

Tools for Reducing GHGs from the Transportation Sector

Cutting Carbs Workshop - Salem Oregon

Transportation Planning Analysis Unit

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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



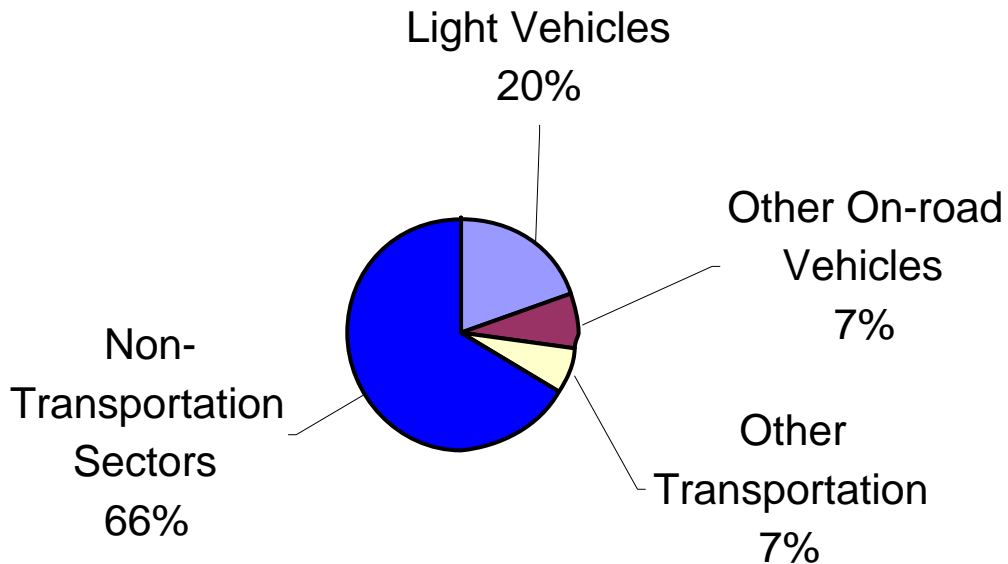
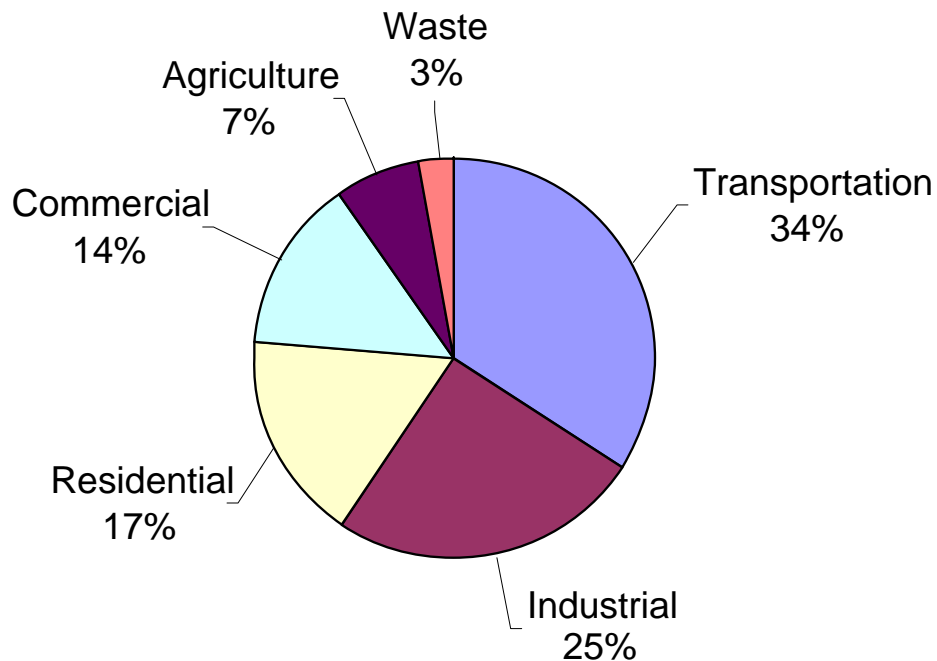
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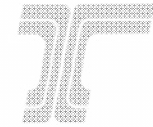


