



# ***Analyzing GHG Emissions from the Transportation Sector***

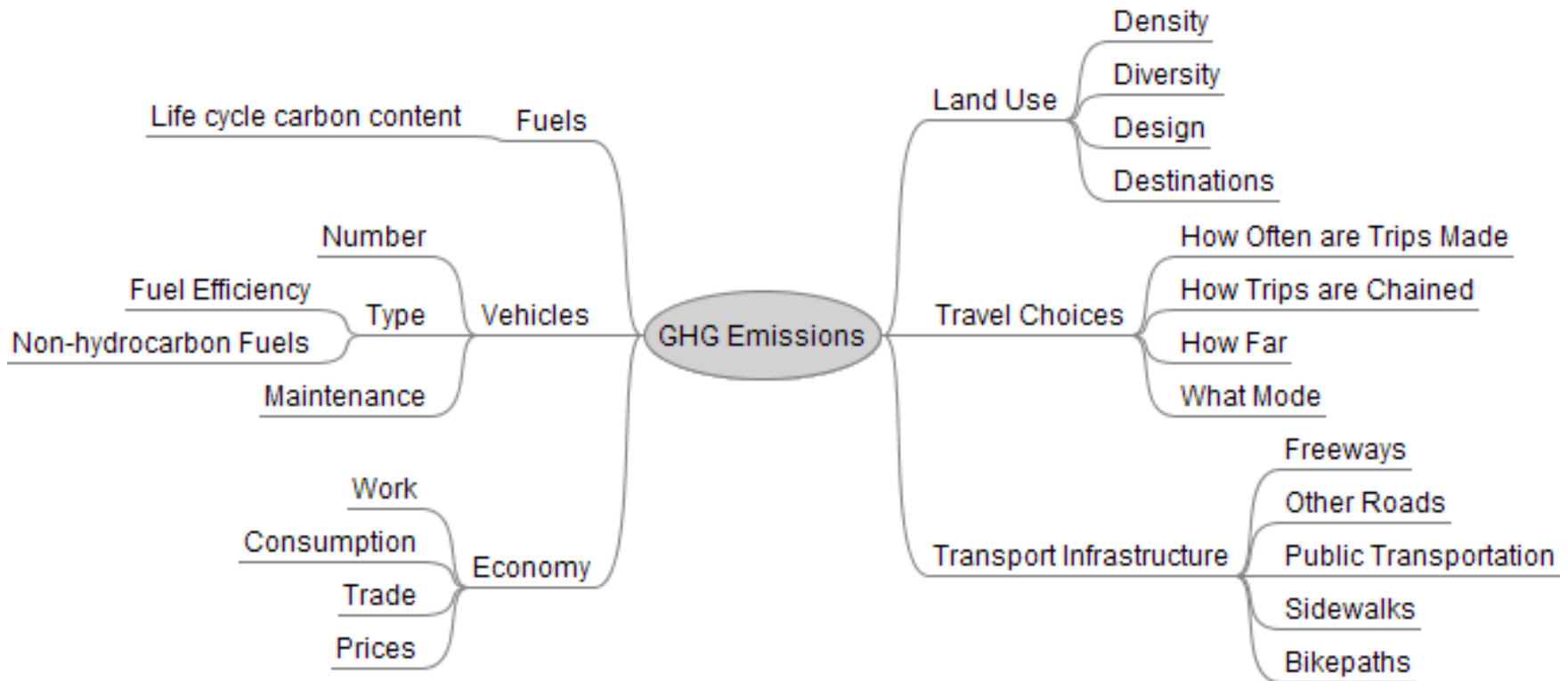
Presentation to HB 2186 Task Force  
Transportation Planning Analysis Unit

