Transportation and Land Use Integration Process

Presentation to

Oregon Symposium on Integrated Land Use and Transport Models

Program Overview

Track 1 - OUTREACH

- Multi-User Software License Agreement
- State Steering Committee
- Modeling Users Group
- Agency Cooperation - Partnerships
- Education
  - O.T.I.S (OTP, TPR, ISTEA, State AQ Conformity)
  - Intro to EMME/2
  - Intro to Demand Modeling
  - EMME/2 Applications
  - Advanced Demand Modeling

Track 2 - IMPLEMENTATION

- Common Platform (evolving)
- *Travel Demand Model Development and Application Guidelines* emphasizing "Best Practices"
- Procedures Manual
- 3-tiered Modeling
  - Statewide
  - Substate
  - Urban

Track 3 - DEVELOPMENT

- Land Use and Transportation Forecasting
  - Integration of Land Use and Transportation
  - Initial Review and Scope Process
  - Develop Tools
  - Guidelines Manual
  - Procedures Manual
  - 3-tiered: statewide, substate, and urban
- Statewide and Substate Modeling

Track 4 - DATA

- Building Standardized Transportation Database
- Working Toward GIS Platform
- Household Activity Surveys
- Roadway Inventory
- Land Use & Demographics
- Freight & Commodities
- Recreation Surveys
- Transit Surveys
- Origin & Destination Surveys