***Greenhouse gas emissions
from the transportation
sector***

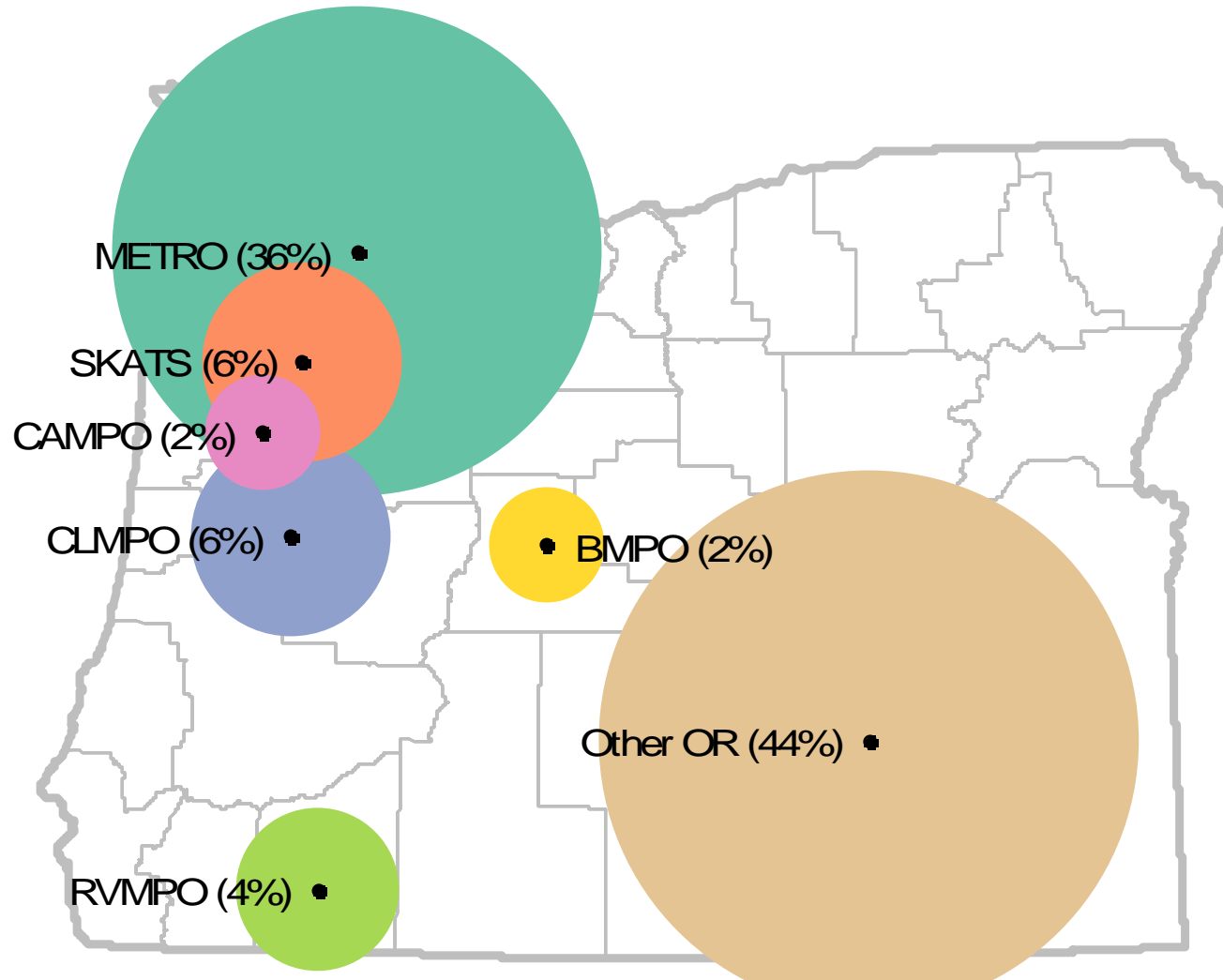


GHG Emissions By Sector





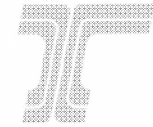
Oregon Household Light Vehicle GHG Emissions