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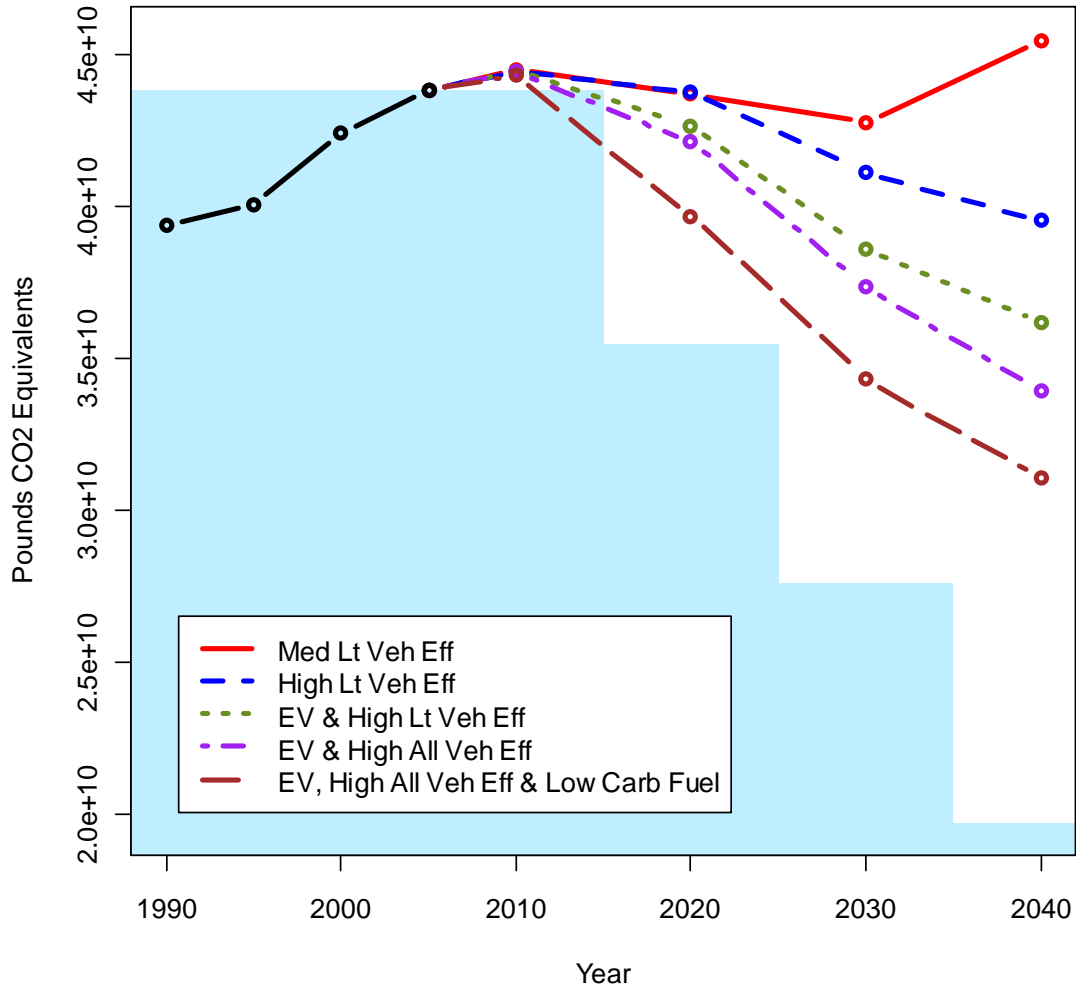


