

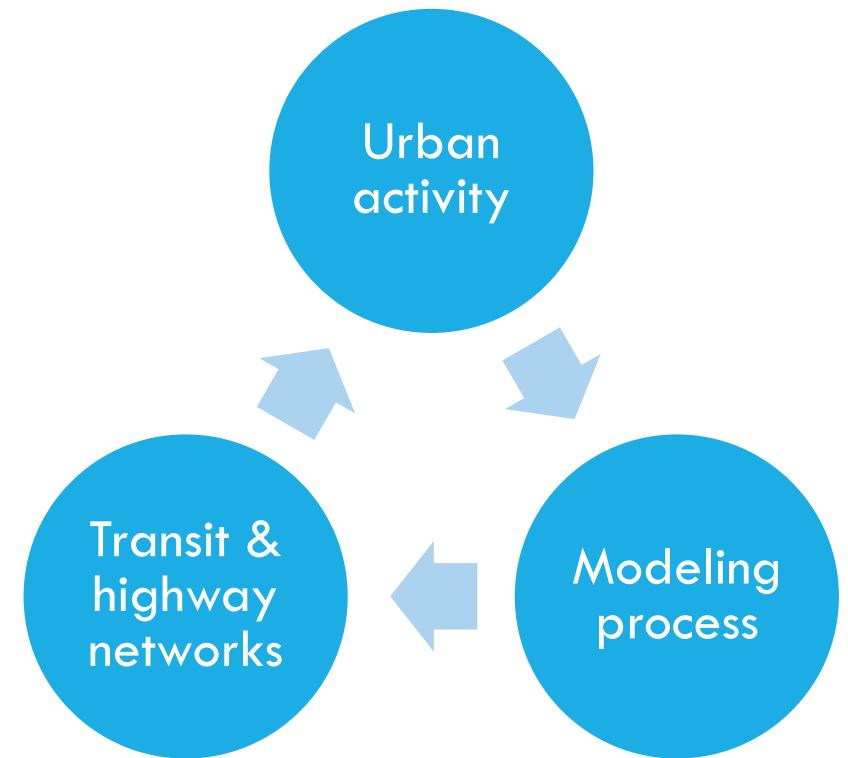


Modeling and VMT: A Primer

City of Culver City
City Council
January 30, 2018

OBJECTIVES FOR THIS PRESENTATION

- Have a basic ‘big picture’ understanding of modeling
- Answer the following questions:
 - Why should we model travel demand?
 - What is a travel demand forecast model?
 - Who will use model output?
 - How will we use model output?
 - Why the change from LOS to VMT?

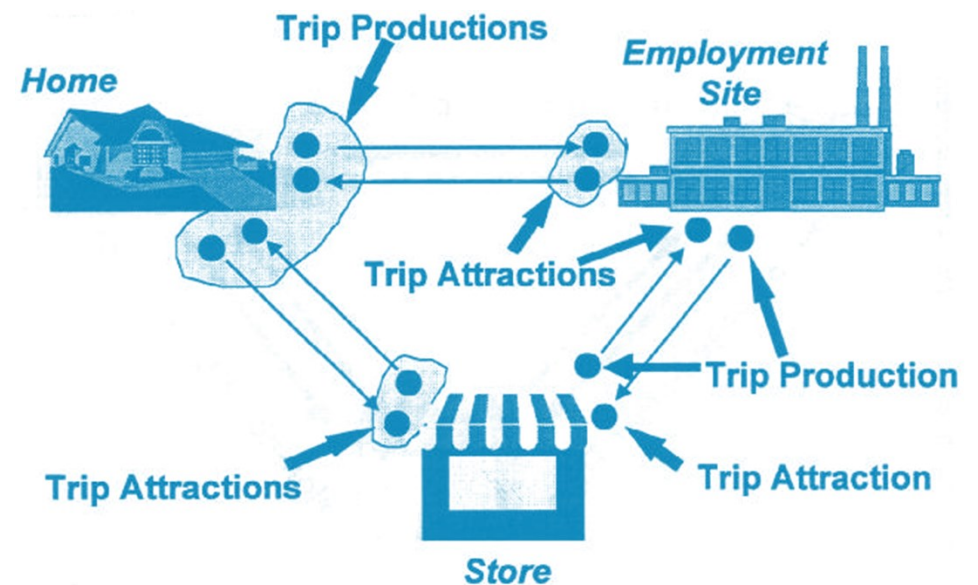


PRESENTATION OVERVIEW

1. Introduction to modeling
2. How to build a model
3. How the model works
4. Model output
5. Performance measures
6. Model application
7. LOS to VMT transition
8. Modeling costs

WHAT IS A TRAFFIC MODEL?

- A forecast of future travel
 - Where are people traveling to and from?
 - What routes are they choosing to get there?
 - What modes of transportation will they use?



