



Regional Models

Update for TPP Technical Working Group



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Two Regional Models Work Together

Land Use Model

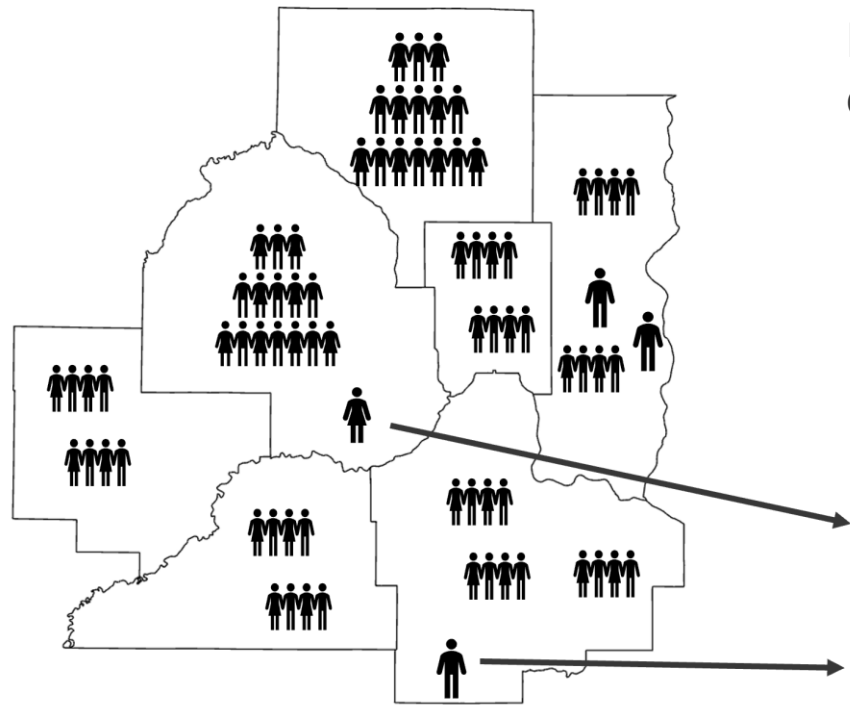
- Forecasts where people live and work based on a future scenario
- Used in the Council's local forecasts
- UrbanSim
- *Transportation system influences where people live and work*

Transportation Model

- Forecasts travel behavior based on a future scenario
- Used in Transportation Policy/project plans
- Activity Based Model – Tourcast and ActivitySim (under development)
- *Where people live and work influences transportation system*

UrbanSim Overview

Starting year – Census Data



Each year, the region changes as:

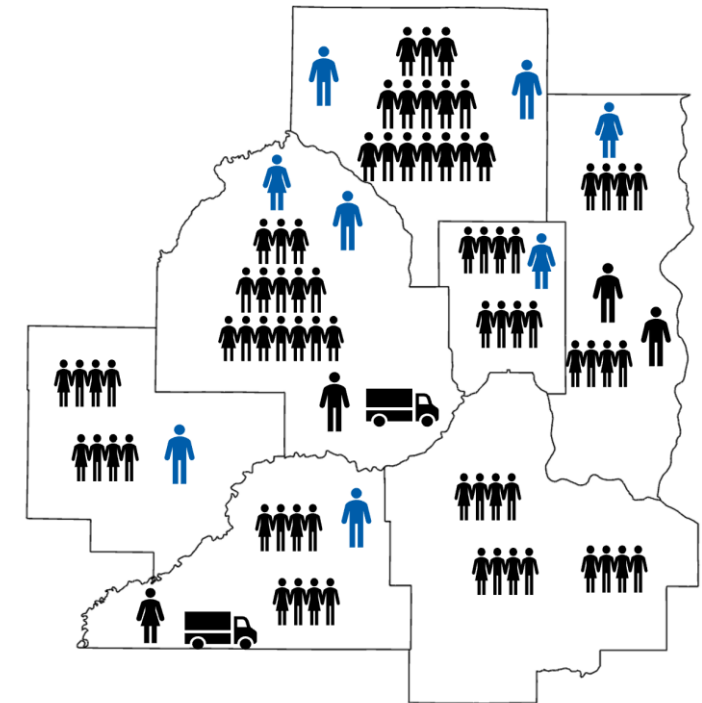
Regional growth (annual births, in-migration, economic growth) adds new people/jobs



