

# Menlo Park General Plan & M-2 Area Zoning Update



CONNECTMENLO  
menlo park land use & mobility update

## Symposium 2: Transportation & Performance Metrics

October 8, 2014



# Tonight's Agenda



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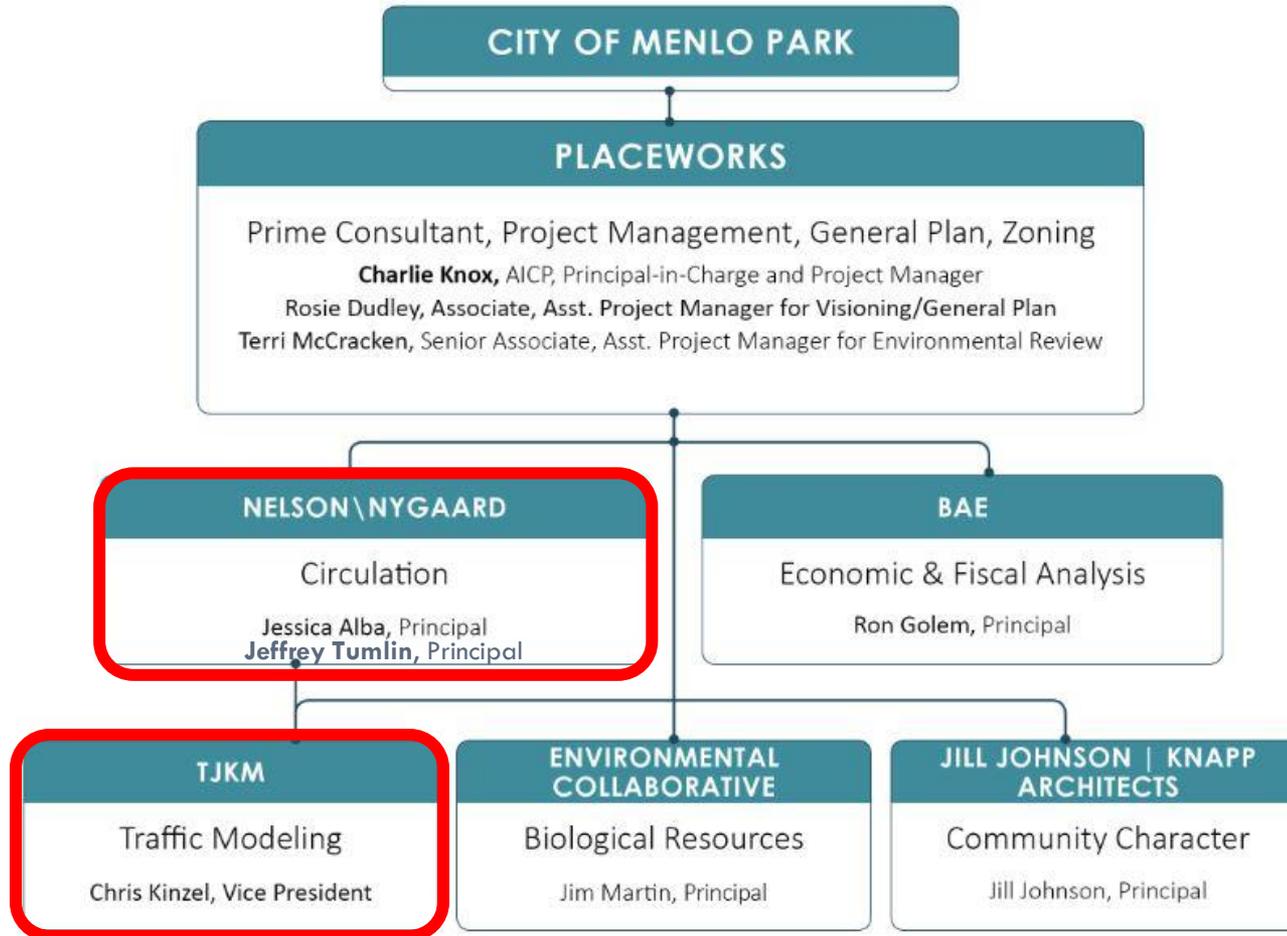
- 7:00 Welcome and Introductions
- 7:10 Presentation by Consultant Team
- 8:10 Questions and Answers
- 8:55 Closing Remarks
- 9:00 Adjourn

# Consultant Team



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# Project Objectives



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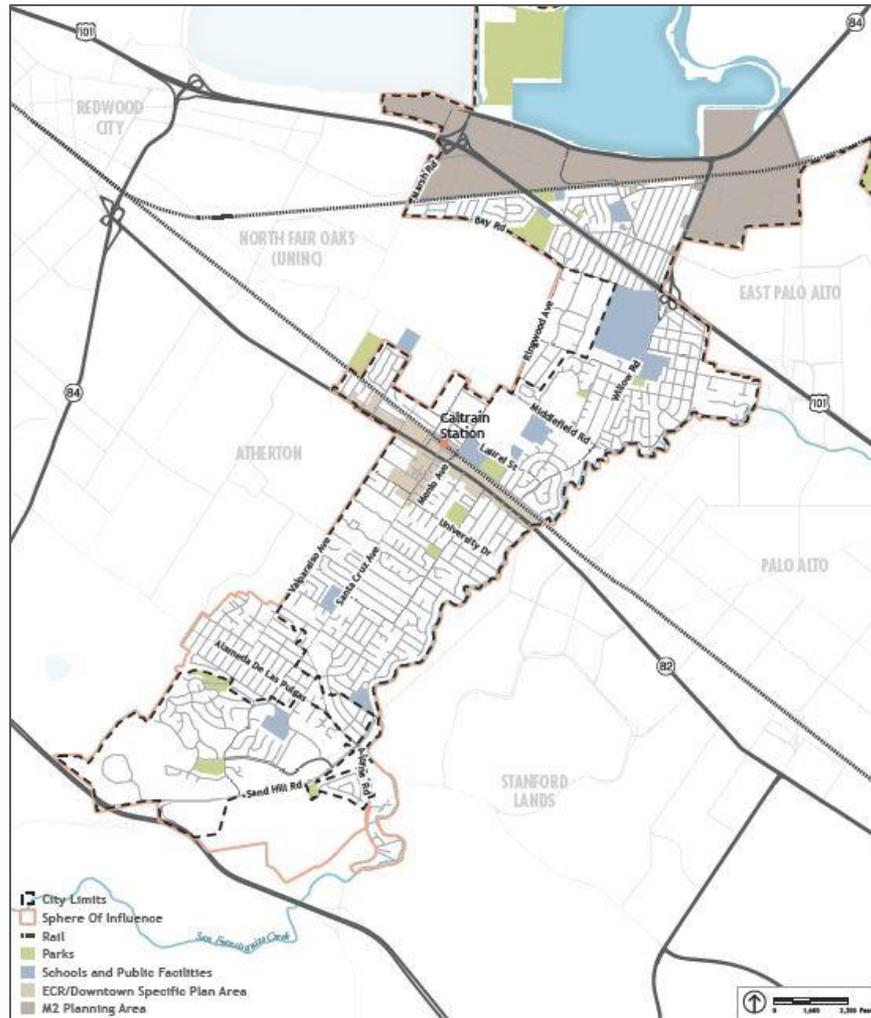
- Establish and achieve the community's vision
- Institute equitable, efficient land use processes
- Realize economic and revenue potential
- Reduce emissions and adapt sustainably
- Improve mobility for all travel modes
- Preserve neighborhood character

# Citywide Context



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# Focus on M-2 Area



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# Project Components

- **Guiding Principles (Visioning)** – compass for the entire project
- **General Plan Update (Land Use & Circulation Elements)** – blueprint for the future
- **M-2 Zoning Update** – implement the General Plan
- **Environmental Impact Report (EIR)** – identify and address potential impacts