# ***Many factors affect GHG emissions from the transportation sector***



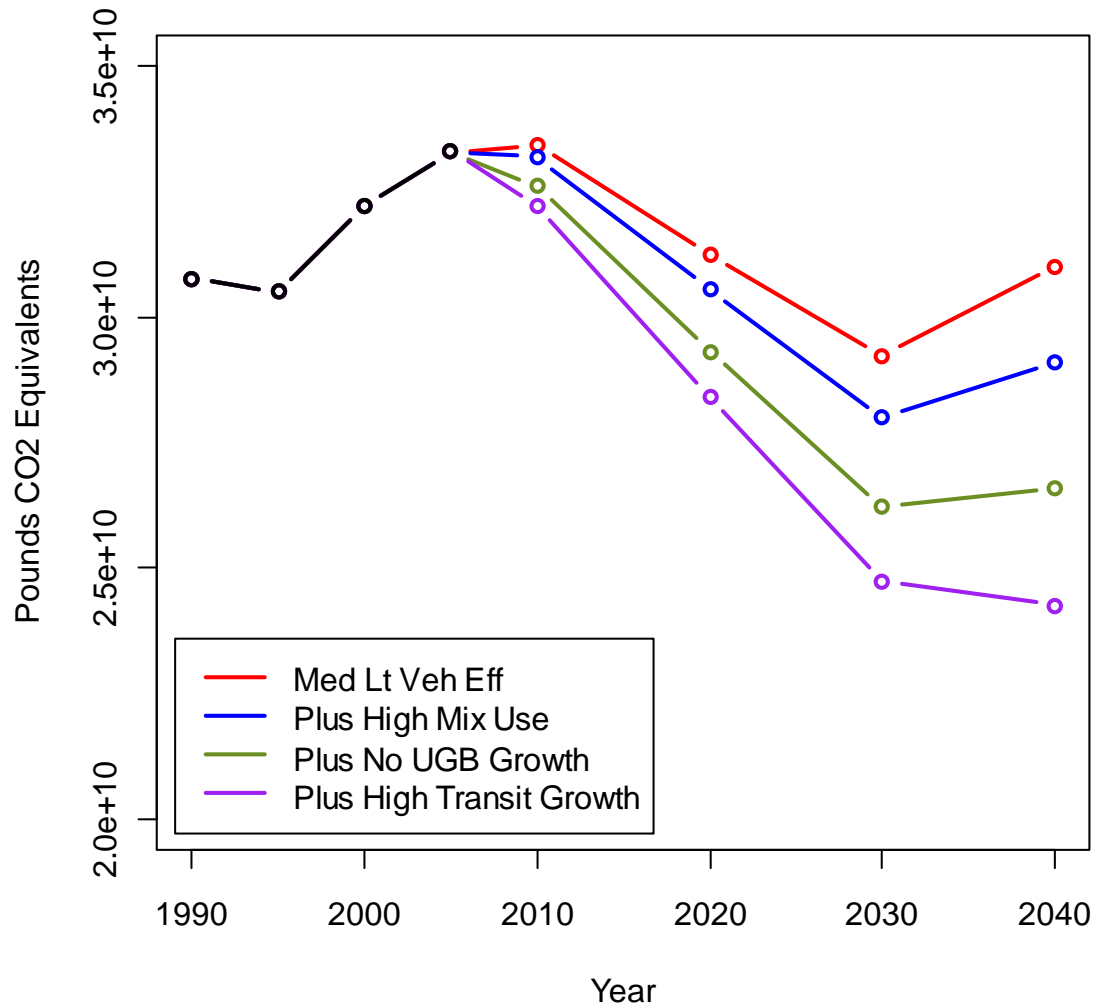


# ***Reducing transportation GHG emissions with fuel economy, electric vehicles & low carbon fuels***