And people/jobs move house locations/job sites



Land use changes as these people/jobs locate to new places



UrbanSim forecasts how local population and employment will grow by simulating where new (or moving) households/jobs choose to locate, and how developers respond to this demand by building new housing/commercial sites.

UrbanSim – A Deeper Look



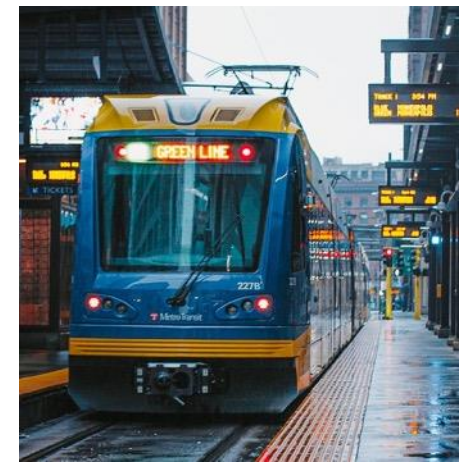
Uses a series of annual submodels



What Does UrbanSim Consider?

Factors Affecting Location Choice and Price in Models

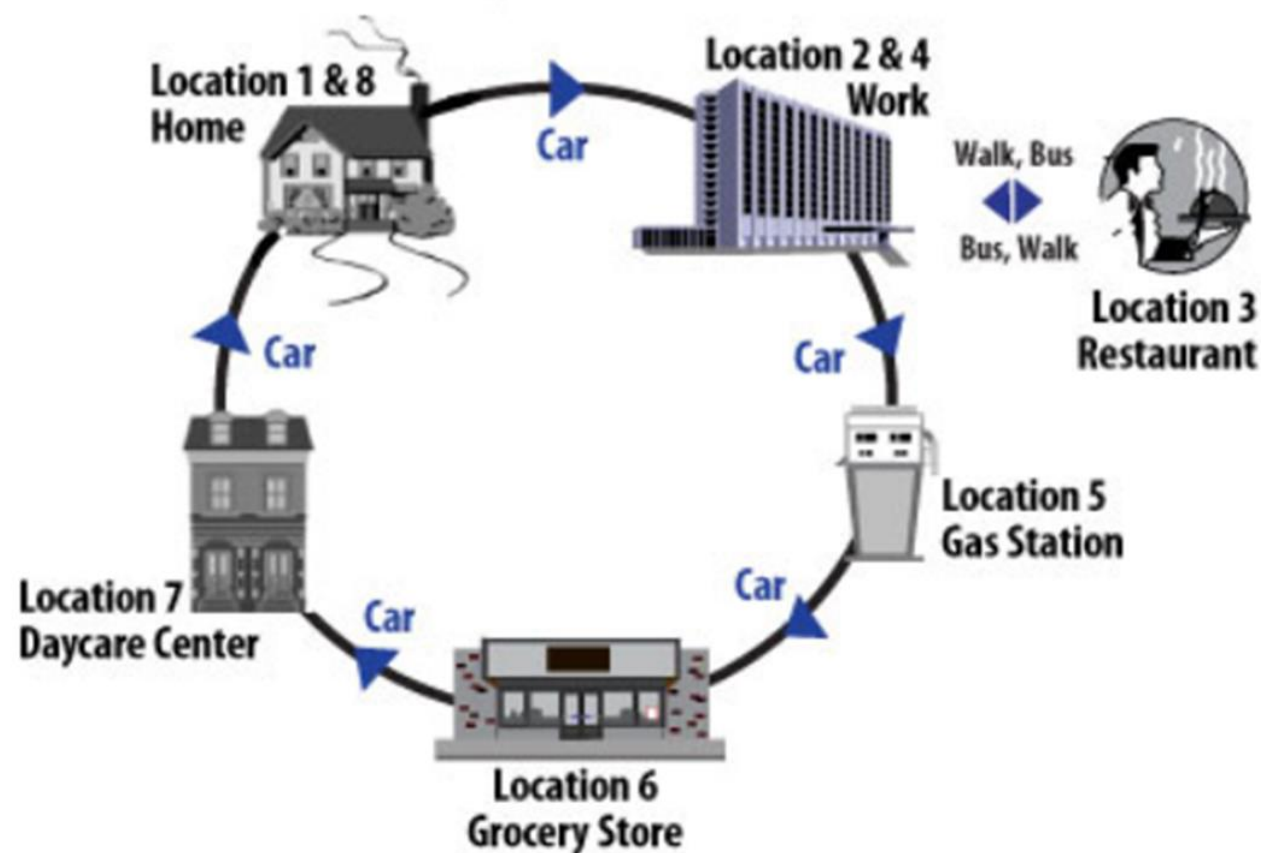
- Transportation Accessibility
 - Jobs accessible within 20 minutes auto/45 minutes transit
 - Proximity to high frequency transit stops/stations
- Surrounding land uses and built environment characteristics
- Parks and open water
- Land use policies
- Neighborhood rents and prices