# General Plan – Our “Constitution”

- Community's 20-year vision for the future
- Comprehensive guide for decision-making
  - Leads to real physical change
- Vehicle for public engagement & education
  - Opportunity to include your priorities
- Required “Elements”
  - Land Use & Circulation included in this update
  - Conservation, Housing, Open Space, Noise & Safety updated in the past two years

# M-2 Area Zoning Update



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- Zoning Ordinance contains land use standards
- Update for M-2 area needed to:
  - Create certainty in land use review
  - Reflect updated General Plan

# Upcoming Events



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- Mobile Tour of Other Communities

12:30-3:30p

Tues Oct 14

155 Constitution Drive

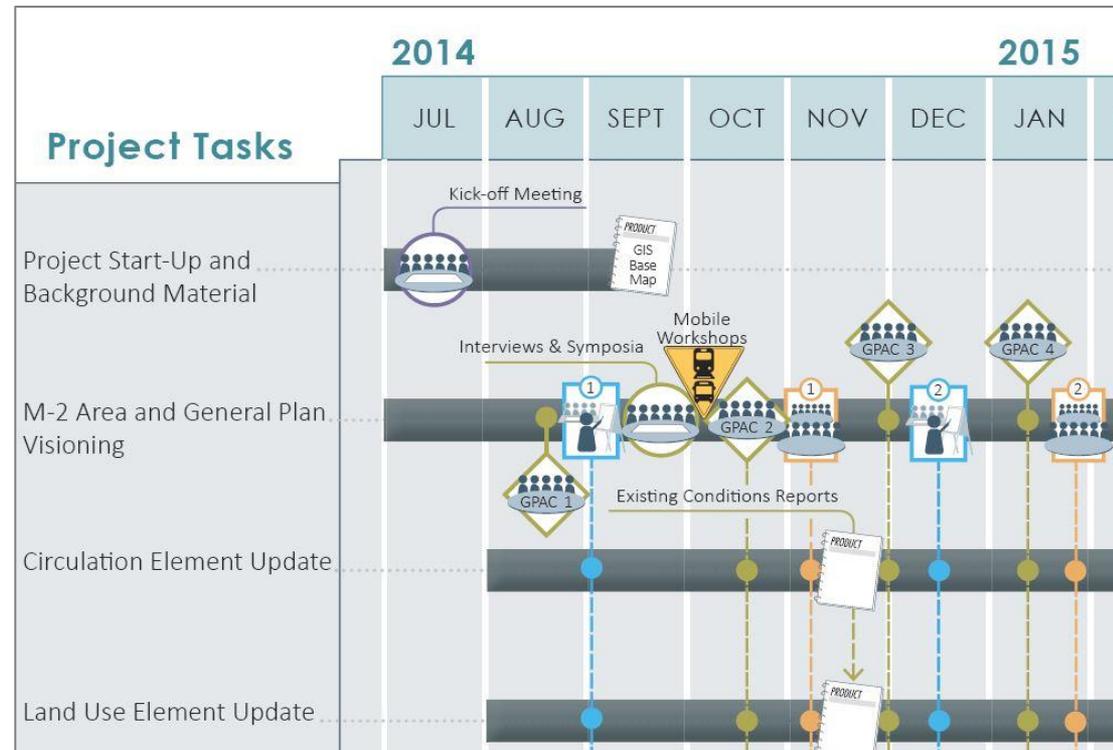
*Join the bike caravan from City Hall*

- Transportation

Focus Group

7-9pm Thurs Oct 16

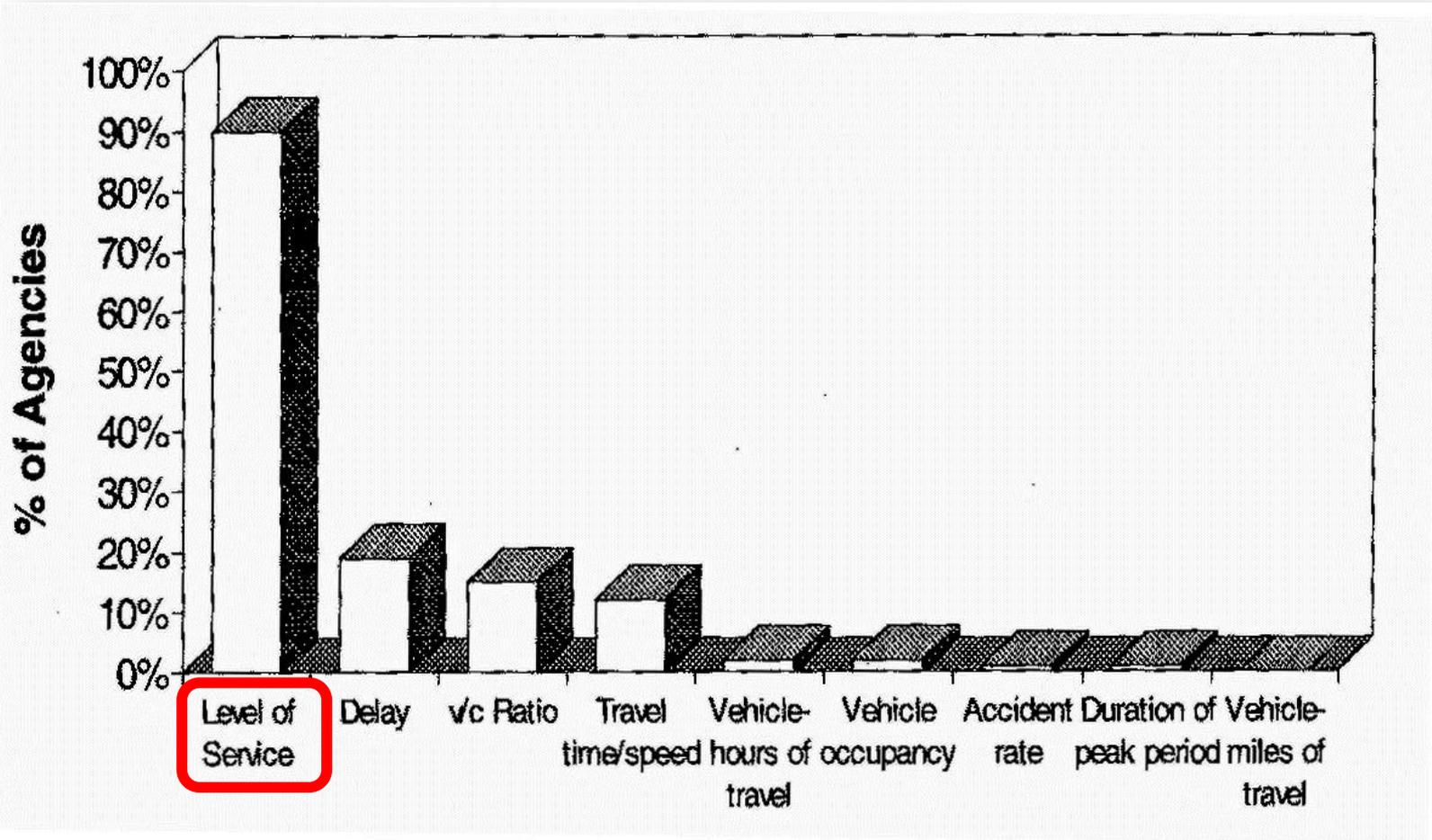
Oak Room



HOW DO WE MEASURE THE  
PERFORMANCE OF OUR  
TRANSPORTATION SYSTEM?