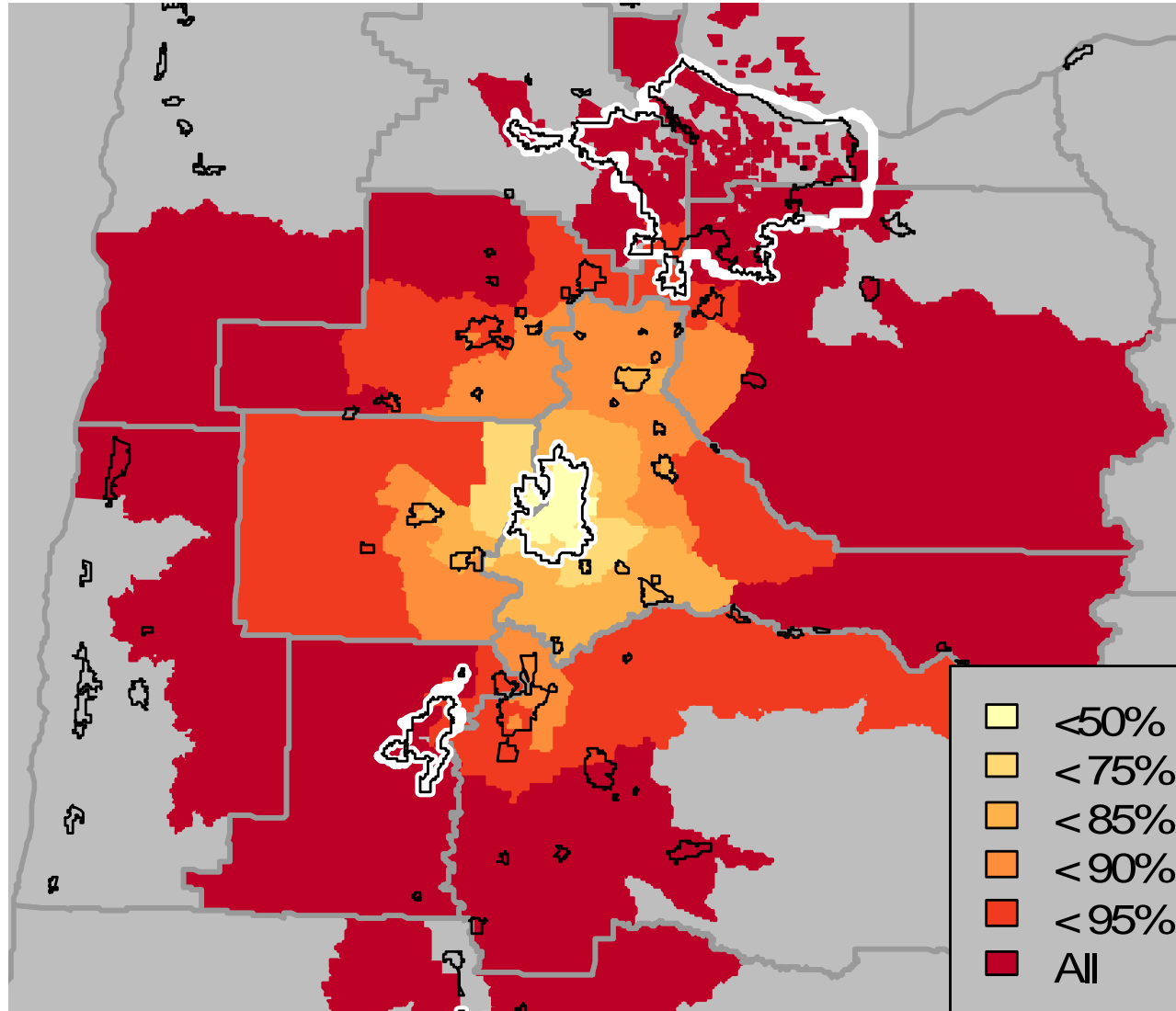
Circle areas are proportional to household travel GHG emissions