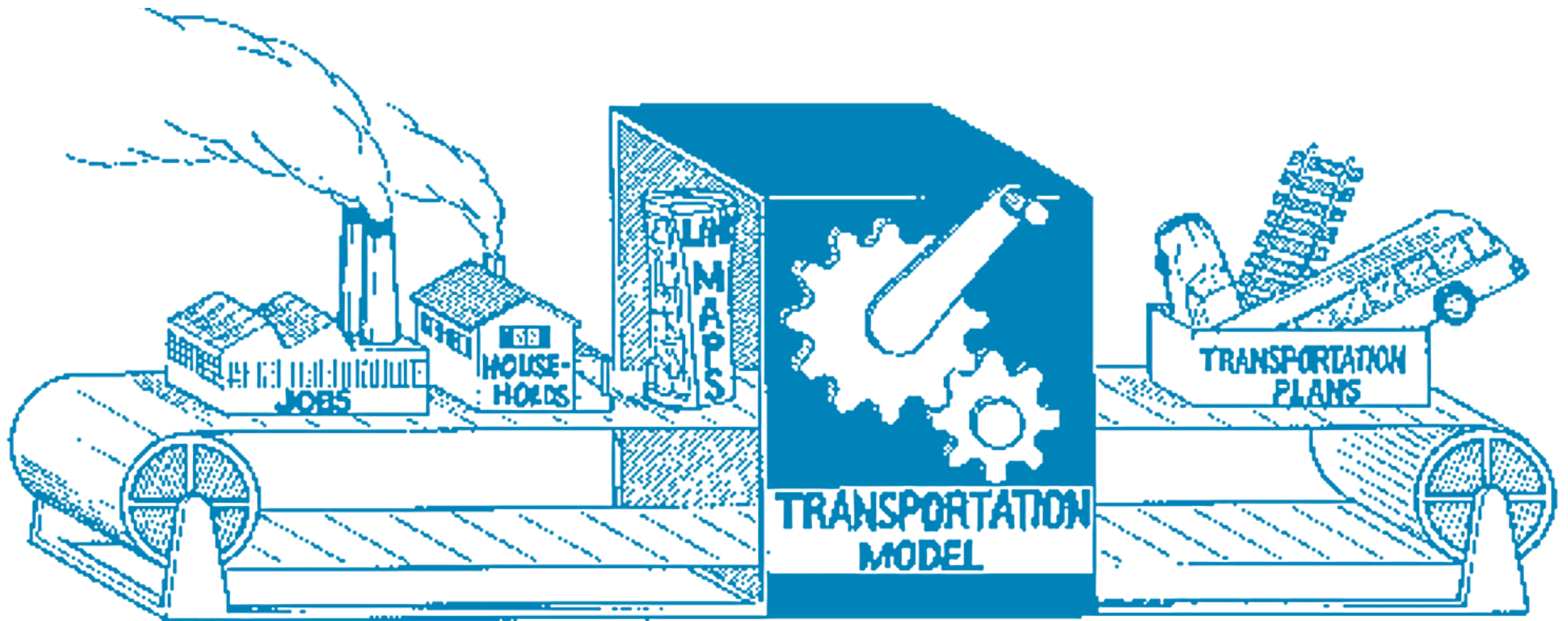
WHY ARE MODELS IMPORTANT?

- Guides development of long-range plans for the transportation infrastructure
- Guides future investment strategies
- Determines how much traffic will be on roadways in future
- Helps understand impact of development on the transportation system
- Allows us to make informed decisions

WHAT ARE MODELS USED FOR?

- Providing decision makers best possible information about future needs
- Determining where congestion may be in the future
- Determining how to alleviate or minimize that congestion
- Determining traffic impact due to land use changes and/or development projects
- Considering scenario alternatives analysis