Activity Based Model Overview

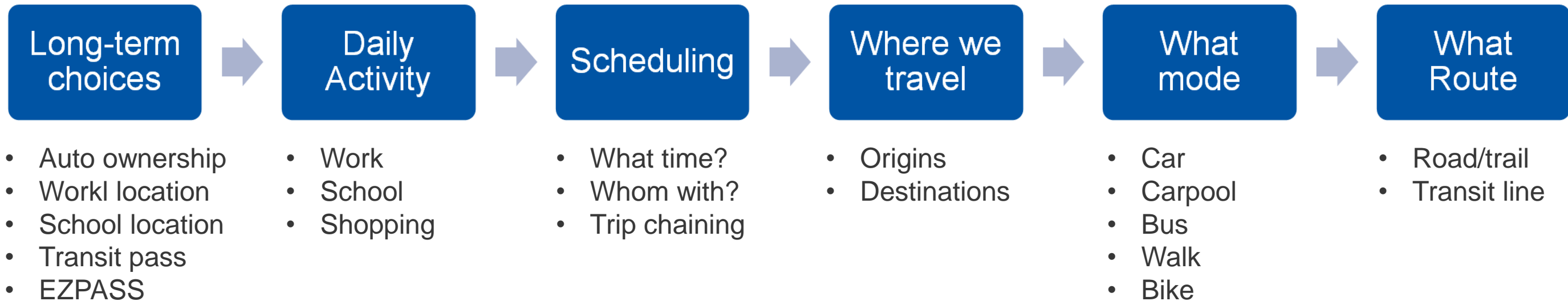
Activity Based Modeling

Example of a Travel Day

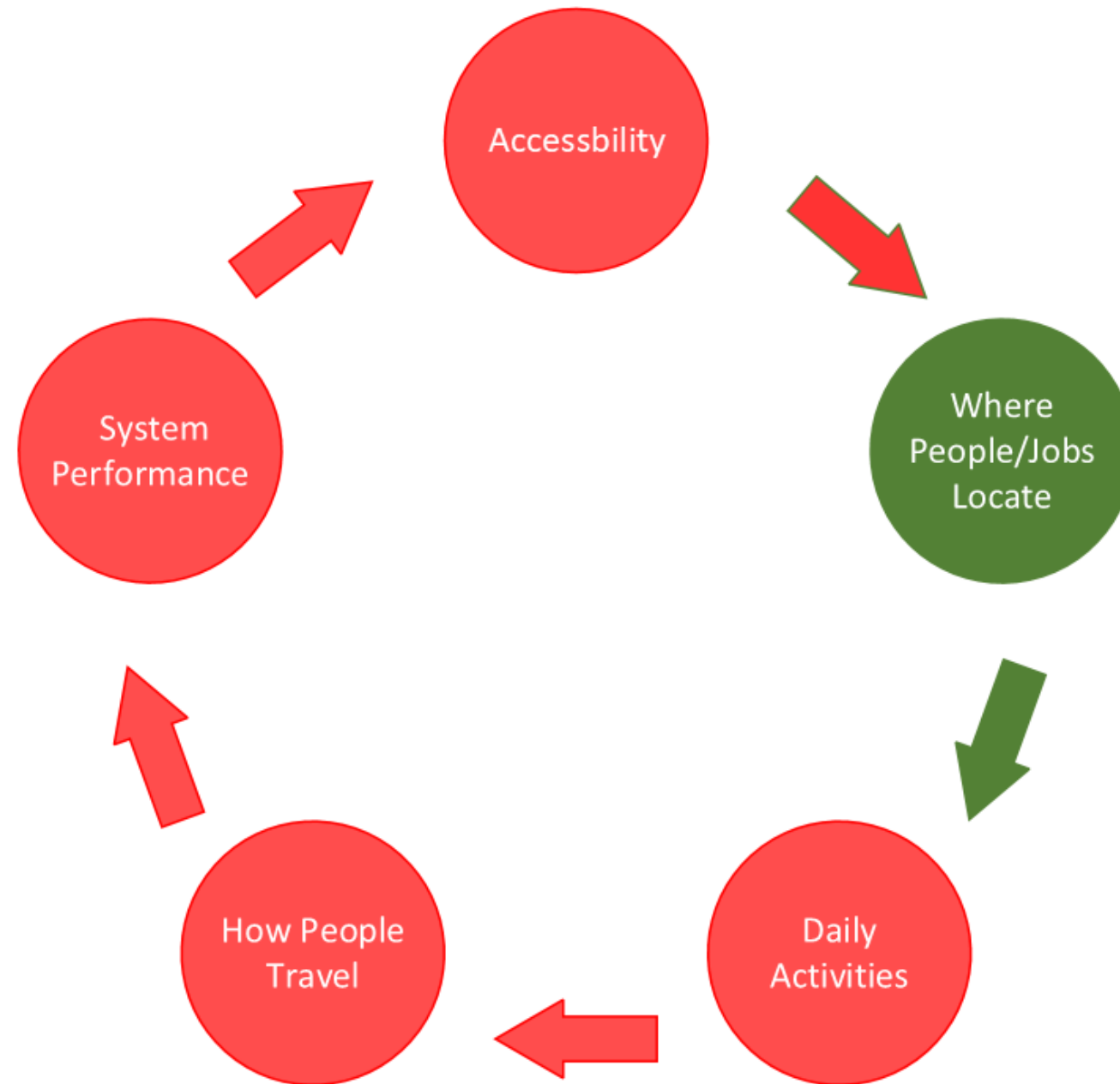


- People make trips during the day because they need/want to do things
- But they have limited time and resources during the day to make these trips
- To accomplish these needs, people often organize trips into tours

Model choices from long- to short-term



How Transportation Model Interacts with Land Use Model



What Info Do We Get from Model?



Outputs include:

- Traffic volumes by roadway segment and time of day
- Trip origins and destinations
- Transit ridership forecasts
- Average forecasted speeds along roadway segments
- How long it takes to travel between destinations
- Vehicle Miles Traveled
- Accessibility Measures

Transportation Models

The Council has multiple transportation models available

- Tourcast
- ActivitySim
- STOPS
- MOVES



Issues in Forecasting



Induced demand

Effect of pandemic

Uncertainty around technology

Uncertainty about effects of climate change

Statistical and other errors in models

“All models are wrong, but some are useful”, George Box