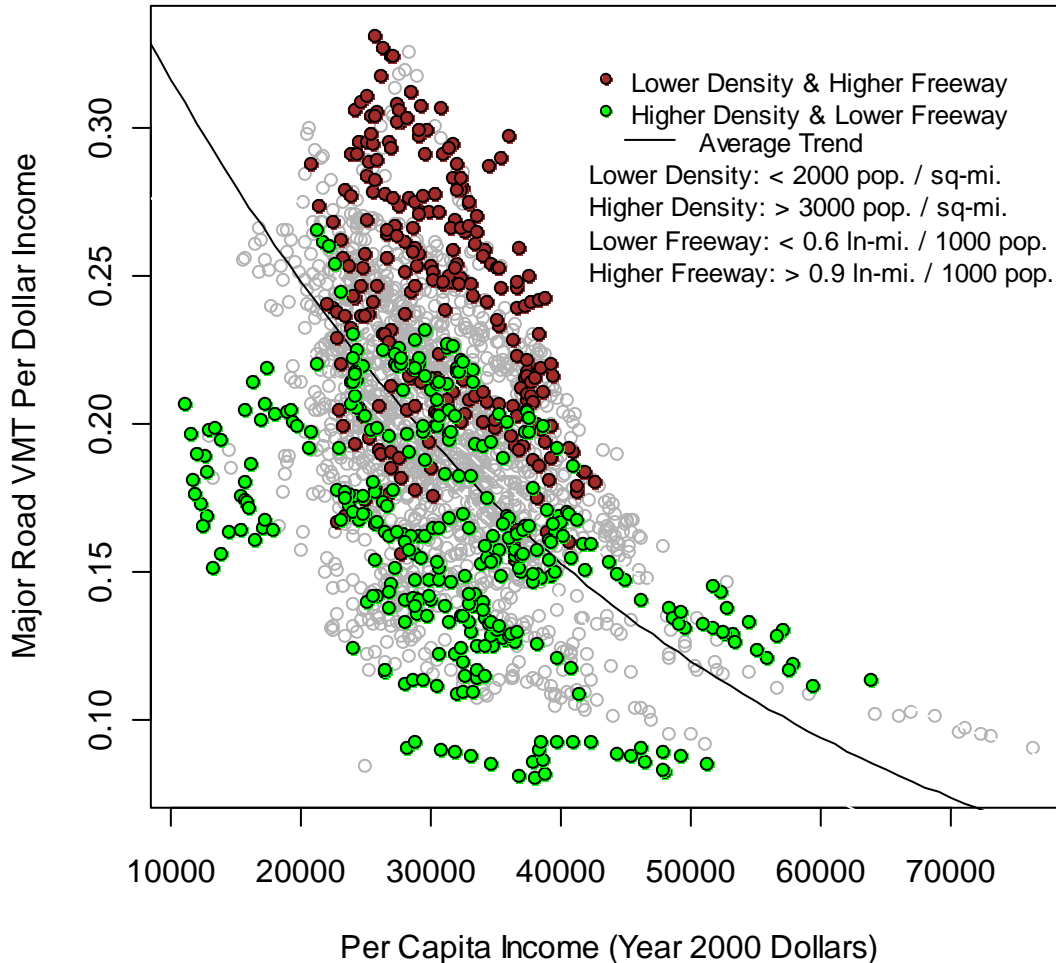


# ***Reducing light vehicle GHG emissions with mixed uses, development densities and public transit***



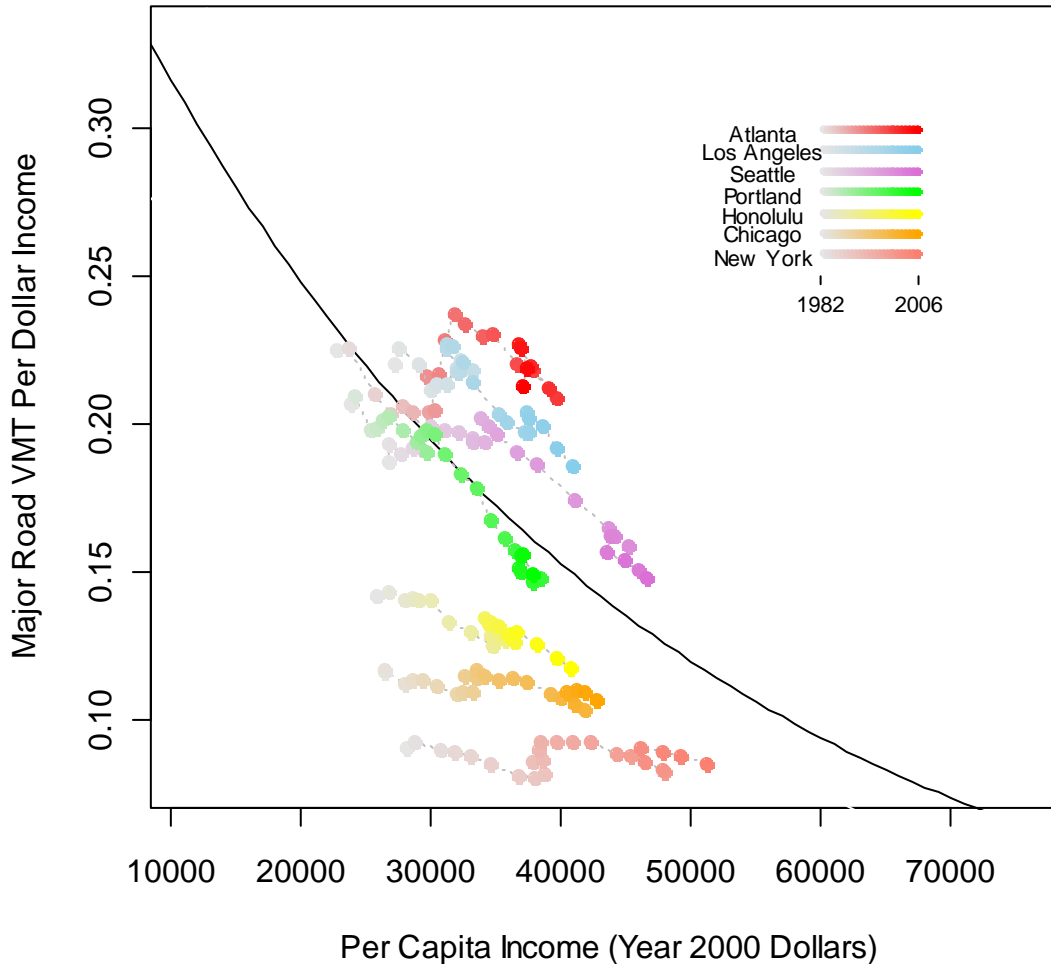


# ***Land use and transportation