# Commonly Used Performance Measures



# Old Speed Paradigm -> Roadway LOS

| Arterial Class   | I                          | II        | III       |
|------------------|----------------------------|-----------|-----------|
| Level of Service | Average Travel Speed (MPH) |           |           |
| A                | $\geq 35$                  | $\geq 30$ | $\geq 25$ |
| B                | $\geq 28$                  | $\geq 24$ | $\geq 19$ |
| C                | $\geq 22$                  | $\geq 18$ | $\geq 13$ |
| D                | $\geq 17$                  | $\geq 14$ | $\geq 9$  |
| E                | $\geq 13$                  | $\geq 10$ | $\geq 7$  |
| F                | $< 13$                     | $< 10$    | $< 7$     |



Level of Service A



Level of Service F



Level of Service F

Source: Downtown San Jose Blog

# What's Important Depends on Perspective



Traffic engineer:

**F**

**A**

Economist:

**A**

**F**

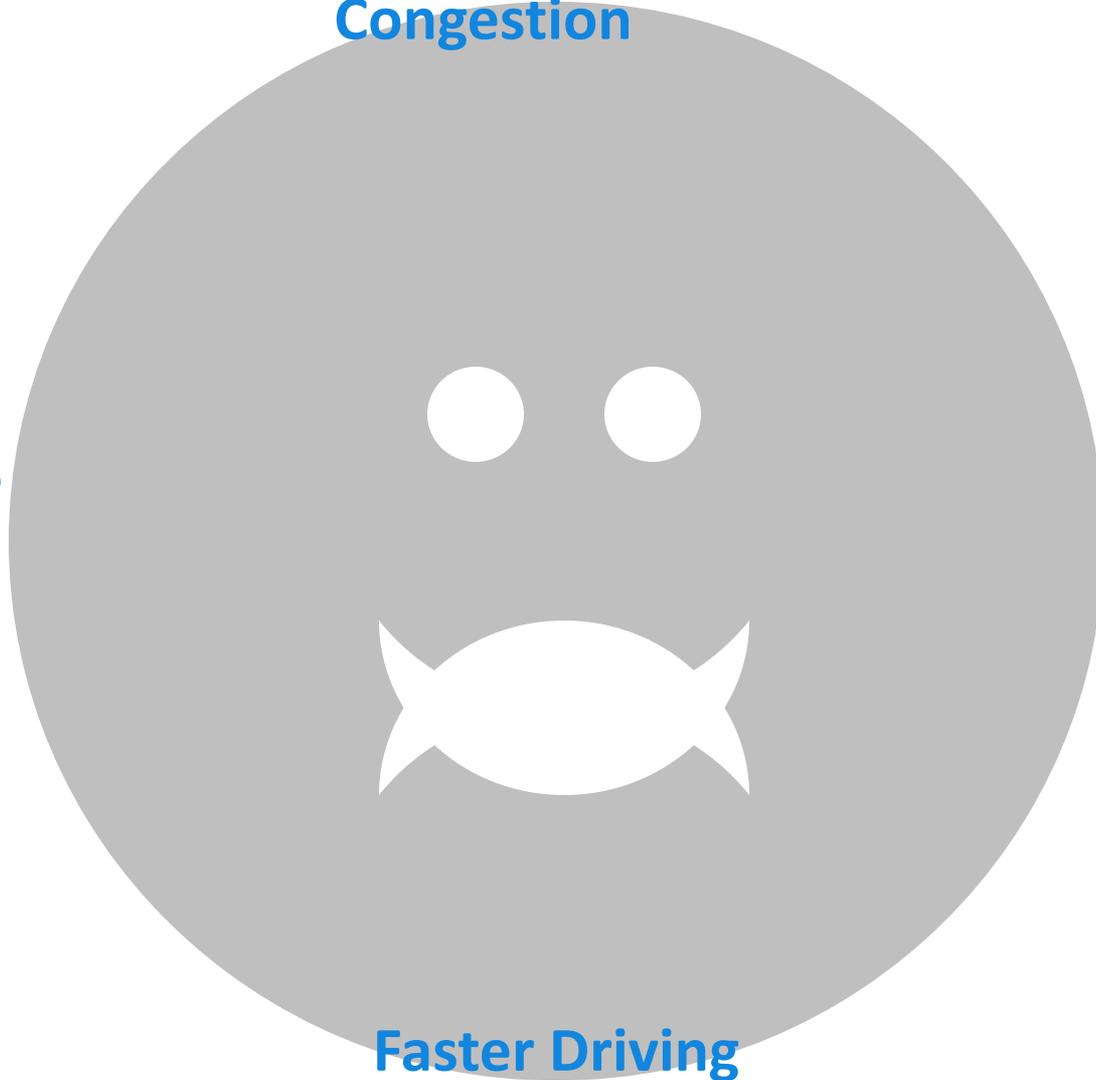
# Induced and Latent Demand

Congestion

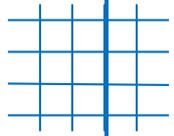
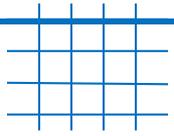
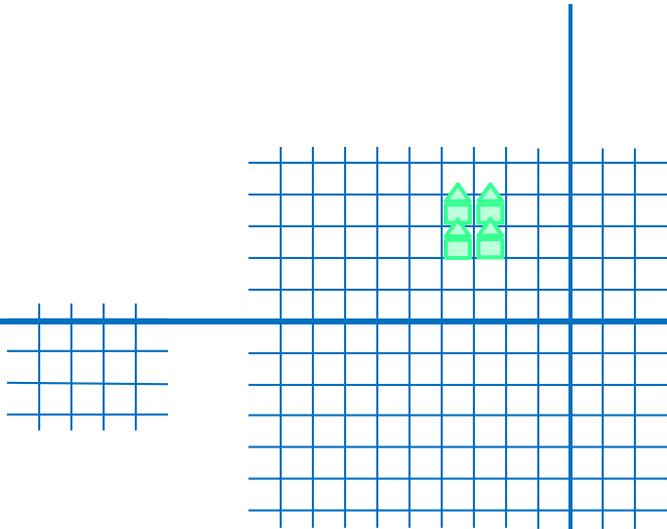
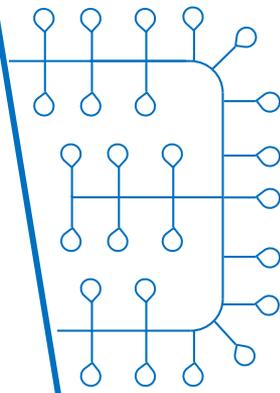
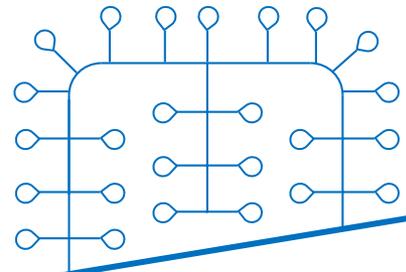
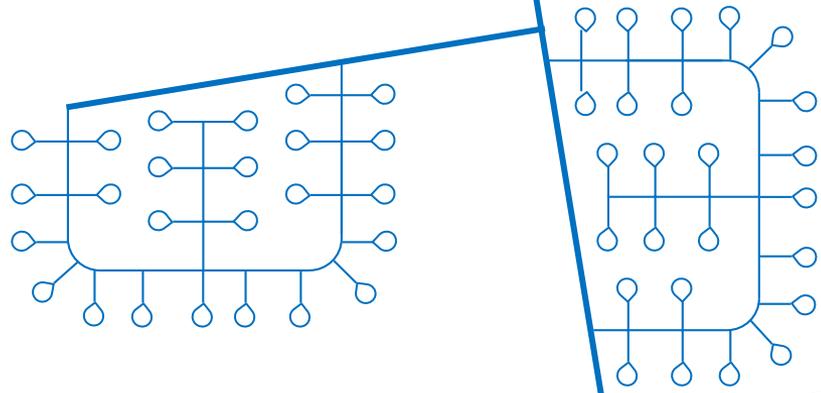
More People  
Drive