Table 1 - Capabilities to address policy issues

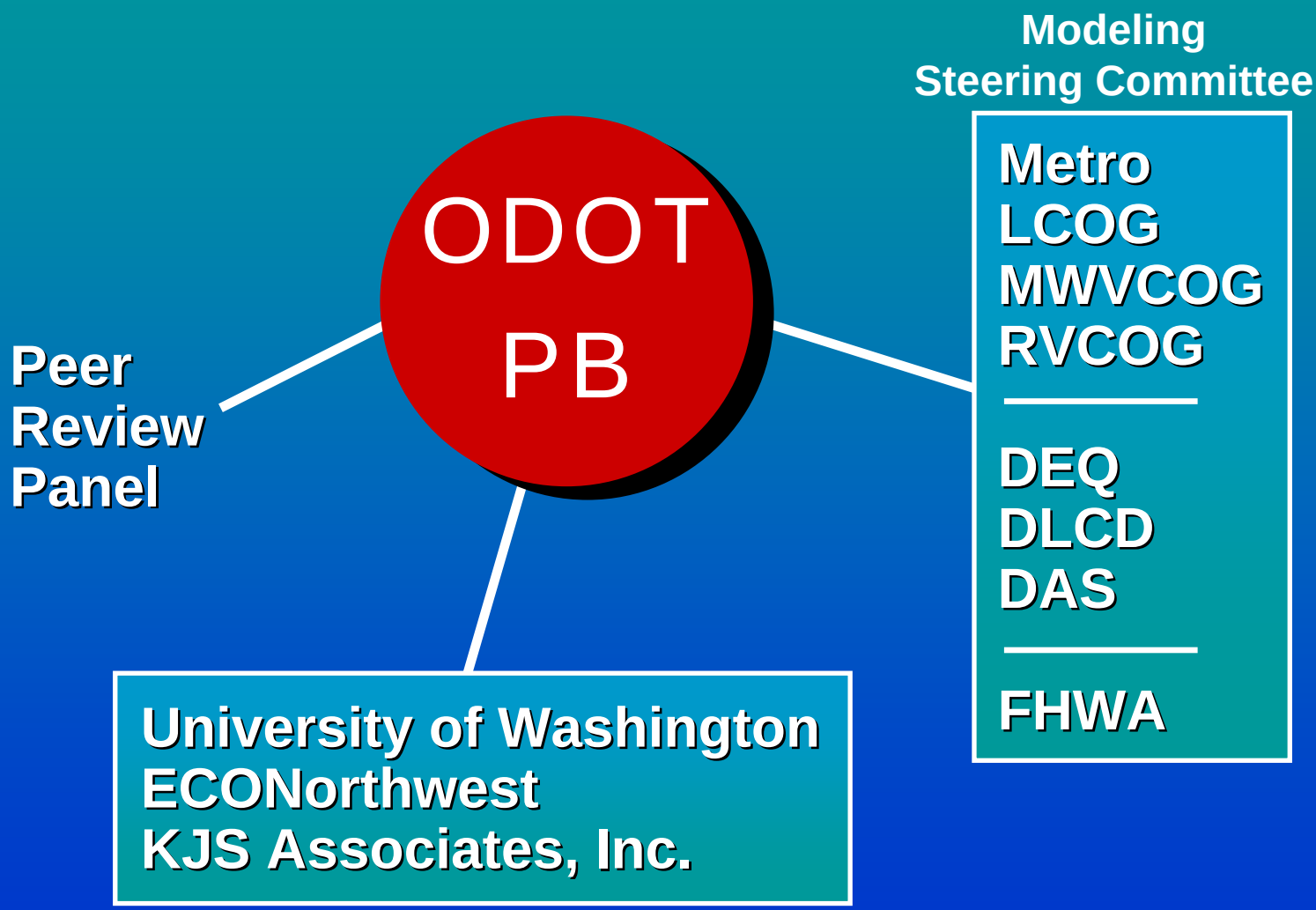
Analysis issue	Applicable scale			Required data	Modeled response(s)[a]
	statewide	substate	local		
Effect of land supply on land use and location decisions	■	■	■	Zonal area, employment and housing by type, network travel times by mode, exogenous constraints on growth (non-movable businesses, urban growth boundaries)	Changes in residential and commercial land prices, changes in land consumption by category of use, migration of employment
Effect of congestion on land use and location decisions	□	■	■		Changes in zonal accessibility[b] and its indirect effect on residential and business location choice
Cumulative effects of retail location choice		□	■		Current and lagged changes in land prices and land use in the target and adjacent zones, increased infrastructure cost as a function of increased travel demand, changes in zonal accessibility[b] and destination choice
Effect of large commercial development on the periphery of the growth boundaries	□	■	■		
Effect of land supply on travel behavior	■	■	■	Employment and household supply by zone, network travel times and cost by mode, estimates of the elasticity of trip generation by trip purpose	Changes in trip generation as a function of zonal accessibility[b] and congestion[c], changes in destination choice as a function of changes in residential and business location choice
Effect of highway capacity increases on travel behavior[d]	■	■	■		Changes in trip generation and destination choice by trip purpose, changes in corridor and systemic network measures[c], changes in travel disutility by trip purpose and area (county, zone group, etc.).
Effect of network connectivity on travel behavior		□	■		Changes in trip generation and destination choice as a function of zonal accessibility[b], changes in network measures[c] for the study area.
Effect of parking supply on travel behavior		□	■	Total travel time and cost by mode, employment and household supply by zone, exogenous forecast of parking cost and supply by zone	Changes in mode choice as a function of parking cost at the destination, lagged residential and business location choices as a function of decreased accessibility and changes in land prices.

