



Use of the GreenSTEP Model for Scenario Planning in Oregon

Approaches to Scenario Planning

2012 National Scenario Planning Peer Exchange

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Outline

- Scenario Planning in Oregon
- Overview of the GreenSTEP model
- Example: Statewide Transportation Strategy for Reducing GHG Emissions
- Lessons Learned



Oregon Planning Context & Background

- 1973: Comprehensive Planning Requirements
 - Urban growth boundaries, resource lands protection, requirements to accommodate housing
- 1991: Transportation Planning Rule
 - Require coordinated planning of land use & transportation
- 1992: Oregon Transportation Plan
 - State multimodal transportation plan
- 1992-1995: Region 2040
 - Scenario planning to develop 50-yr growth plan for the Portland metropolitan area
- 1999-2001: Willamette Valley Alternative Transportation Futures
 - Large scale land use and transportation scenario planning for Oregon's Willamette Valley



Current Scenario Planning Efforts

- Focus on greenhouse gas (GHG) mitigation
 - State GHG reduction goals from 1990 levels: 10% by 1990, 50% by 2050
- Statewide
 - Requirement to develop a statewide transportation strategy for reducing GHG emissions
- Portland metropolitan area
 - Requirement to develop and implement a scenario plan for reducing GHG emissions
- Eugene/Springfield metropolitan area
 - Requirement to develop a scenario plan for reducing GHG emissions
- Other urban areas
 - No current requirements. Figuring out how to move ahead.



GHG Mitigation Planning is a Strategic Planning Exercise

- Effects are large scale
 - Unlike criteria air pollutants, effects are not just local or regional
- Big challenge
 - If total GHG to be reduced by 75% while population doubles, per capita GHG has to be reduced by about 88%
- Many interacting factors
 - Demographics, economics, land use, transportation services, travel behavior, vehicle technology, fuels ...
- Many actors
 - Gov't (federal, state, regional, local), Private (many various)
- Large amount of uncertainty
 - Prices, technological advances, federal actions (or inactions)



Models Important to Strategic Planning Processes

- Enable evaluation of complex systems
 - Mental models are insufficient
 - It's important to model interactions between factors
- Enable evaluation of many scenarios
 - Large solution space to explore (but requires model to be fast enough: set up and run time)
- Facilitate discussions and consensus building among stakeholders
 - Differing mental models lead to conflict
 - Computer models bring together mental models and apply greater analytical rigor
 - Stakeholders see their mental models as important, but not the only important consideration



The GreenSTEP Model

- GreenSTEP = Greenhouse gas Strategic Transportation Energy Planning model
 - Requested by Oregon Global Warming Commission
 - Development started in 2008
- Models at the household level
- Two GreenSTEP versions
 - Statewide: supports strategic planning at the state level
 - Metropolitan: supports metropolitan area scenario planning
- Offshoots
 - FHWA Energy & Emissions Reduction Policy Analysis Tool (EERPAT) - https://www.planning.dot.gov/FHWA_tool/default.aspx