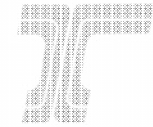


***Effect of travel distance:
A commuting example***

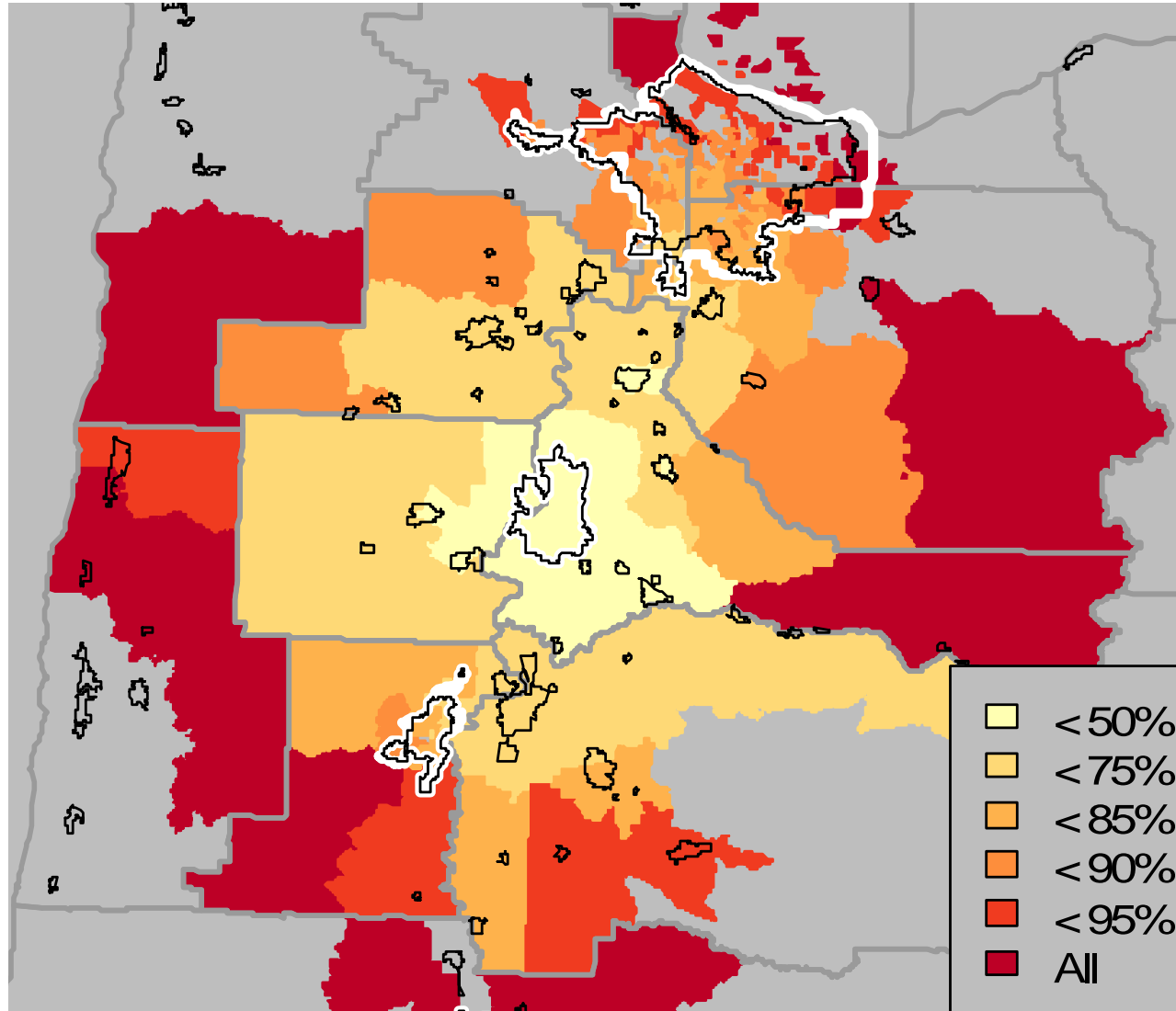


Proportions of Workers to SKATS Jobs



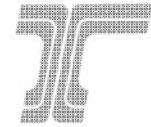


Proportions of Emissions to SKATS Jobs





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



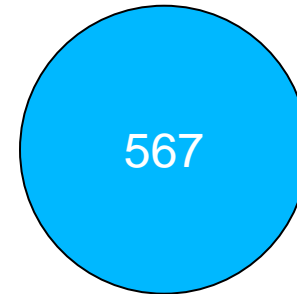
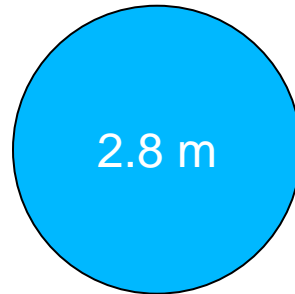
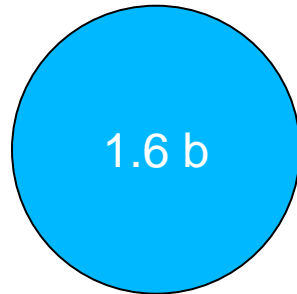
75% reduction in GHG emissions in fuel consumption terms