significantly affect the VMT intensity of metropolitan area economies***





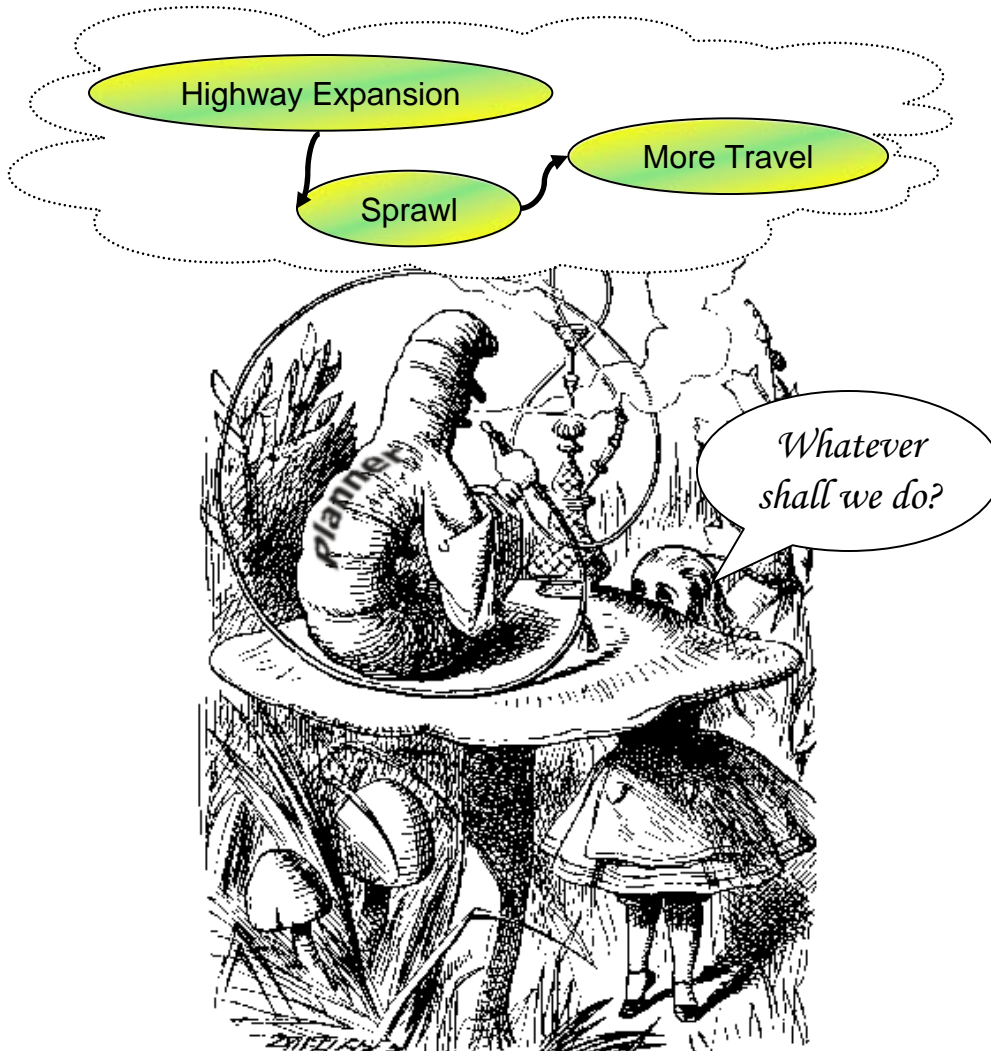
# ***Portland area economy VMT intensity declined at a faster than average rate as prosperity grew***