Factors are Considered at the Household Level

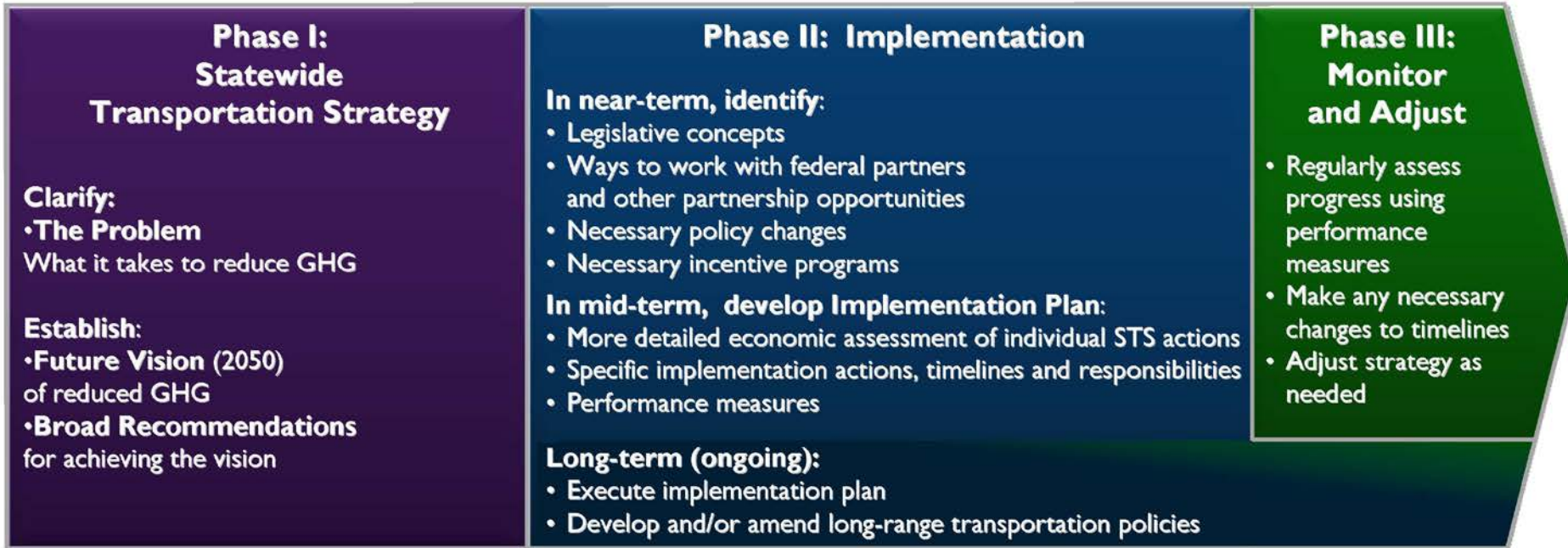


Forecasts Are Made at the Household Level





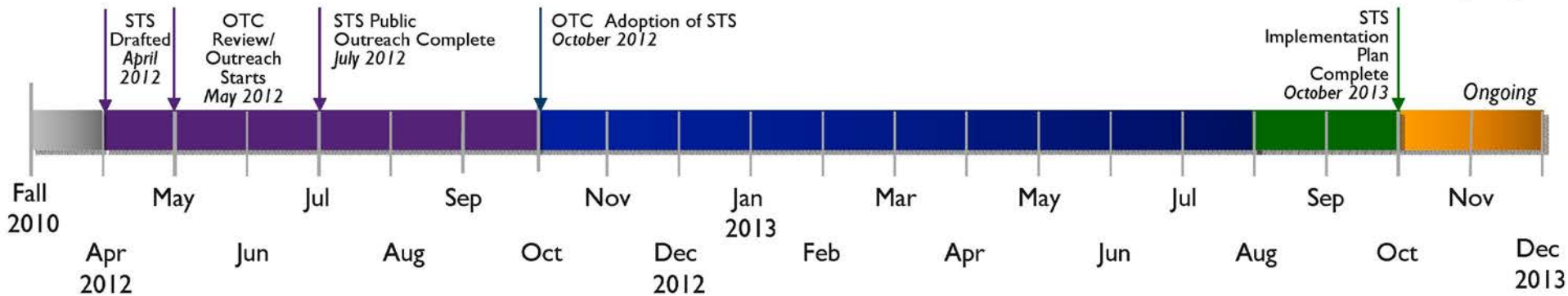
Statewide Transportation Strategy (STS)



