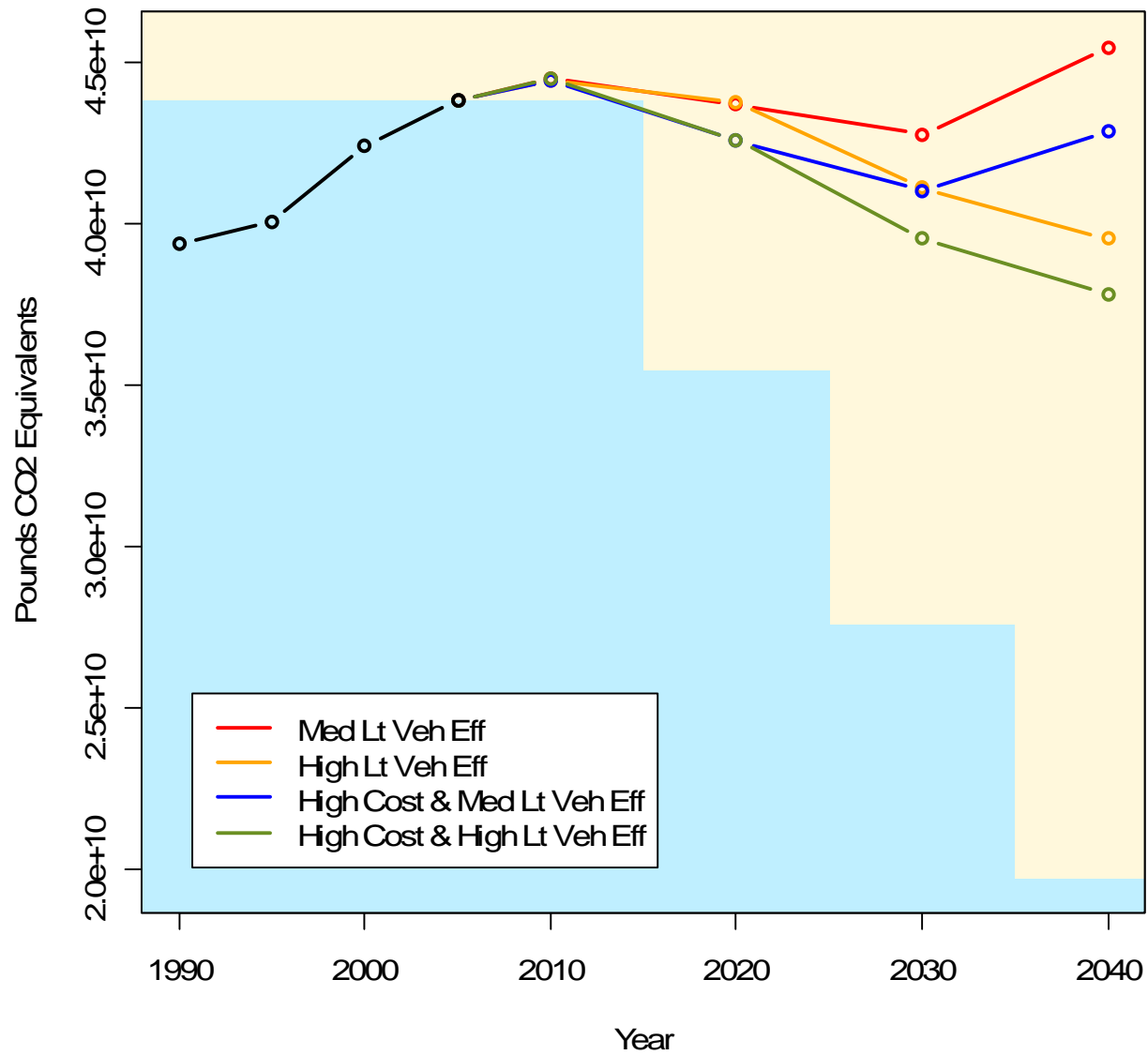


Total Statewide Light Vehicle VMT Price Scenarios



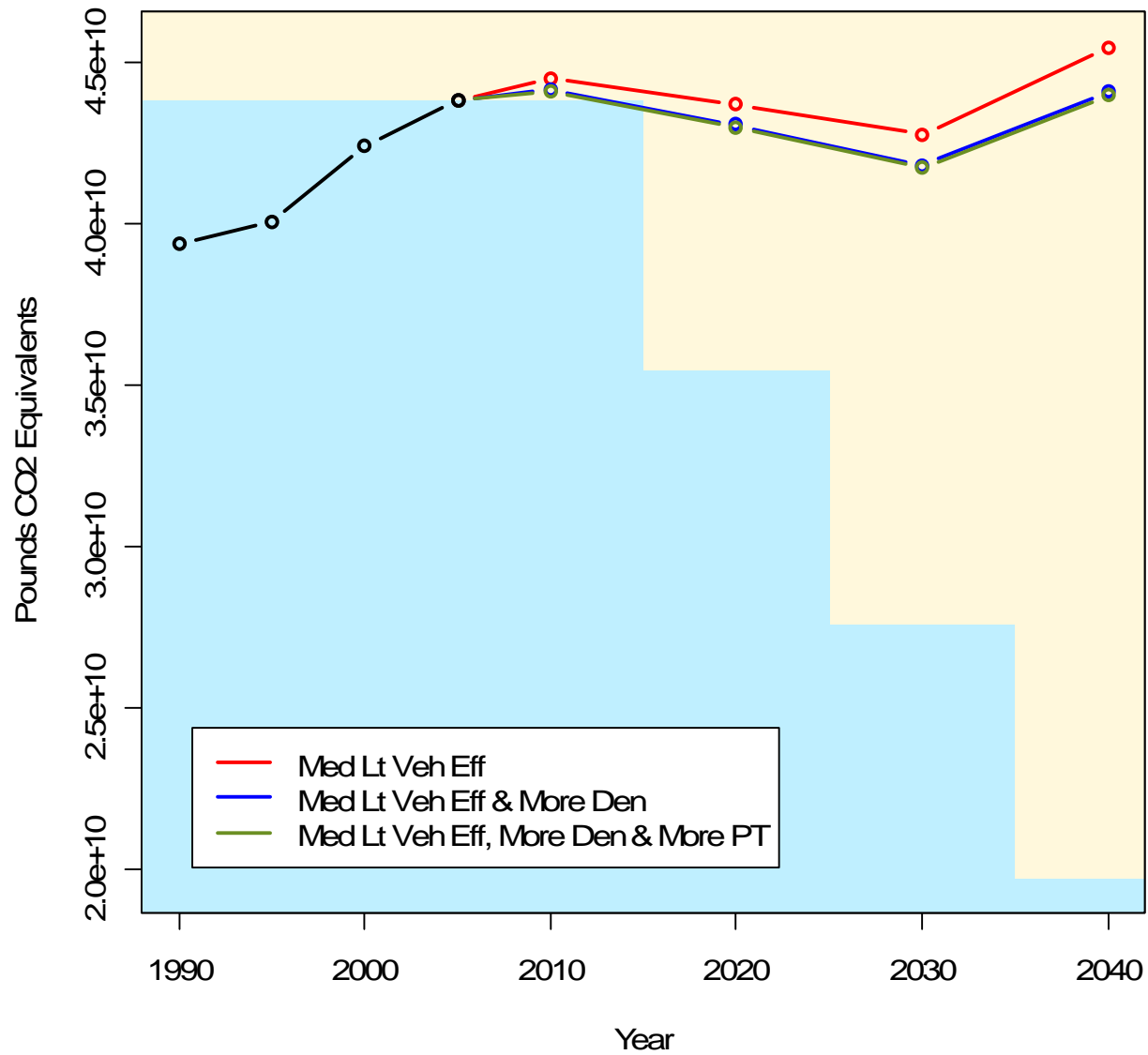


Annual CO2 Equivalent Emissions Price Scenarios





Annual CO2 Equivalent Emissions Density Scenarios



Annual CO2 Equivalent Emissions All Vehicle Efficiency & Fuels Scenarios