BUILDING A MODEL

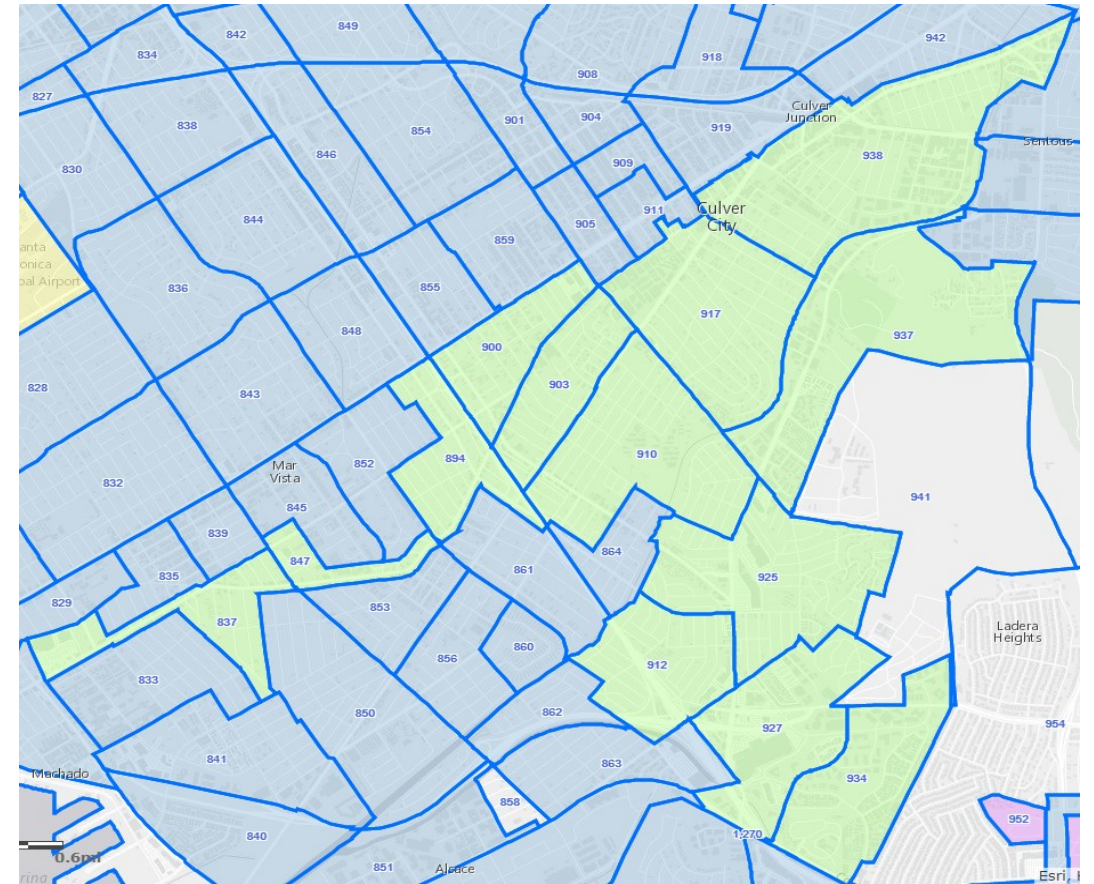


WHAT IS NEEDED TO START?

- What causes us to travel each day? How do we get there?
- Well organized data is critical!
 - Population
 - Households/dwelling units
 - Employment
 - School enrollment
 - Vehicle ownership
 - Income levels
 - Land use characteristics / zoning
 - Roadway network

TRAFFIC ANALYSIS ZONES (TAZ)

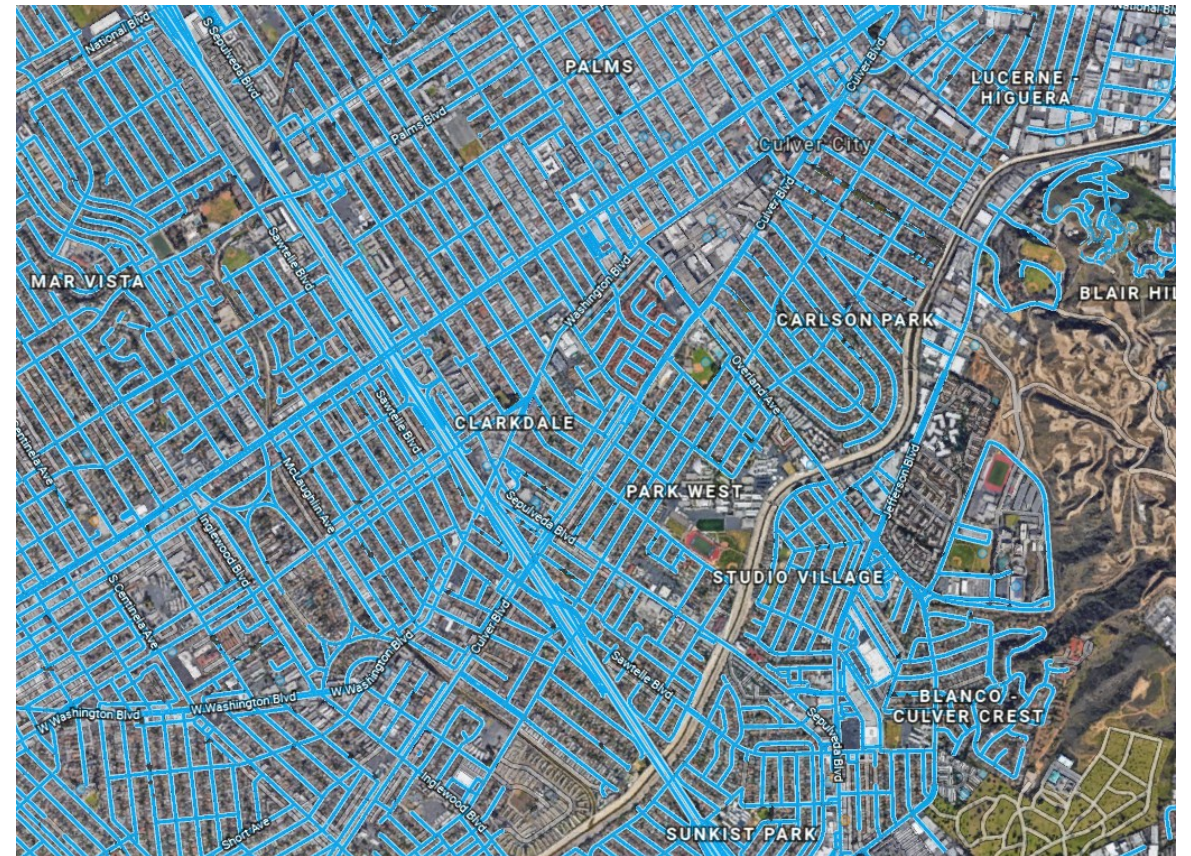
- Data is organized by “TAZ,” a geographic area, similar to a census block
- Culver City model will create detailed sublayers in SCAG TAZs