Widen  
Roadway

Faster Driving

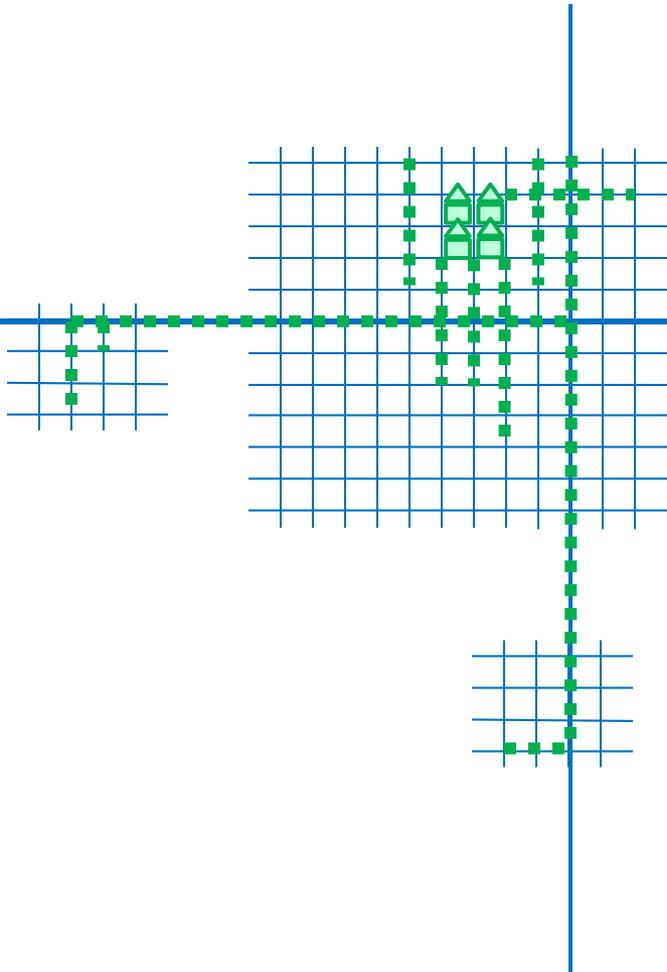
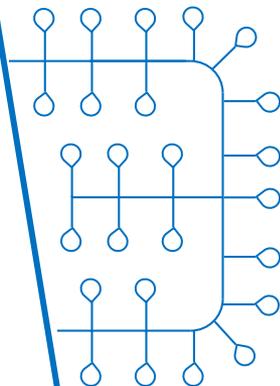
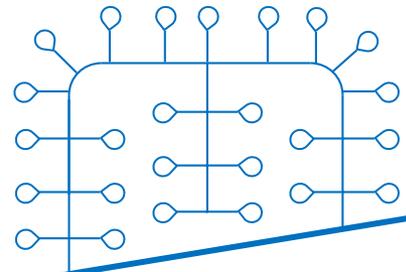
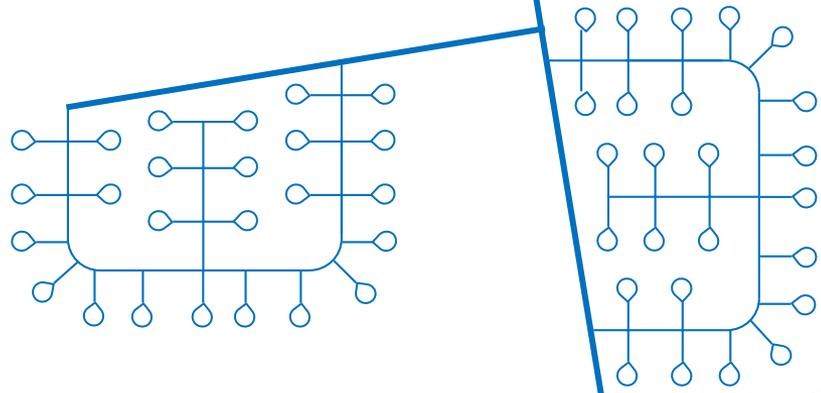


# Analysis of **infill** development using LOS



**Analysis of infill development using LOS**

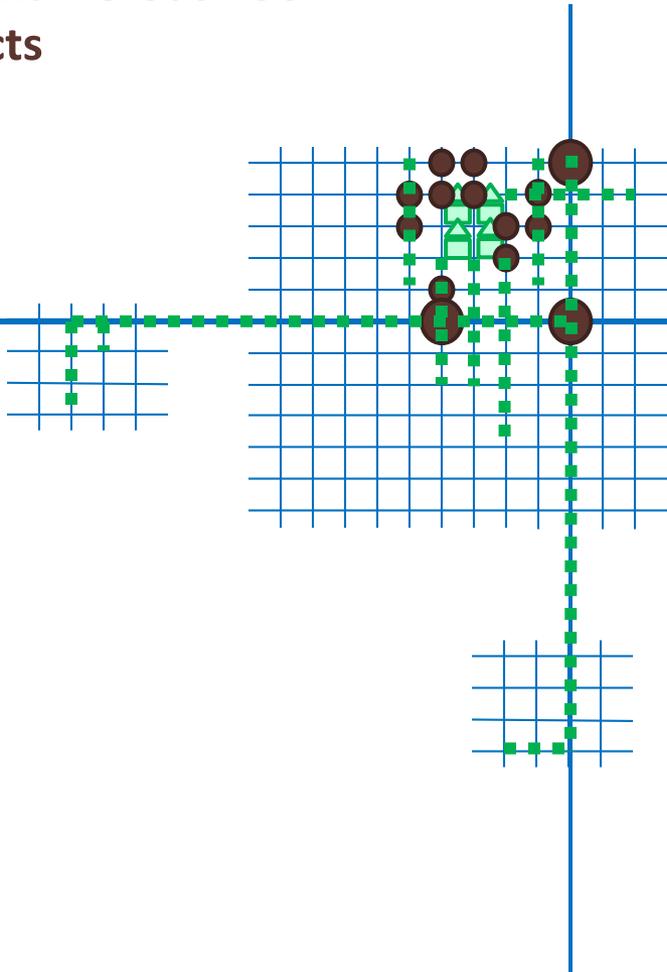
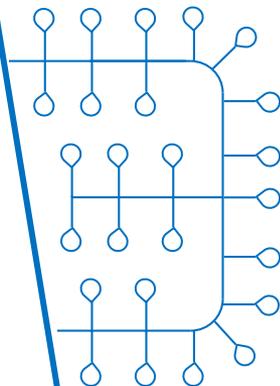
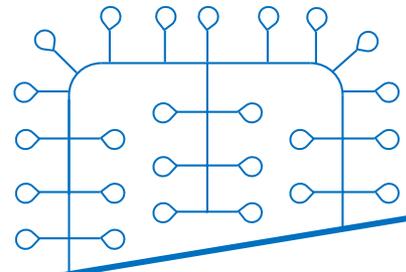
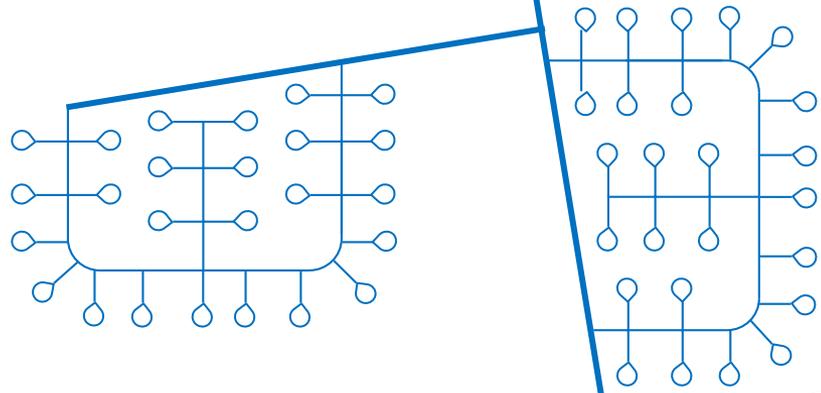
**Relatively little vehicle travel loaded onto the network**