Fuel

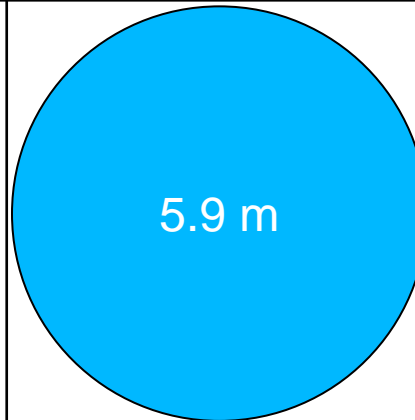
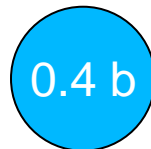
Population

Fuel Per Capita

1990



2050



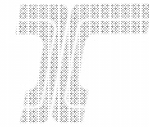
	Fuel	Population	Fuel Per Capita
1990	1.6 b	2.8 m	567
2050	0.4 b	5.9 m	68



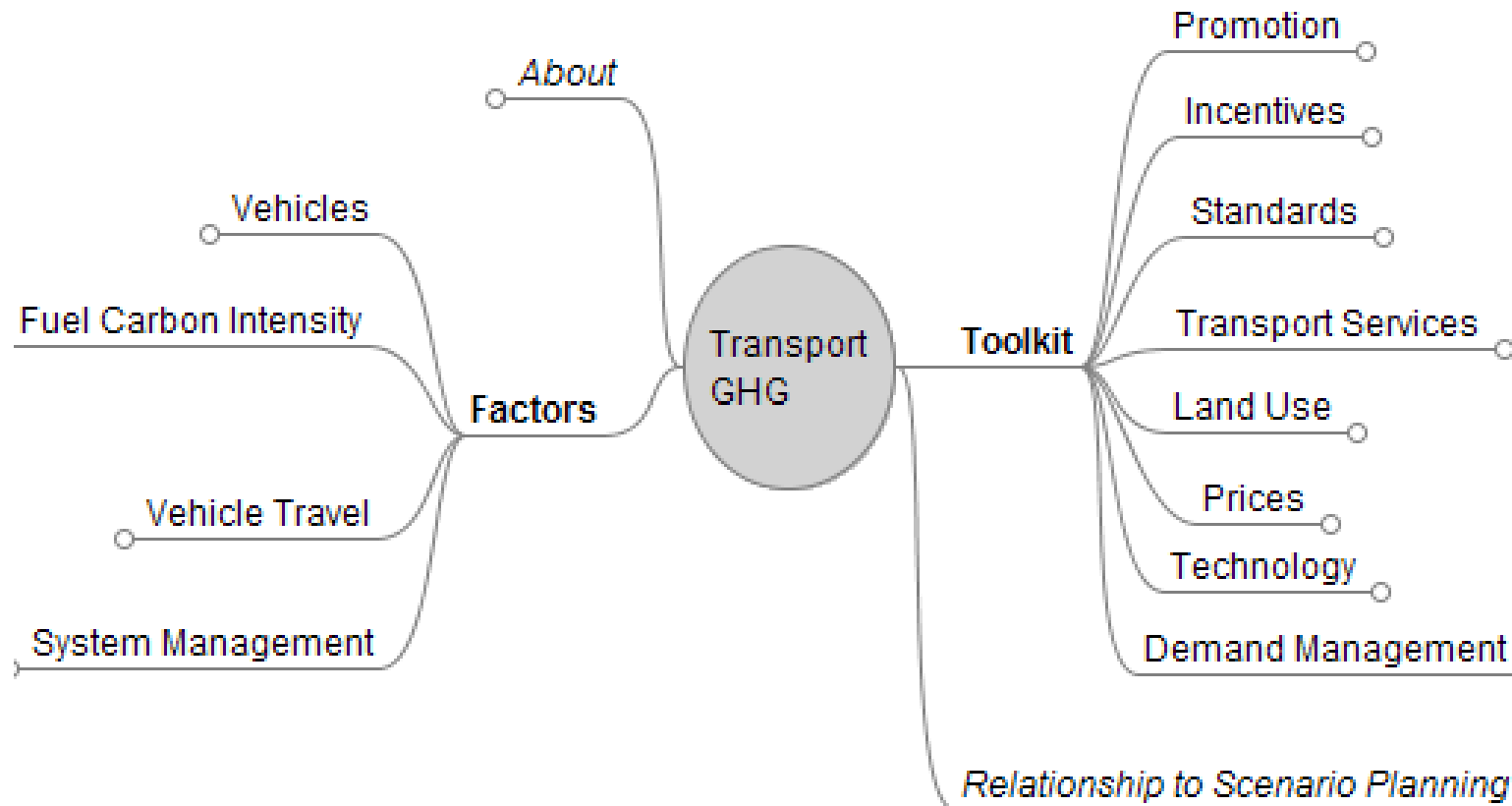
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***Opportunities for
transportation sector
GHG reductions***