# ***Modeling GHG Mitigation Actions***

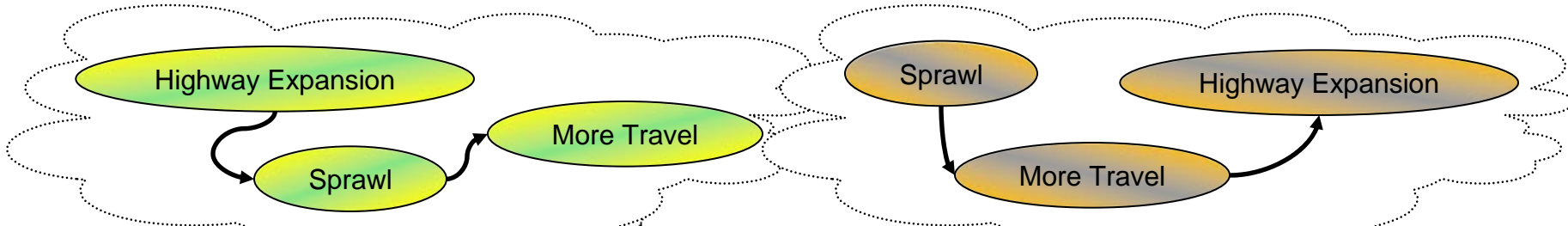
# ***We Are All Modelers***



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!