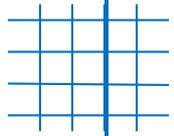
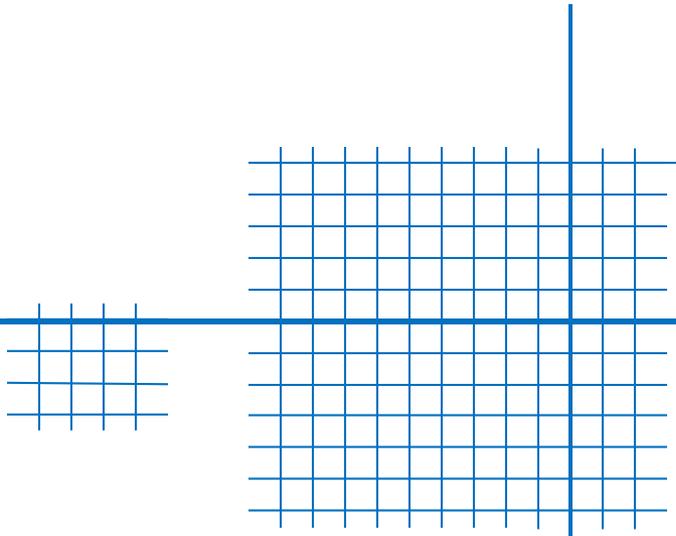
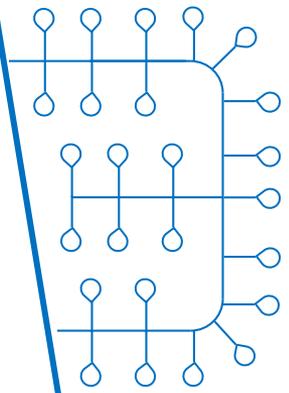
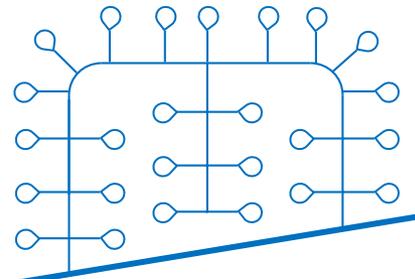
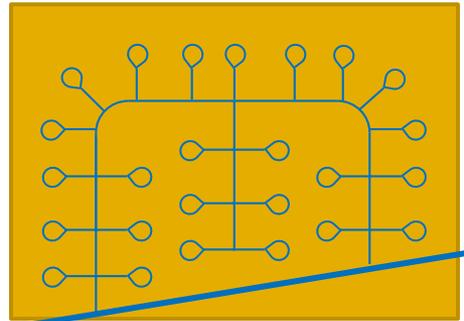
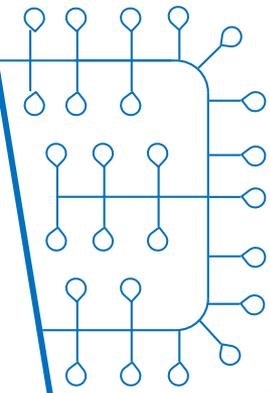
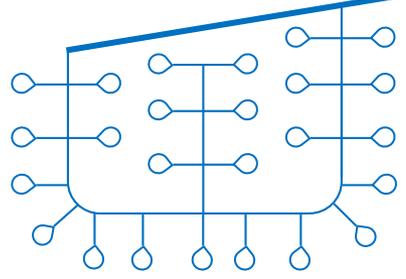
**Analysis of infill development using LOS**

**Relatively little vehicle travel loaded onto the network**

**...but numerous LOS impacts**

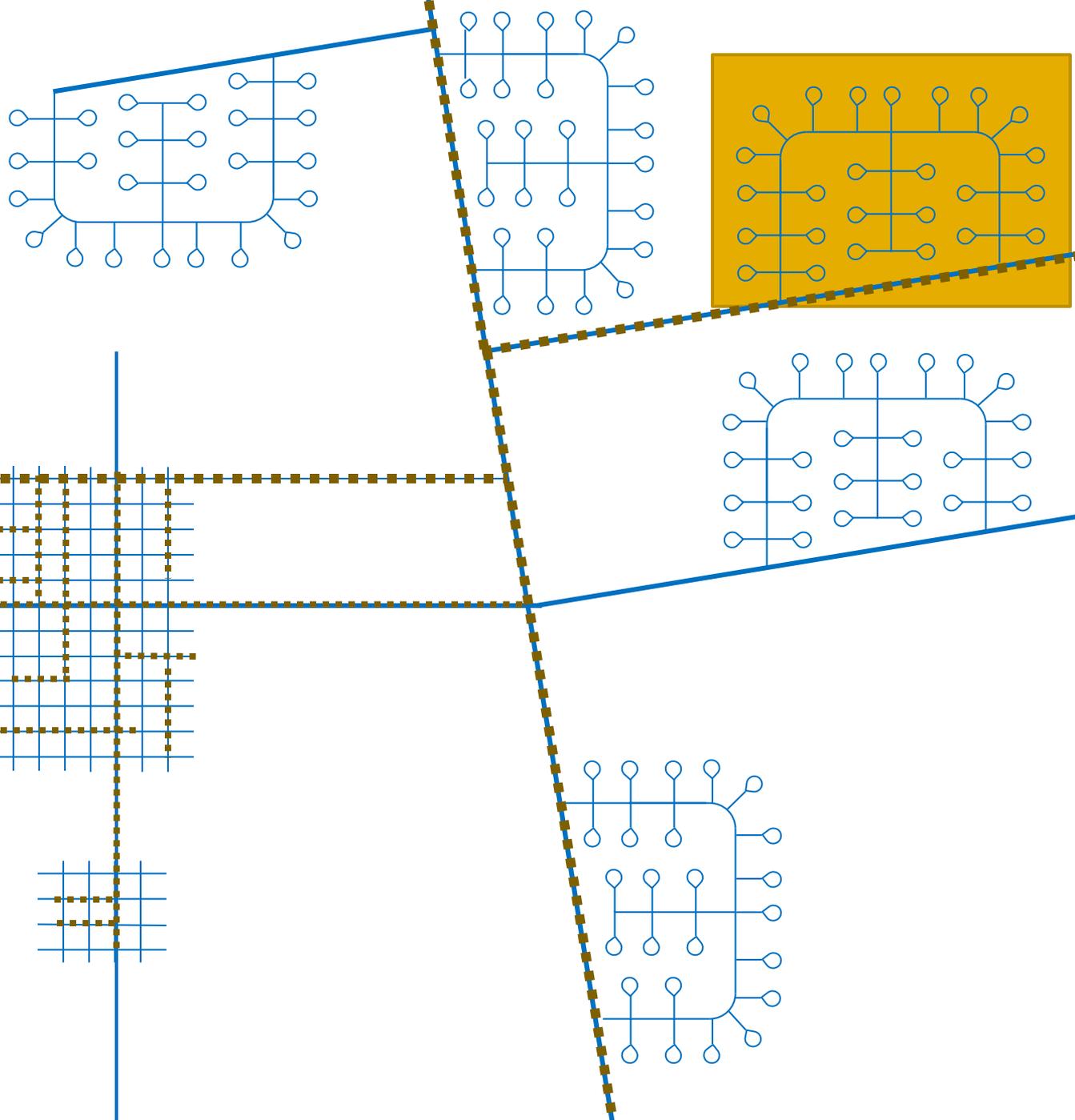


# Analysis of greenfield development using LOS



# Analysis of greenfield development using LOS

Typically three to four times the vehicle travel loaded onto the network relative to infill development