Table 1 - Capabilities to address policy issues, cont'd

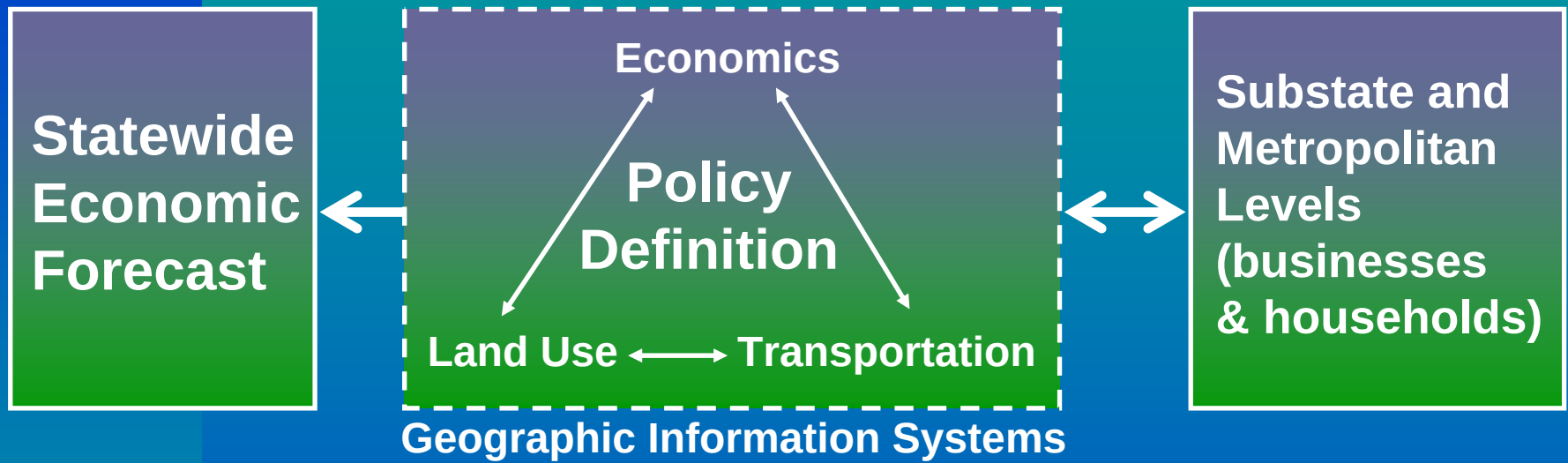
Analysis issue	Applicable scale			Required data	Modeled response(s)[a]
	statewide	substate	local		
Effect of urban form on mode choice		□	■	Zonal area and density, parking cost and supply by zone, travel cost and time by mode	Changes in mode choice as a function of destination parking costs and differential travel times and costs, lagged changes in residential and business location choice and attendant changes in trip generation and destination choice.
Effect of rail investment on highway use	■	□		Rail service and network attributes, rail passenger and freight origin-destination data by mode of access and trip purpose (persons) or commodity family (freight), zonal accessibility	Truck-rail diversion by commodity group as a function of current and lagged cost and travel time differentials, changes in unit transport cost by mode, passenger mode choice as a function of travel time and cost differential and changes in consumer surplus[f].
Effect of changes in the demographic composition of Oregon	■	■	□	Changes in household composition by time period, estimates of trip generation elasticity by household type	Changes in trip generation by area and household type[g], changes in the demand for employment by businesses, inducement of migration of employment by industry.

a. Some measures of effectiveness will be applicable for all analyses, such as changes in consumer surplus (for persons) or aggregate changes in transport cost (for freight).
b. Zonal accessibility is a derived output of the travel model which is fed back into the land use model until user-defined equilibrium occurs; it is primarily a function of zonal density and the level of congestion on the network serving it.
c. These changes can be measured both in terms of changes for a single zone or group of zones, or systemwide using measures such as changes in vehicle miles and hour of travel by area, corridor, trip purpose, mode of transport, etc.
d. These effects are still not well understood; see TRB Special Report 245.
e. Includes but not limited to changes in vehicle miles and hours of travel by mode and trip purpose (under congested conditions and total) for the corridor under study, a buffer zone around it, and for the state or substate area as a whole.
f. Estimation of passenger patronage will not be possible using the Phase II model; exogenous estimates of modal shifts can be accommodated but not explicitly modeled in the statewide model.
g. Three household classifications based on income (low, medium, and high) have been specified for the statewide model, based upon data availability.

Agency Context



What does this tool look like?



- Household Location
- Business Location
- Freight Flows → Trucks
- Passenger Flows
  - Commuter, Recreation, Personal Business