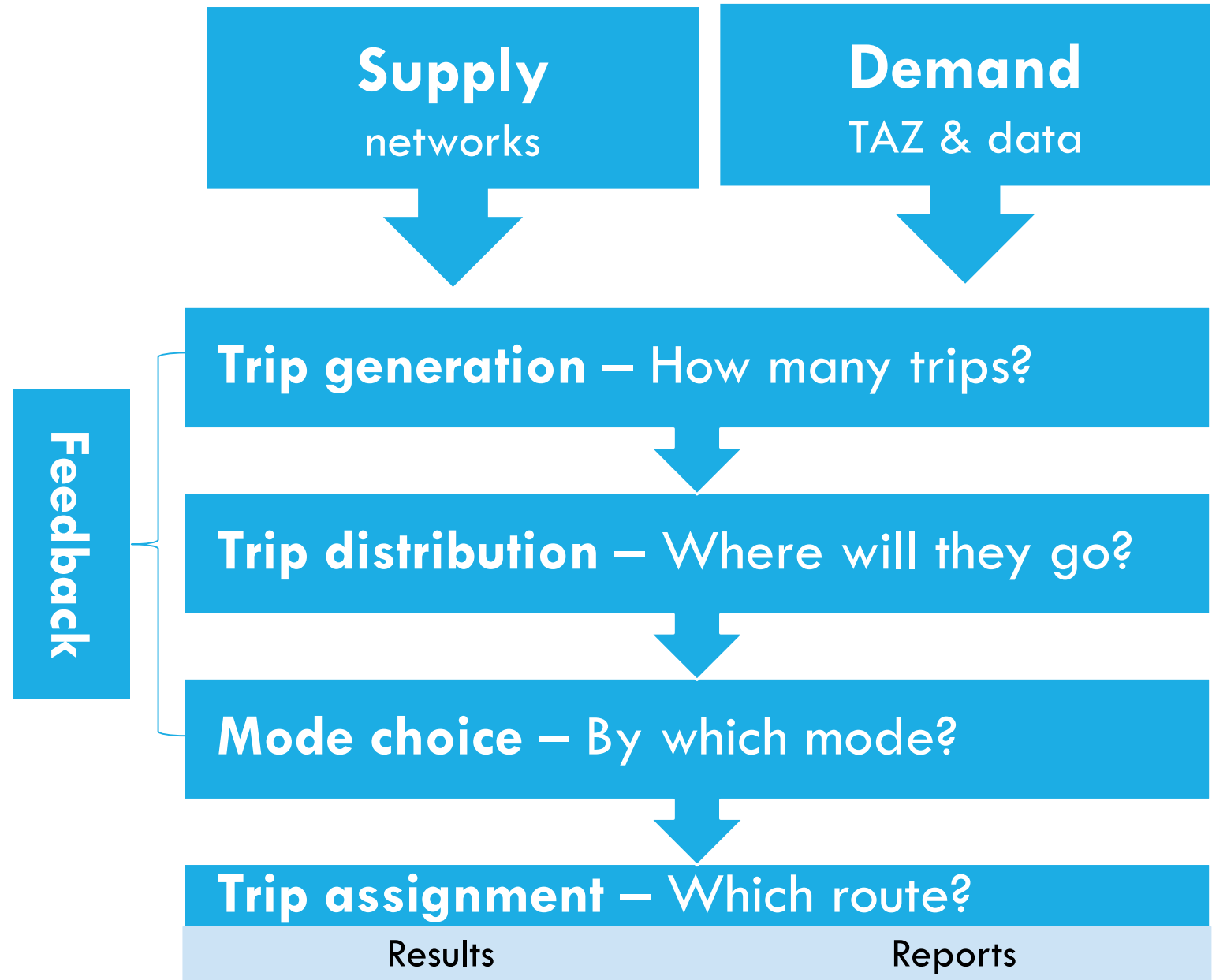
SCAG TAZs

TRANSPORTATION NETWORKS

- Need to know how TAZs are connected before figuring out how trips are distributed between TAZs
- TAZs are connected by transportation networks