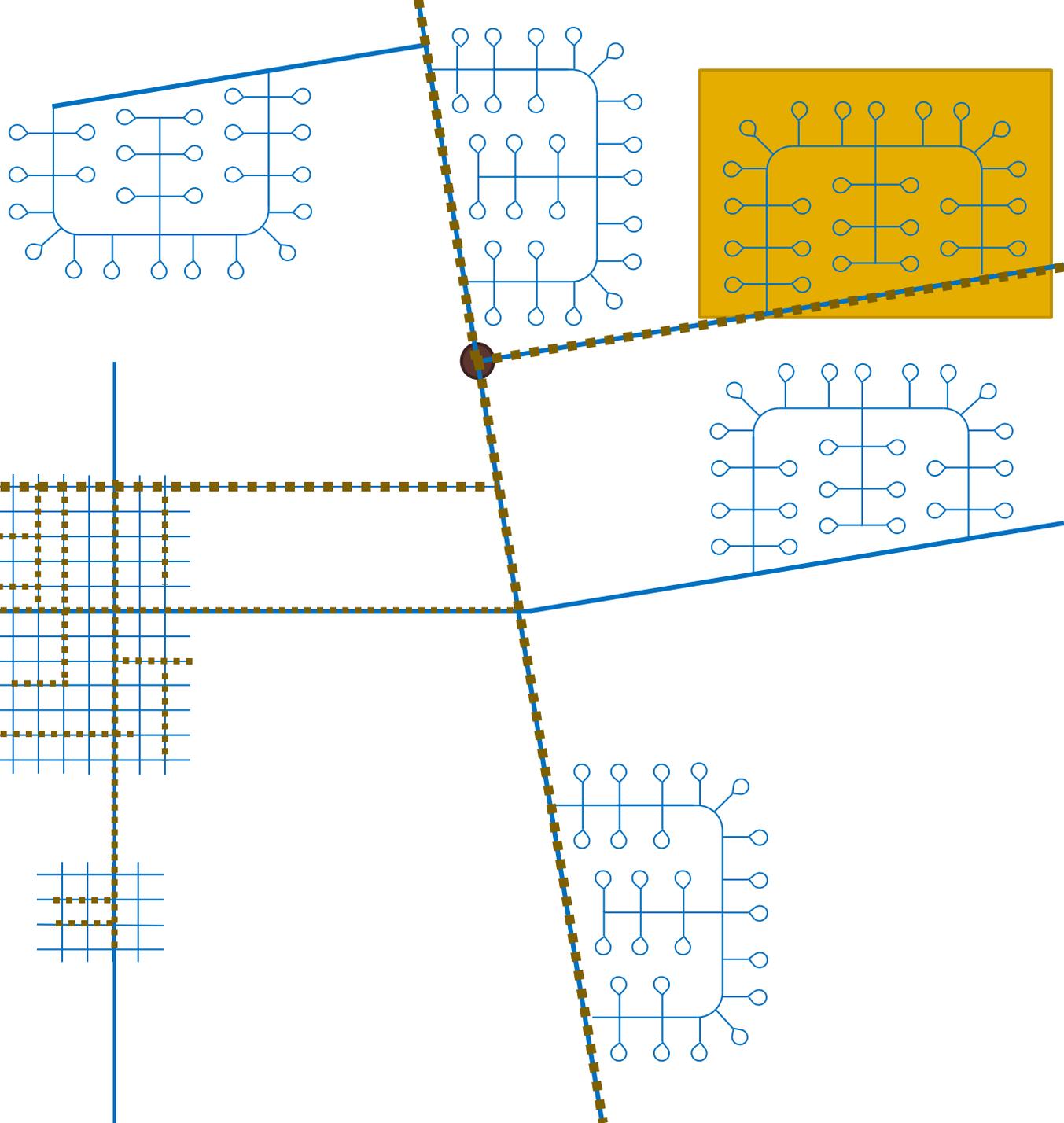


# Analysis of greenfield development using LOS

Typically three to four times the vehicle travel loaded onto the network relative to infill development

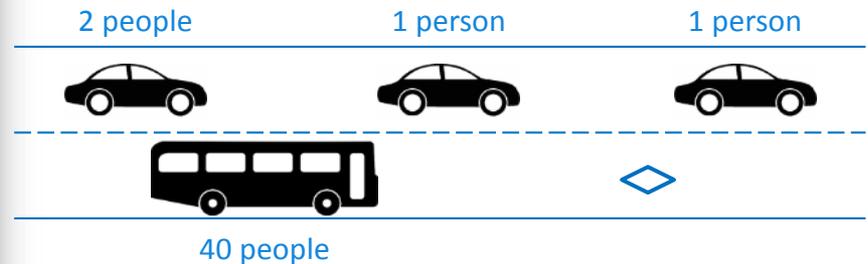
...but relatively few LOS impacts

Traffic generated by the project is disperse enough by the time it reaches congested areas that it doesn't trigger LOS thresholds, even though it contributes broadly to regional congestion.



# Problems with Auto LOS

1. Bias against infill because of “last-in development” problem
2. Scale of analysis is too small
3. LOS mitigation is itself problematic
4. Mischaracterizes transit, biking, walking as detriments to transportation



WHAT GETS MEASURED GETS DONE



# What is Transportation For?

- ❑ Transportation is not an end in itself
- ❑ It is merely a means by which we support individual and collective goals and objectives



# How Do We Use Performance Measures?

- ▣ Improve efficiency of system operations
- ▣ Manage a given road or corridor
- ▣ Prioritize funding
- ▣ Measure impact of new development
- ▣ Impose development fees
- ▣ Report to Congestion Management Agency
- ▣ Report on achievement of various goals

# Measure What Matters

## Why not Consider...

- Economic Development
  - Job creation
  - Real estate value increase
  - Retail sales
- Quality of Life
  - Access to jobs
  - Access to shopping
  - Residential property value impact
- Social Justice
  - Do benefits accrue equitably?
  - Are investments spread equitably?
- Ecological Sustainability
  - VMT per capita (=CO<sub>2</sub>, NO<sub>x</sub>, runoff, etc.)
  - Land use/transportation connection

# Senate Bill 743 – LOS Reform

- LOS in California
  - State: California Environmental Quality Act (CEQA) Guidelines
  - County: Congestion Management
  - City: General Plan
- What does SB 743 say about LOS?
  - California Office of Planning and Research (OPR) to develop alternatives
  - Once guidelines adopted, LOS (mostly) removed
  - Cities can choose to keep or remove LOS

# Senate Bill 743 – Goals

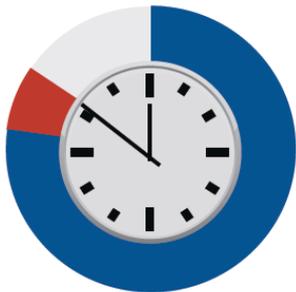
- “Those criteria shall promote...”
  - “Reduction of GHGs”
  - “Development of multimodal transportation networks”
  - “A diversity of land uses”
  
- Other policy and administration goals
  - Consistency with State planning priorities (Infill priority)
  - Environmental benefit
  - Fiscal benefit
  - Equity
  - Health
  - Simplicity/feasibility

# Other Important Considerations

## Link transportation and land use

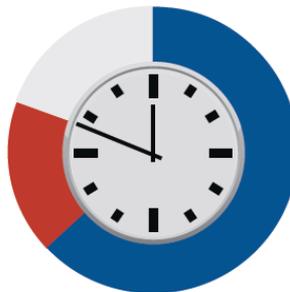
### Denver 1982

1.09 Travel Time Index  
50.6 minutes Average travel time  
46.4 mins Travel time without traffic  
4.2 mins Extra rush hour delay