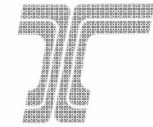


Transportation GHG Factors and Toolkit





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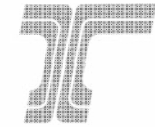
Modeling GHG Mitigation Actions



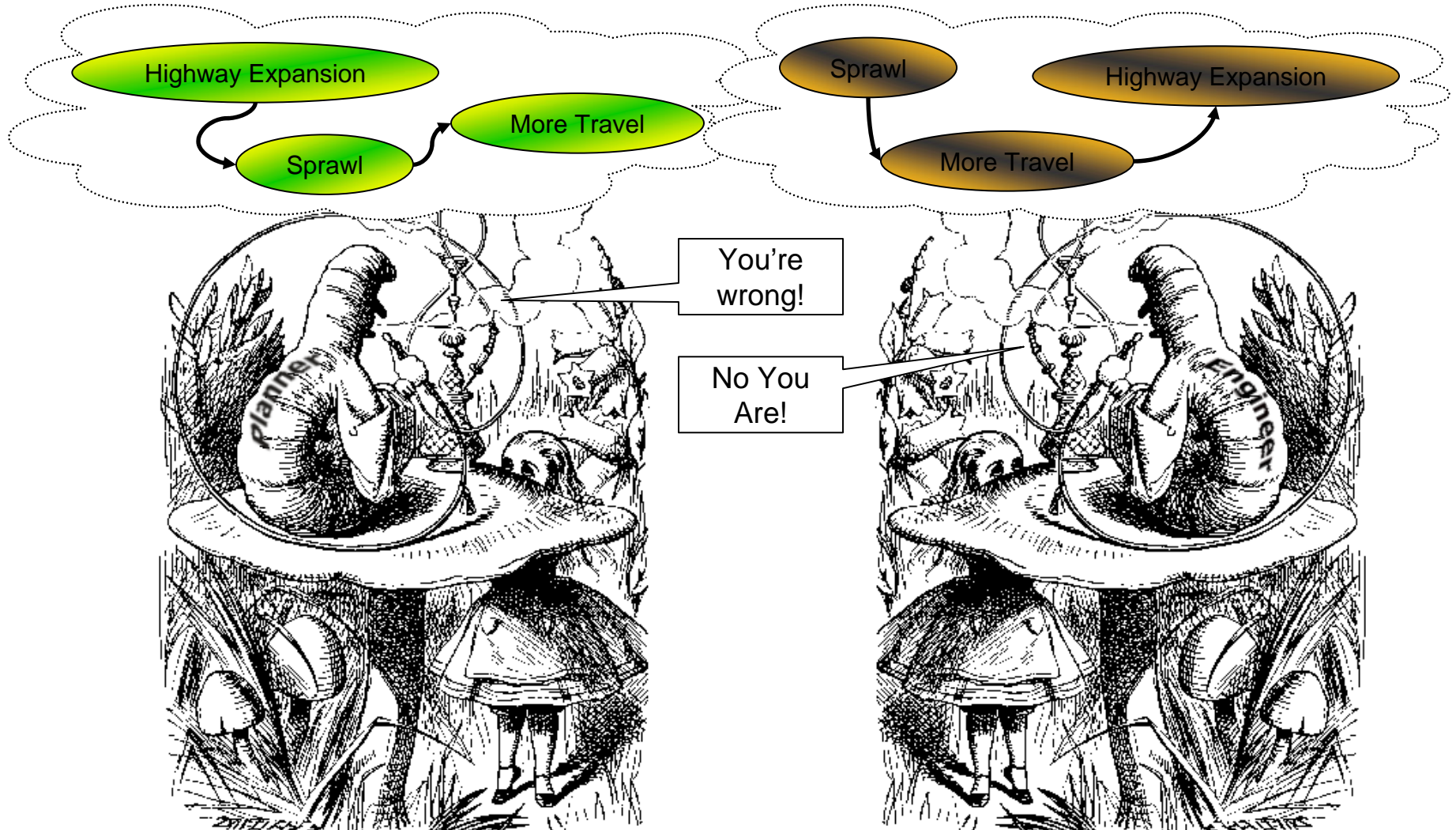
We Are All Modelers



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





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.