October 2010–October 2012

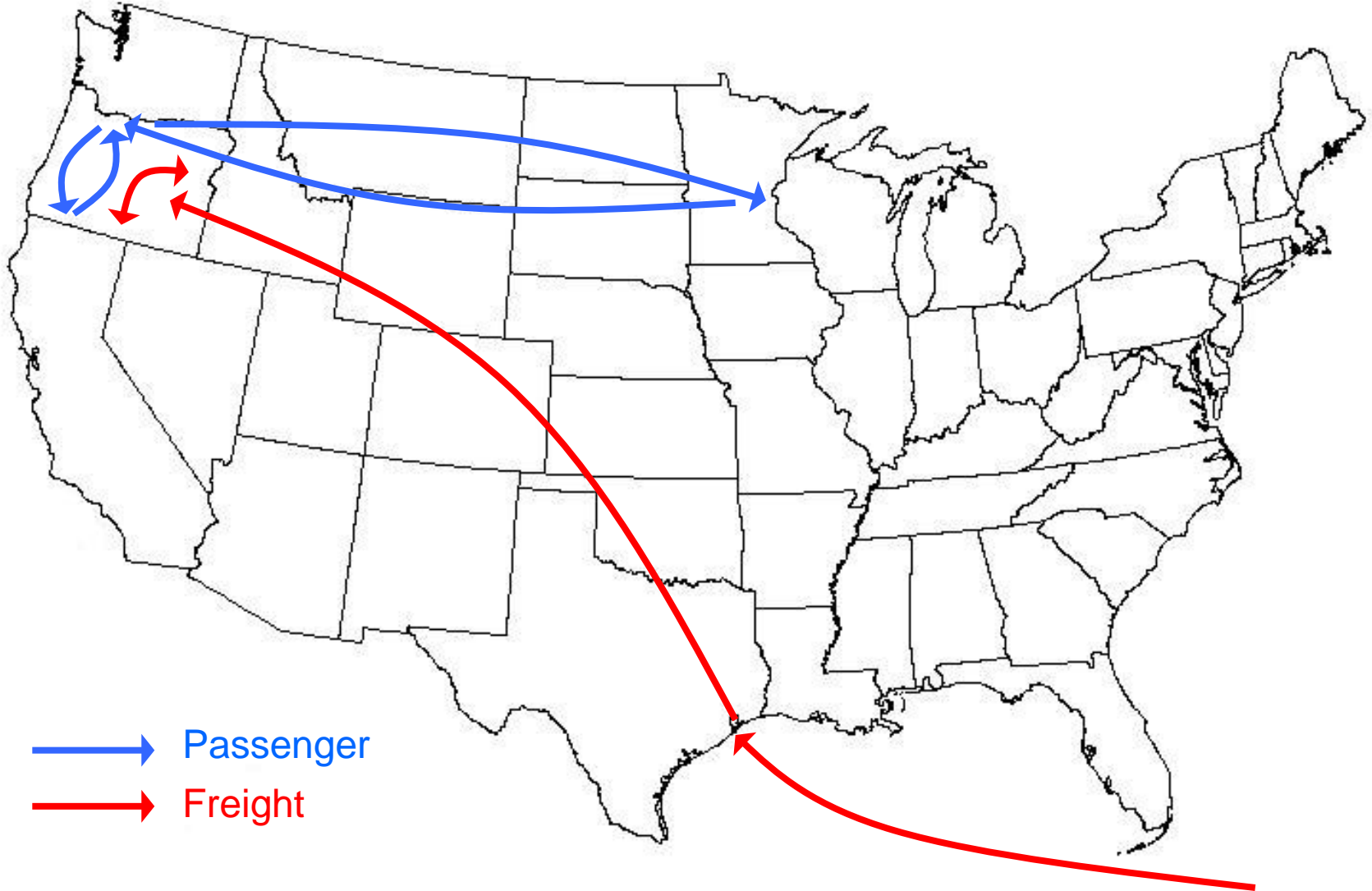
October 2012–October 2013

October 2013–Ongoing



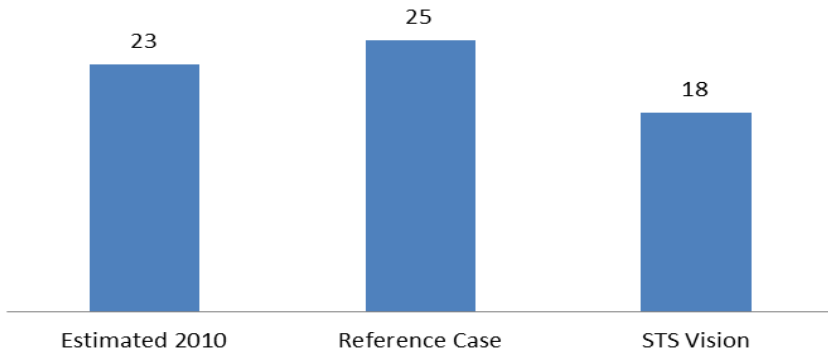


STS Scope

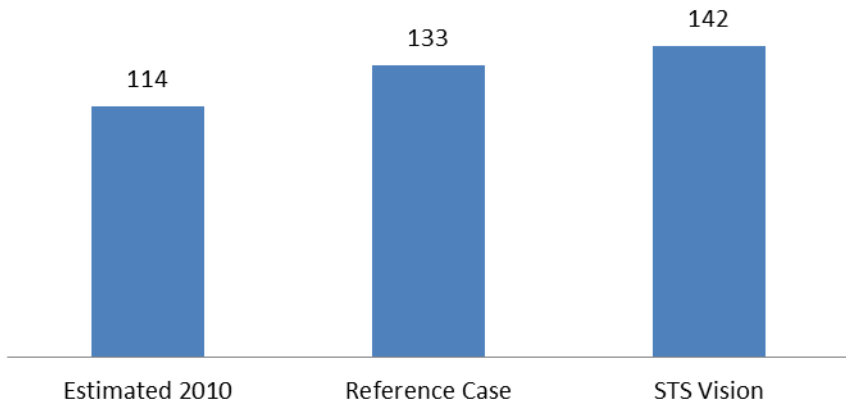




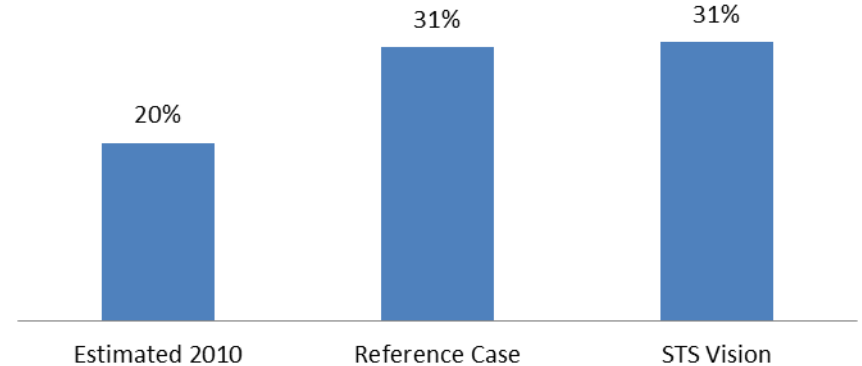