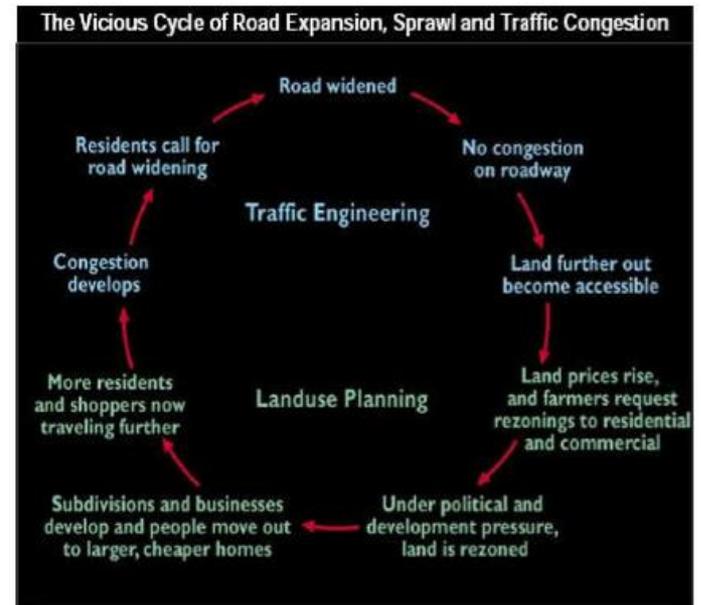


### Denver 2007

1.31 Travel Time Index  
49.6 minutes Average travel time  
37.9 minutes Travel time without traffic  
11.7 minutes Extra rush hour delay

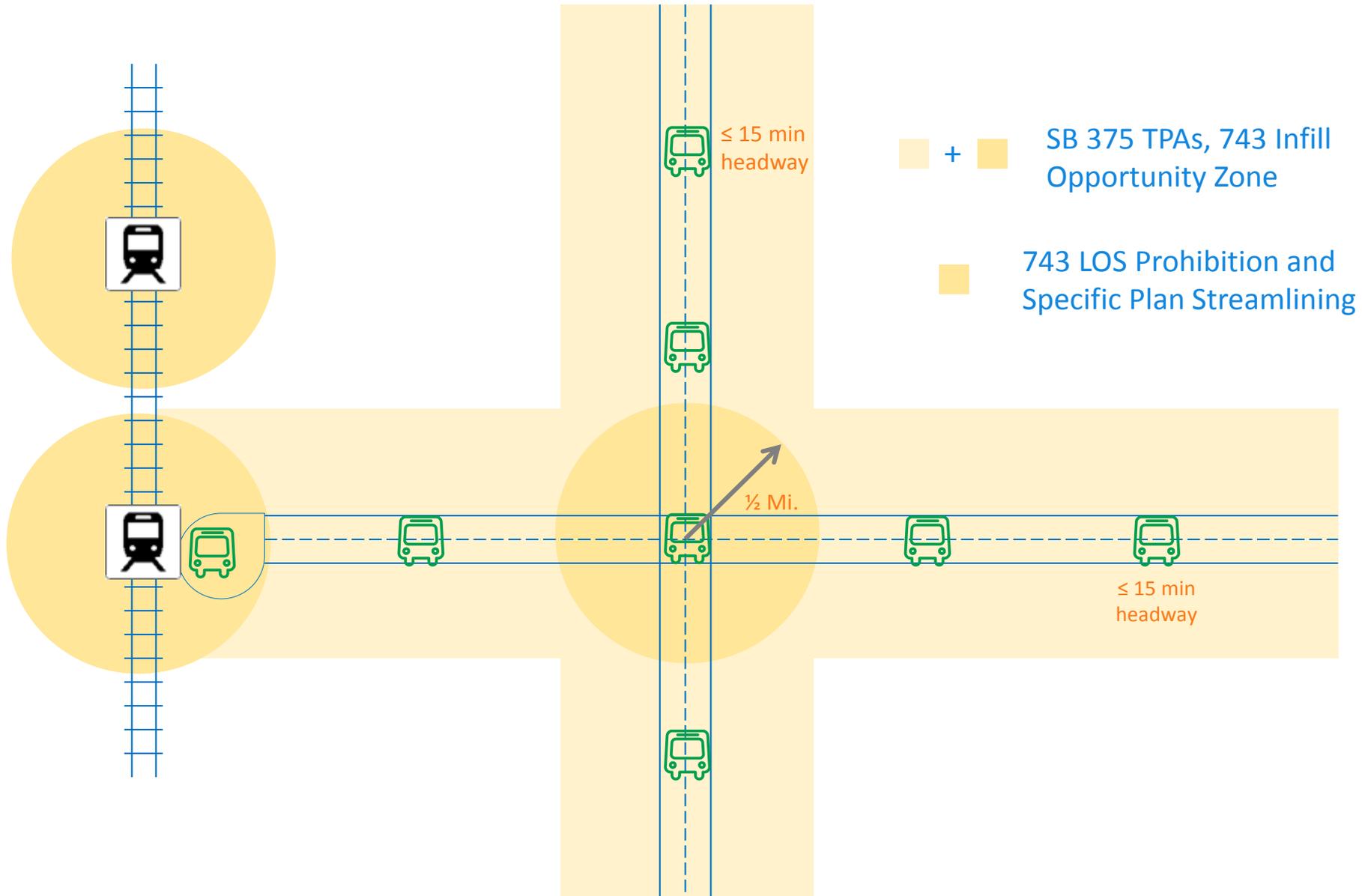


## Consider induced travel



Graphic: NJ DOT

# Transit Priority Areas (TPAs)



# Potential Measures

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- ❑ Multi-modal LOS
- ❑ Automobile trips generated/capita
- ❑ Vehicle miles traveled/capita
- ❑ Vehicle miles traveled/person-trip
- ❑ Fuel use
- ❑ Travel time (in corridors)

# CASE STUDY: SANTA MONICA



# Process

- Identify local values
- Identify long list of performance measures
- Refine into short list:
  - Assess today's conditions
  - Predict future conditions
  - Evaluate projects
  - Conduct EIRs
- Create tools and gather data
- Establish targets and thresholds
- Report back to public and Council
- Adopt impact fee

# Start with Transportation Principles

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- ❑ Measure Success
- ❑ Management
- ❑ Streets
- ❑ Quality
- ❑ Public Space
- ❑ Environment
- ❑ Health
- ❑ Affordability
- ❑ Economy
- ❑ Equity
- ❑ Safety
- ❑ Public Benefits