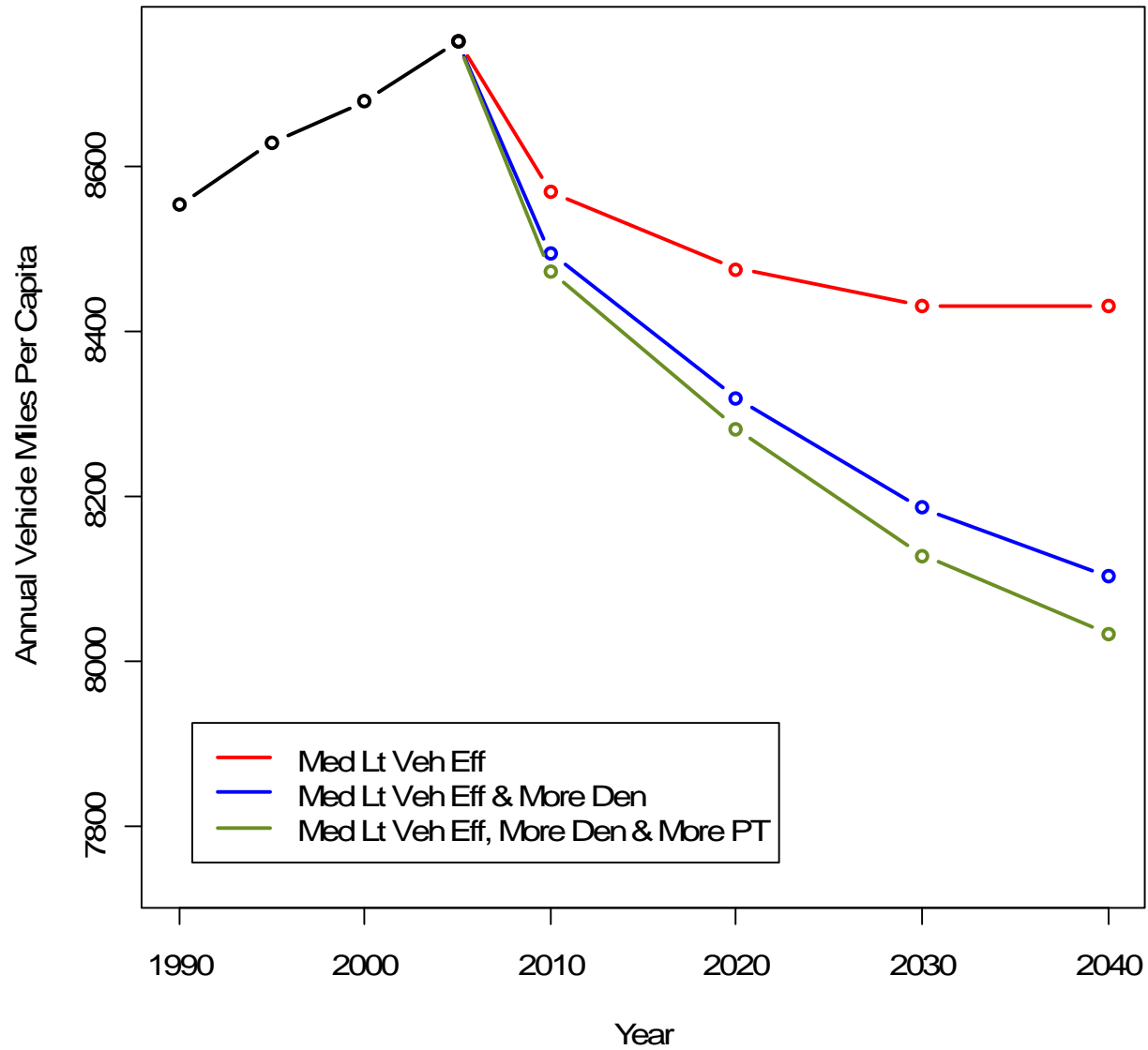
It was created to help develop a statewide strategy on how to meet targets for reducing greenhouse gas (GHG) emissions from the transportation sector