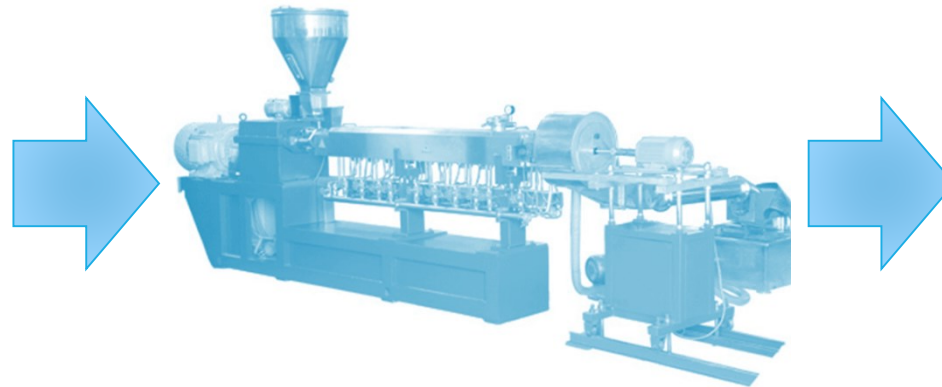
MODELING STEPS



MODEL INPUTS AND OUTPUTS

Inputs

- Transportation networks
- Socioeconomic data
- External data
- Special generators
- Model parameters



Outputs

- Trips by mode
- Traffic volumes
- Congestion speeds
- Transit volumes
- Bike/ped volumes
- Summary information

MODEL VALIDATION

- Steps to obtain a reliable model
 - Model estimation
 - Model calibration
 - Model validation
 - Model application
 - Reasonableness checks
 - Sensitivity checks

