



**COLORADO**

Department of  
Transportation



**Statewide Travel Model:  
What it can do to enhance planning**



## Purpose and Intent of Today's Discussion

- In early stages of travel model development
- Scoping done now to identify travel demand model needs
- Early discussion on scenarios used in SWP and RTP development.



## What can the model do for us?

- Reduce project time and expense used previously to build project-based travel models to assess traffic conditions on large projects.
- Provide consistency in traffic analysis that was done on a project to project basis in the past.
- Allow for better “what if” analysis that is consistent between projects.
- Use as a “what if” tool to assess outcomes of transportation and/or land use concepts at a statewide level – e.g., examine the effect on traffic and congestion of adding lanes to a highway.



## Activity-Based Models vs. Traditional Trip-based Travel Models

- Depicts people and their travel behavior in much greater detail.
- Similar to comparing a “Stick figure” drawing of a region’s people and their travel patterns, for trip-based models, to “true to life” drawings of activity-based models.
- Activity-based models include a detailed depiction of each person in the region, together with a complete “travel diary” of each person on a typical day.
- They provide better insights into the relationship between people’s characteristics and their travel choices – they can show how older citizens travel compared to younger.



## Basic Data/Model Inputs

- Transportation network of roadways, rail lines, and transit routes
- Detailed location of households, jobs, and schools (at the address level)
- Detailed depictions of each household and each person in the household (via population synthesizing), equivalent to the information available in the census long form survey (for example, sex, age, school status, job, and household income.)



## Basic Model Outputs

- Vehicle miles traveled
- Travel speeds, varying by time of day
- Travel delay, varying by time of day
- Traffic volumes varying by time of day
- Mode choice
- Truck volumes
- Numbers of trips and miles driven by demographic group
- Trips (by any mode) originating from or destined to any location

### Model Runs

- A typical model run is anticipated to take 24 hours



## Use in Plan Development by Varying Audiences

**Senior Management** - which major projects and programs produce the best outcomes?

**Planners** – what statewide trends influence transportation improvement priorities, both statewide and regionally?

**Project Engineers** – what are the effects of various options in design for a given project?

**Planning Partners** – what happens to the transportation system in my area if we build certain improvements or projects in my area?

**The Traveling Public** – how effective are my taxpayer dollars in influencing the betterment of the transportation system that will improve my quality of life, e.g., get me conveniently to work, day care/school, and social events?



## Use in SWP and RTP Development

Support discussions in identifying:

- Needs
- High-Priority Corridors
- Projects
- Other?



## Scenarios – An Initial Conversation with You

CDOT will work with CDOT Regions and planning partners to identify key issues to consider for scenarios, and factors that influence issues.



## Sample scenarios that may inform plan development

- What happens to the transportation system and travel patterns if technological advances become prevalent, e.g., connected and autonomous vehicles?
- What happens if people become more environmentally conscience, and start driving less, and taking transit, or walking and biking more?
- What happens if gas prices rise substantially or alternative fuels like solar become prevalent?
- What happens if all expansion projects are now toll express lanes?
- What happens if the economy improves or gets worse?



## Statewide Travel Model Timeline & Next Steps

- It is anticipated the model will be operational some time in 2017.
- IMB is seeking input to determine what other potential model outputs may be useful to users.