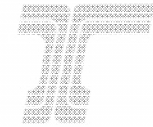
Model sensitivity

- 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

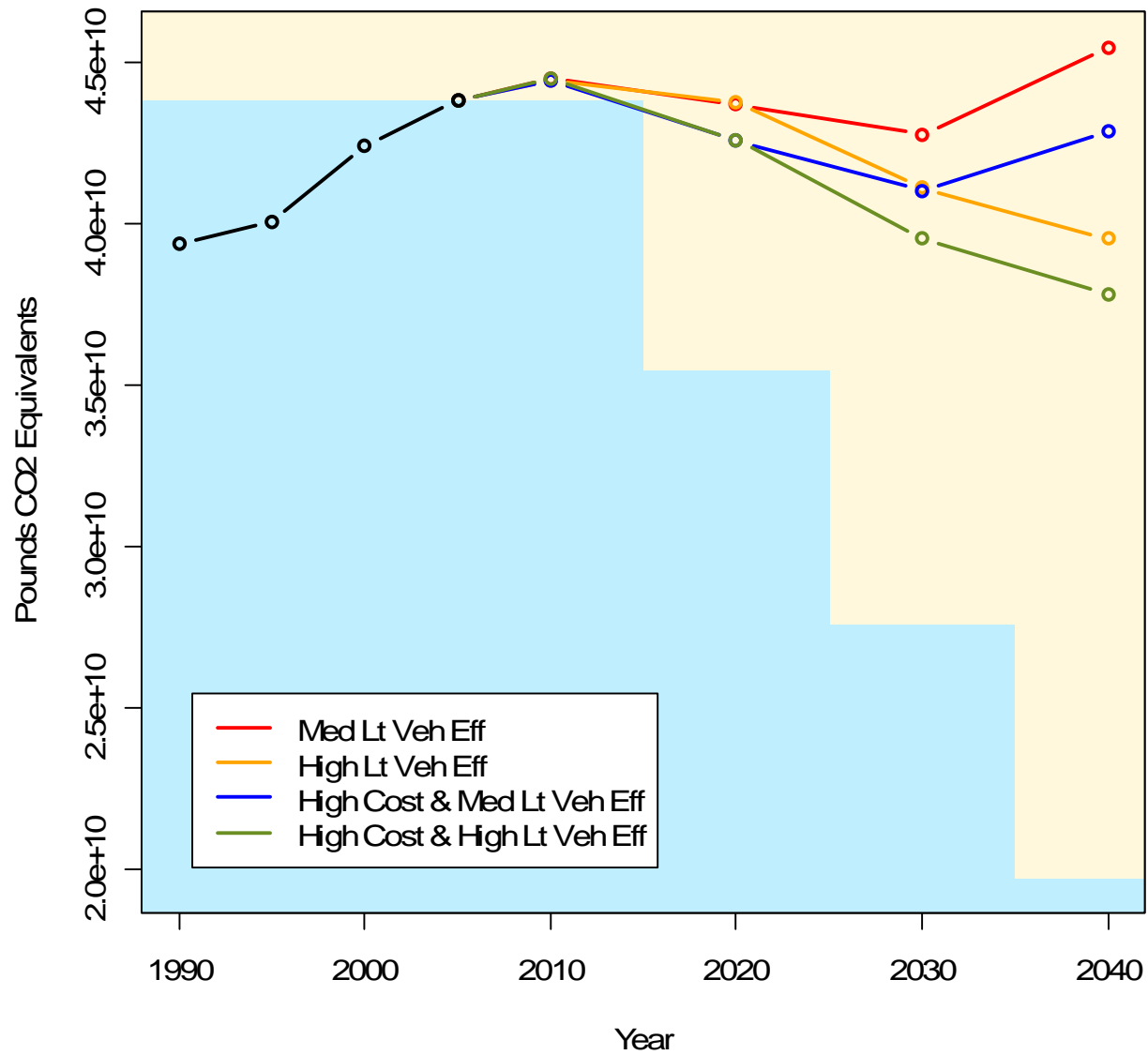


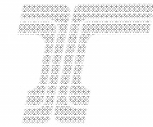
Per Capita Light Vehicle VMT Density Scenarios





Annual CO2 Equivalent Emissions Price Scenarios





Annual CO2 Equivalent Emissions All Vehicle Efficiency & Fuels Scenarios