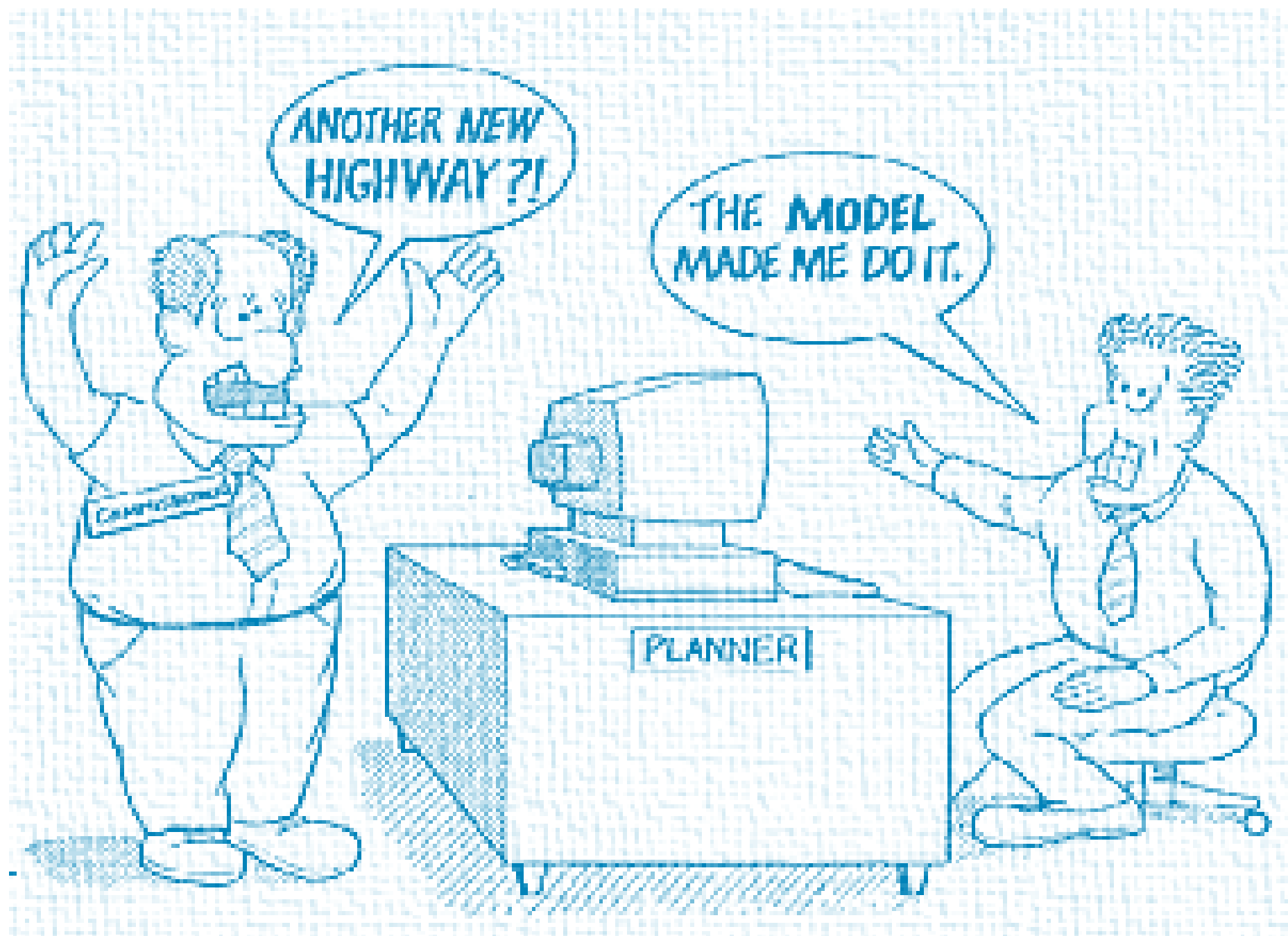
UPDATED ANALYSIS METHODS

California Senate Bill (SB) 743

- Requires CEQA transportation analysis to measure impacts with Vehicle Miles Traveled (VMT), promoting:
 - efficient access to destinations, such as removing barriers to infill development
 - reduction of greenhouse gas emissions
 - public health through active transportation

WHY THE CHANGES?

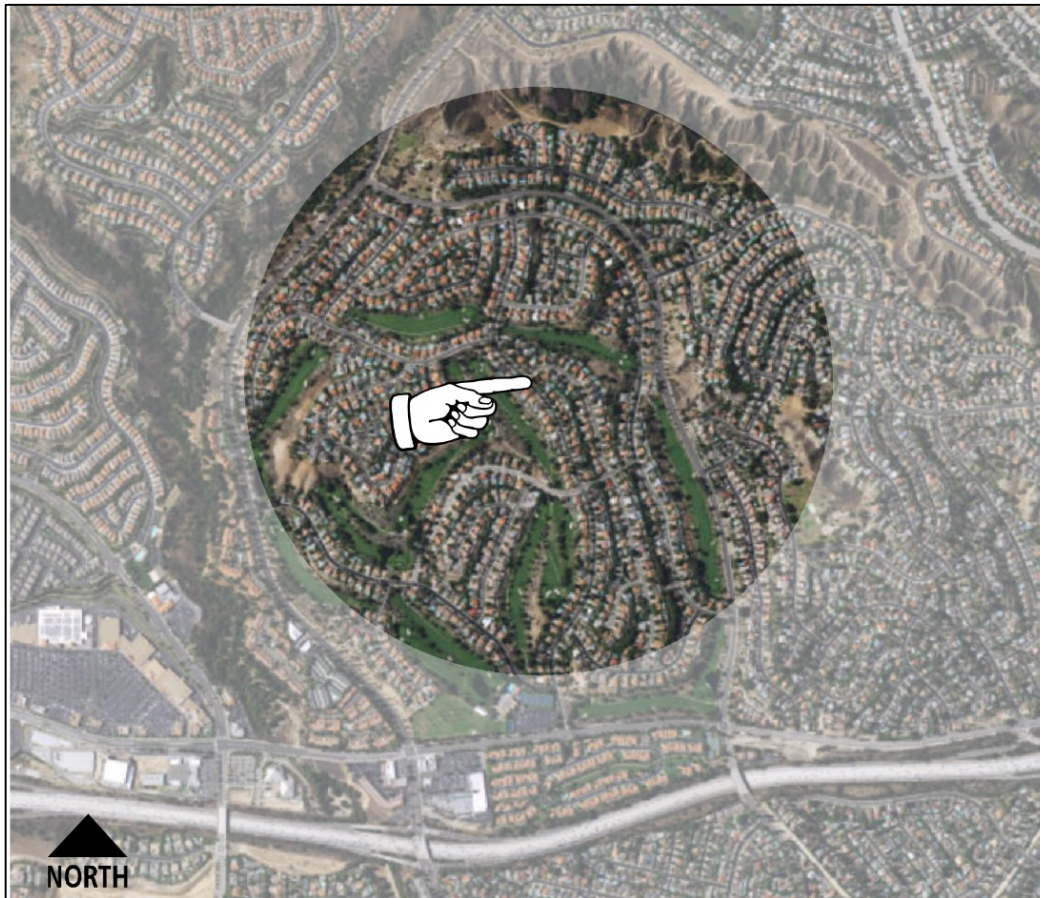
- We can't widen our way out of congestion...
 - ✓ yet everyone wants to reduce traffic congestion
- Our continued economic growth and activity...
 - ✓ needs enhanced transportation options
- Our changing demographics and preferences...
 - ✓ are shifting how people travel



PROBLEMS WITH LOS AS A MEASURE OF TRANSPORTATION IMPACT

- Hard and expensive to model real-world conditions accurately
- Focuses on moving more cars faster rather than people
- Discourages and penalizes “last in” infill development that creates an impact
- Encourages sprawl and exacerbates regional congestion
- Scale of analysis focusing on adjacent intersections and roadways is too small
- Induces vehicular travel
- Favors inefficiency and ignores road users who aren't in cars