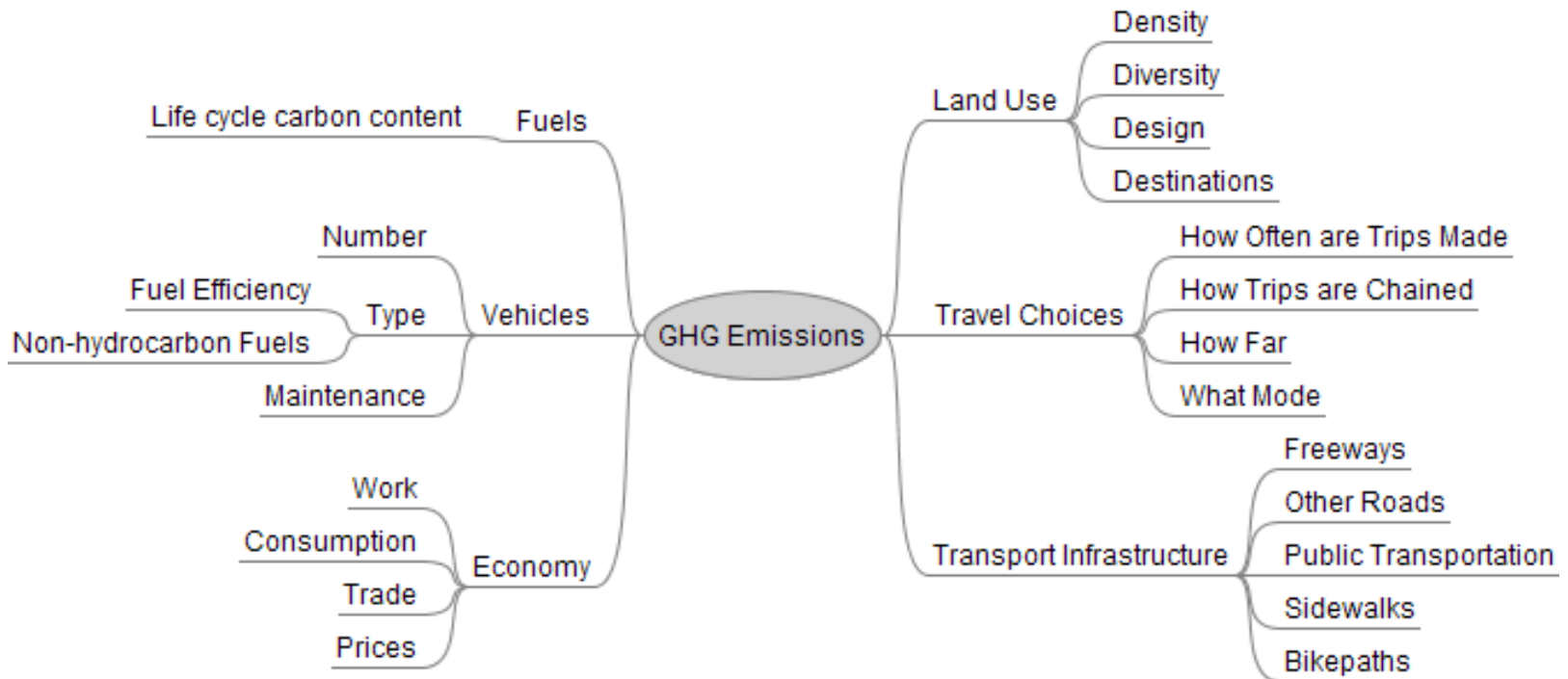
## ***Formal Models are Needed for Analyzing Complex Systems***

- 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.



# *No single model can do everything well*



The art of modeling is to combine models and analysis to provide useful information



## ***Compromises are necessary***

- Size and breadth of geographic analysis
- Number of factors addressed
- Amount of interactions between factors
- Analytic detail for addressing factor



## ***A number of tools are available to address GHG mitigation issues***

- GreenSTEP
- Statewide Integrated Model
- Metroscope
- Metropolitan area travel demand models
- Land Use Scenario Developer (LUSDR)
- Land use scenario tools: PLACE3S, MetroQuest, CoolSpots
- MOVES



## ***Choosing the right tool to use depends on the questions being asked***

- What is the statewide strategy for meeting GHG emissions via changes in the vehicle fleet, fuel carbon content, transportation infrastructure, land use regulations, and other policies?
- How can urban growth management, transportation services and pricing be used to reduce GHG emissions from intercity commuting.
- How do alternatives for expanding a metropolitan urban growth boundary compare with respect of VMT and GHG emissions.
- Where should mixed use centers be developed in a metropolitan area and what should their sizes be to maximize travel by public transit and non-motorized modes?
- How should neighborhoods be designed to minimize GHG emissions?



## ***There is a substantial resource barrier to doing MPO scenario planning for GHG***

- MPOs, aside from Metro, are minimally staffed to do modeling
- ODOT modelers are occupied with other necessary modeling for MPOs and ODOT has new modeling requirements under HB 2001.
- Modeling requires knowledge and expertise that is not widely available
- Several years are required in order to deploy a new model in an MPO, even if the modeling tool is available
- Even more time is required if modeling tools need to be modified or new tools need to be developed.



## ***The size of the resource gap depends on scenario planning expectations***

- What level of proof will be expected of MPOs to show they have done an adequate job? Will MPO decisions be appealable?
- What geographic area will MPOs need to address; just the area within and adjacent to the metropolitan UGB or nearby satellite cities as well?
- Will the MPO plans be advisory on land use or will they establish land use requirements for local governments?
- What factors will MPOs be required to consider?
- What interactions will MPOs be required to consider in their analysis?

***There is a substantial gap in resources to do scenario planning. The size of the gap may be several times larger depending on the scenario planning expectations.***