Selection of STS Evaluation Measures



Average DVMT Per Capita



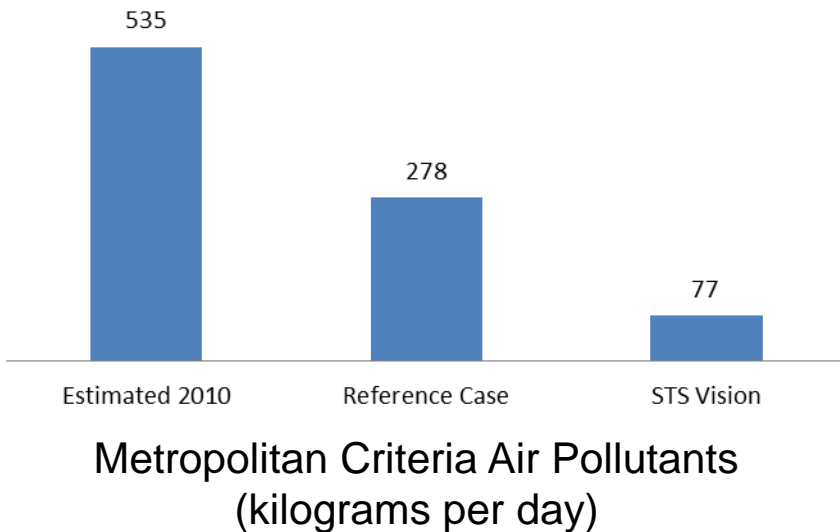
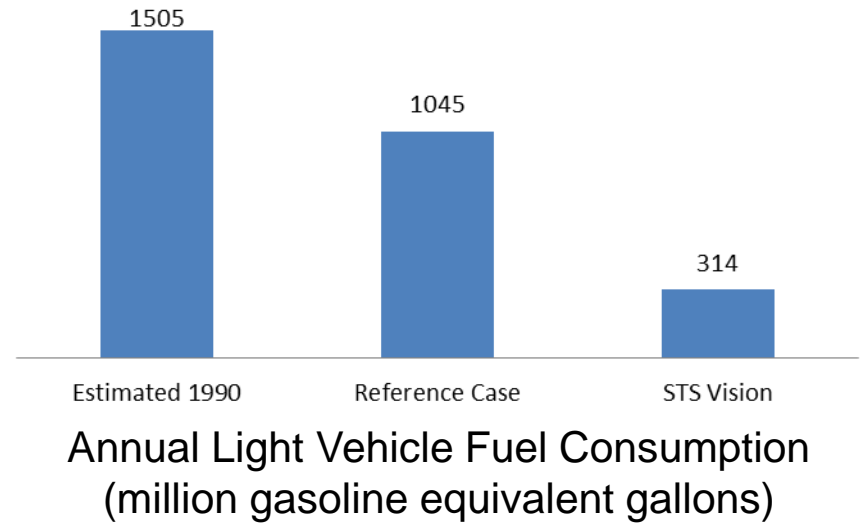
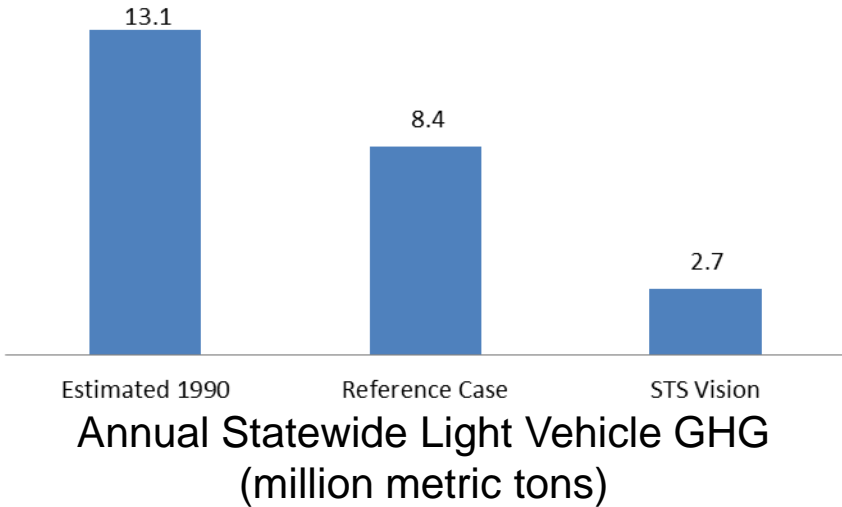
Average Annual Walk Trips Per Household