USING VEHICLE DELAY TO EVALUATE LAND USE PROJECTS RESTRICTS EFFICIENT DEVELOPMENT



Development Review Metric	Outcome
Level of Service (LOS)	More sprawl

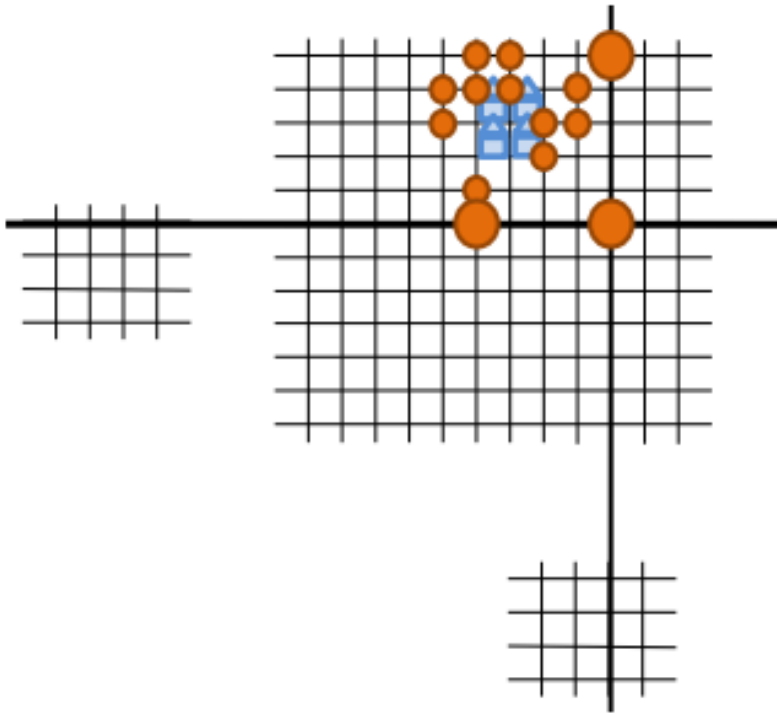
VMT IS A BETTER MEASURE OF THE EFFECTS OF LAND USE ON THE TRANSPORTATION SYSTEM



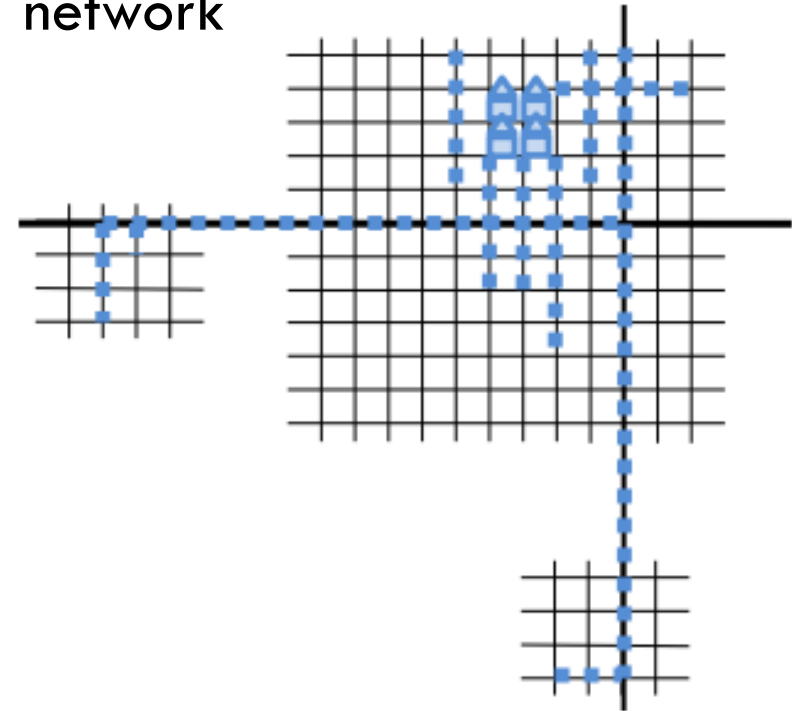
Development Review Metric	Outcome
Vehicle Miles Traveled (VMT)	Projects where they make sense

ANALYSIS DIFFERENCE

Current: LOS on local intersections and highway segments



Proposed: Full extent of VMT loaded onto the roadway network



BENEFITS OF USING VMT

- Data to evaluate effectiveness
- Lower CEQA costs
- Better public health and safety outcome
- Fights climate change, reduces GHG emissions
- Promotes growth where it makes sense
- Streamlines transit and active transportation
- Lower road maintenance costs
- Enhances mobility throughout the region



VMT IS ONLY ONE ASPECT OF THE PUZZLE

CEQA Guidelines ask, “Would the project:

- **Conflict with any City plan, ordinance, or policy addressing the safety or performance of the circulation system**, including transit, roadways, bicycle lanes and pedestrian paths (except for automobile level of service)
- **Substantially increase additional vehicle miles traveled** (per capita, per service population, or other appropriate efficiency measure)
- **Substantially induce additional automobile travel by increasing physical roadway capacity in congested areas** (i.e. by adding new mixed-flow lanes) or by adding new roadways to the network
- **Result in inadequate emergency access”**

KEY COMPONENTS FOR IMPLEMENTATION

- General Plan Land Use and Mobility Elements
- CEQA significance thresholds and implementing guidelines
- Traffic study guidelines incorporating regional tools for consistency
- Mobility fund programming to implement plans to reduce VMT

VMT MITIGATION OPTIONS

- Parking management
- Transit incentives
- Education and encouragement
- Bicycle infrastructure
- Shared mobility
- Commute trip reduction
- Neighborhood enhancement

WHAT HAPPENS TO LOS?

- Cities can keep authority to require projects to analyze LOS thresholds in traffic study criteria and report on project traffic causing vehicle congestion and delay at intersections

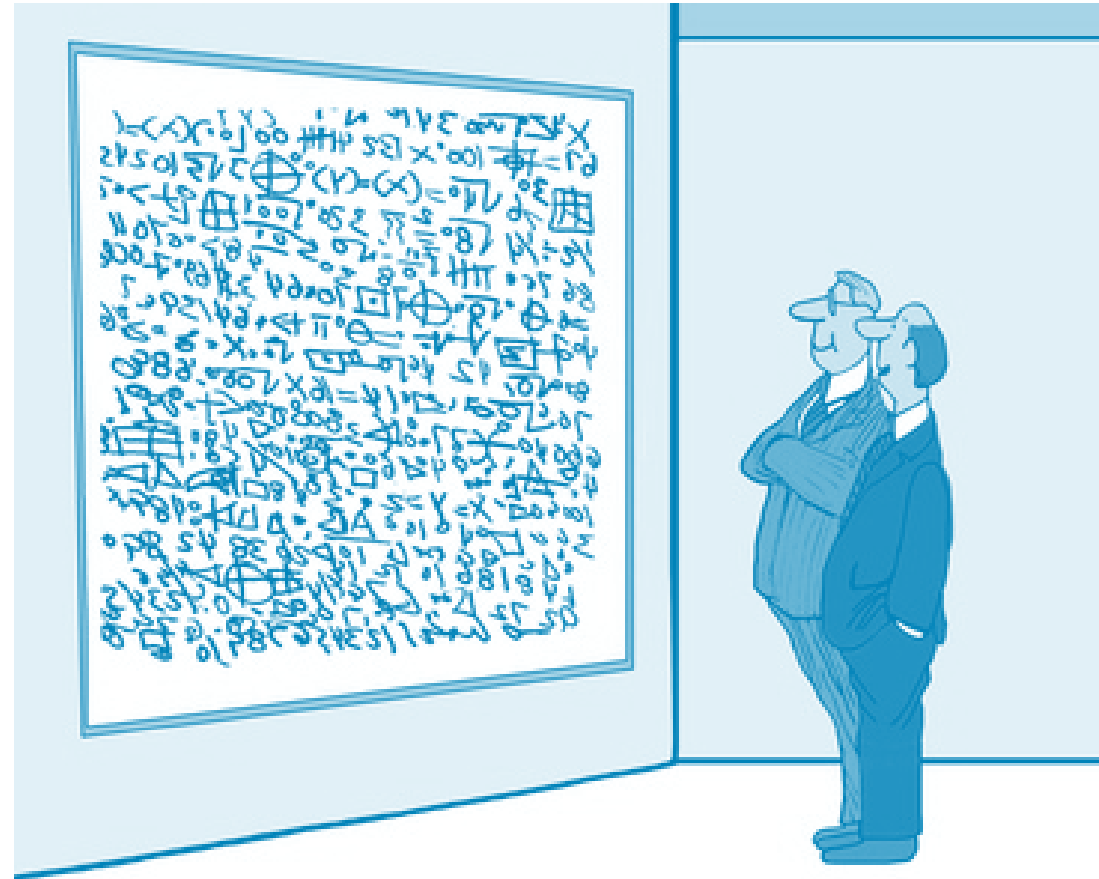
COST EXAMPLES

- Updates to existing models for SB 743 compliance
 - \$825,000 (LA)
 - \$300,000 (SaMo)
 - \$106,000 (Pasadena)
- Creation of new model:
 - \$500,000 (WeHo)

KEY OBJECTIVES

- Identify/align objectives
 - General Plan sets the objectives
- Measure what matters
 - Choose metrics that reinforce desired outcomes
- Develop tools to ease implementation
 - Transportation impact fees
 - Travel demand management (TDM) regulations
 - Choose forecasting tools wisely

QUESTIONS AND ANSWERS



“When you put it like that, it makes complete sense.”