Percentage of Metropolitan Households Living in Urban Mixed Use Neighborhoods



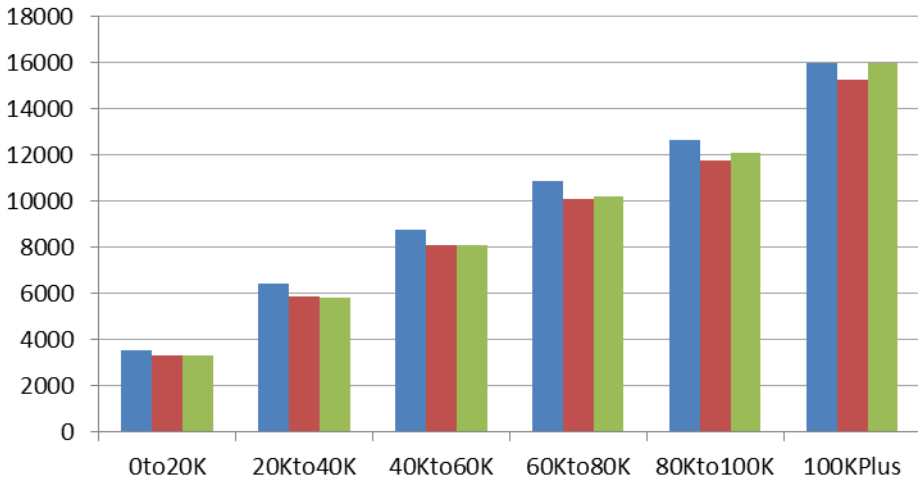
Selection of STS Evaluation Measures





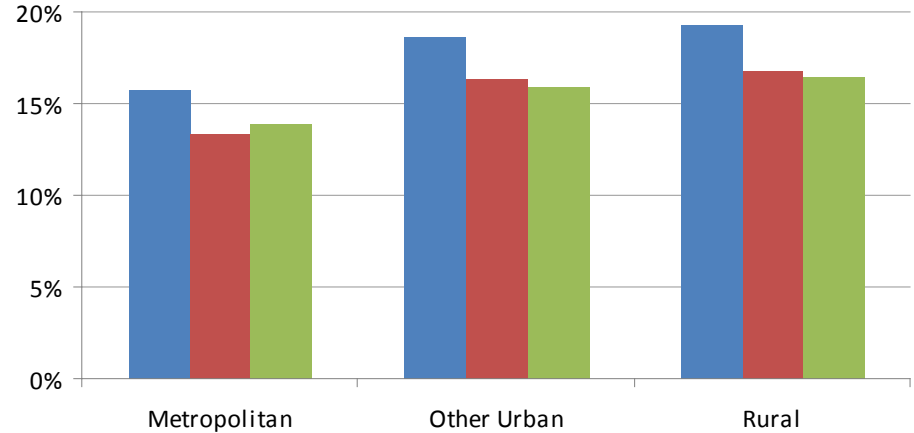
Selection of STS Evaluation Measures

■ Estimated 2010 ■ Reference ■ STS Vision



Average Annual Household Costs for Owning & Operating Vehicles

■ Estimated 2010 ■ Reference ■ STS Vision



Average Percentage of Income Spent on Owning & Operating Vehicles



Lessons Learned

- Scenario planning is a strategic planning exercise
- Planning for GHG reduction is a learning process
- An iterative approach is necessary
- Oregon's land use framework is well established & carrying out existing plans will achieve most of the land use related benefits
- Many of the key issues are related to financing
- Need to monitor and continue to consider implications of vehicle and information technologies