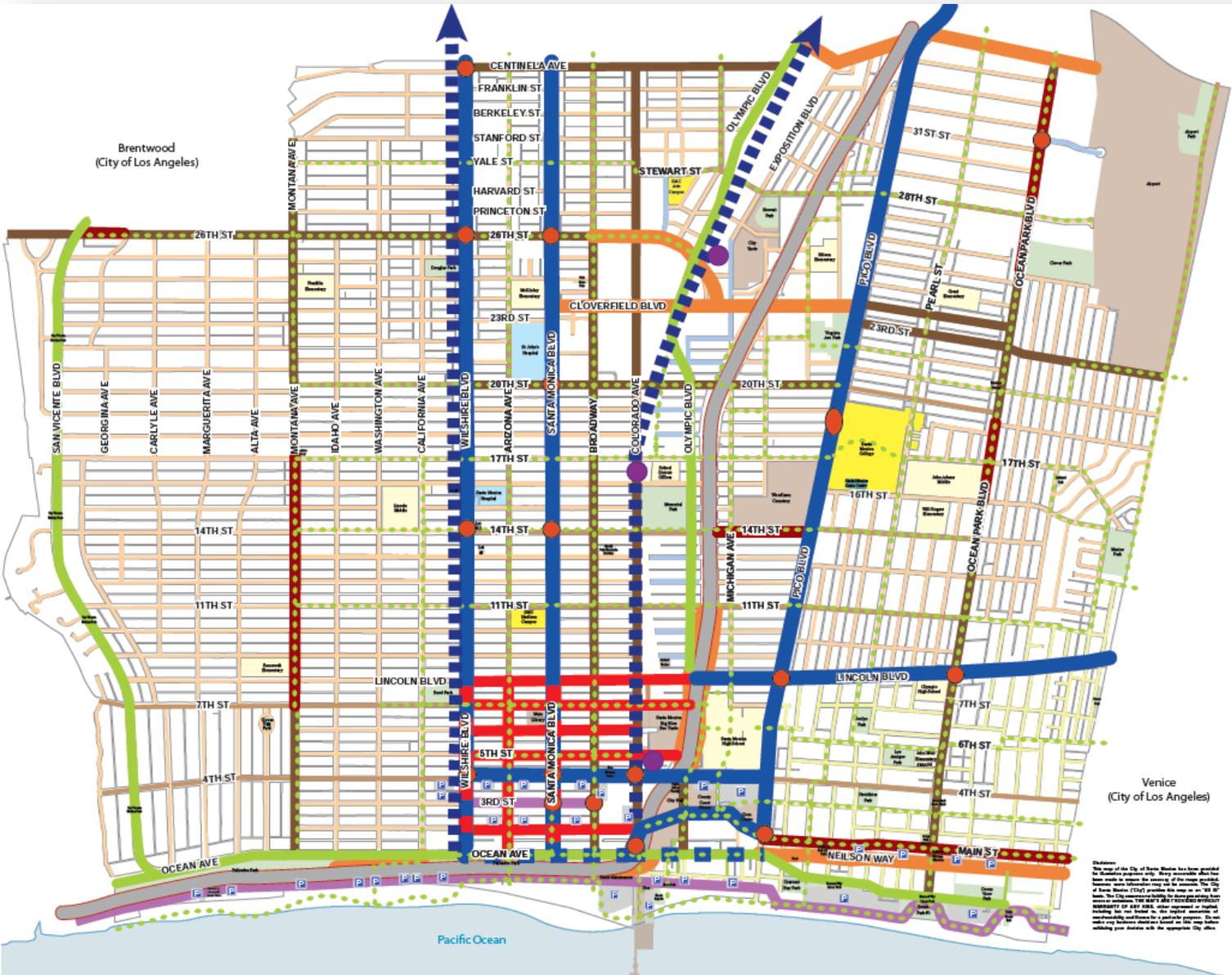
# Creating a Shortlist

- For each principle, a long list of potential measures – and tools for measuring
- Next step: Short list:
  - Shortest list of measures that captures Santa Monica values
  - Minimize data collection costs
  - Maximize clarity
- Some measures, like per capita Vehicle Miles Traveled, capture many values: Greenhouse gases, congestion, air quality, etc.

# The Long List

| Measure                                                                | Cost/Time Consumption | Implementation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | EIR | Project Review | Corridor or Review | Report Card | Travel Model |
|------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------------|--------------------|-------------|--------------|
| <b>MANAGEMENT</b>                                                      |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                |                    |             |              |
| •Relative travel times by mode                                         | Medium                | Can be modeled; see WeHo traffic model. Can also be collected through data collection. Transit travel times can be automated in GPS.                                                                                                                                                                                                                                                                                                                                                                                                                                      | √   | √              | √                  | √           | √            |
| •Person capacity – walking, bike, transit, auto, parking, bike parking | Medium - Heavy        | This is a GIS/Excel type function that can be included if there is survey data available. Can be modeled. This needs to be further defined.                                                                                                                                                                                                                                                                                                                                                                                                                               | √?  |                | √                  |             | √?           |
| •Transit LOS: productivity, farebox return, delay, reliability         | Medium - Heavy        | This will take extensive model development if we want to get to this level in the demand model. Direct ridership modeling would be another option and would require less data/development time. Transit LOS could also be developed and monitored separate from the model in an Excel spreadsheet. BBB already does a basic collection of this info, and full transit LOS data may be available in upcoming GPS reporting from BBB. Seattle uses transit LOS in an annual GIS report card map, focusing on transit speed and frequency. SF uses transit LOS in their EIRs | √   | √              | √                  | √           | √            |
| •Neighborhood spill-over                                               | Medium                | Either traffic volumes or driver behavior (speed, etc)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | √   |                |                    | √           |              |
| <b>Congestion</b>                                                      | Light                 | The sustainability report card currently measures intersection LOS. Congestion is also indirectly measured in the relative travel times by mode and the person capacity analysis above. (There is community resistance to using intersection LOS.) Adjust significance thresholds if used for EIRs.                                                                                                                                                                                                                                                                       | √   | √              | √                  | √           | √            |

# Vary Targets by Context



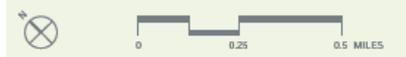
## Street Network City of Santa Monica Land Use and Circulation Element

- Boulevard**  
Regional transportation corridor with continuous mixed use and commercial land uses. Provides access for all forms of transportation, but emphasizes transit and walking. Regional auto traffic is accommodated here in order to minimize regional traffic on parallel streets.
- Special Streets**  
Unique and ceremonial streets requiring special consideration, such as the Third Street Promenade.
- Commercial: Downtown**  
Provides access for all transportation and supporting downtown.
- Commercial: Neighborhood**  
Provides access for all transportation and supporting neighborhood retail.
- Avenue: Major**  
Serves regional automobile trips and provides access for all modes of transportation. Designed to discourage regional auto traffic from using Secondary or Minor Avenues.
- Avenue: Secondary**  
Distributes auto trips onto Minor Avenues and Neighborhood Streets, often serving regional bicycle trips by providing signalized crossings at Boulevards and Major Avenues.
- Avenue: Minor**  
Serves local auto and bicycle trips.
- Avenue: Industrial**  
Minor street serving industrial area.
- Neighborhood Street**  
Provides access primarily to abutting uses. Autos travel slowly enough to stop for people in the street.
- Shared Street**  
Serves as area where autos travel slowly enough to mix safely with people walking or bicycling. May not be wide enough to accommodate separate zones for people walking, bicycling, parking or drinking.
- Parkway**  
Serves as linear park incorporating continuous landscaping, recreational bikeways and pedestrian paths.
- Pathways**  
Pedestrian-only streets
- Bikeway - Lane/Path/Bicycle Boulevard**  
Bicycle lanes, bicycle paths and streets designed so that cars and bicycles can mix comfortably.
- Transit Investment**  
Priority underlay for rail service, including subway and light rail with regional connections.
- Highway**  
Serves regional and interstate auto traffic.
- Alley**  
Provide local property access.
- Light Rail Stop**
- Major Bus Stop**

**Disclaimer:**  
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Updated 10-30-2009

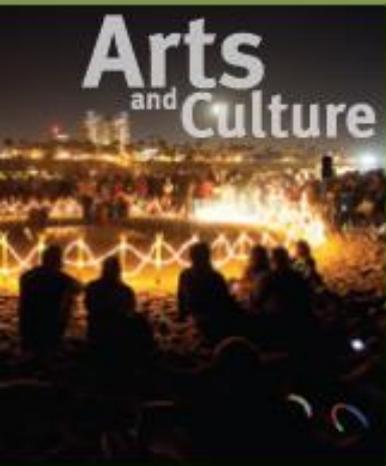


# Tools and Data

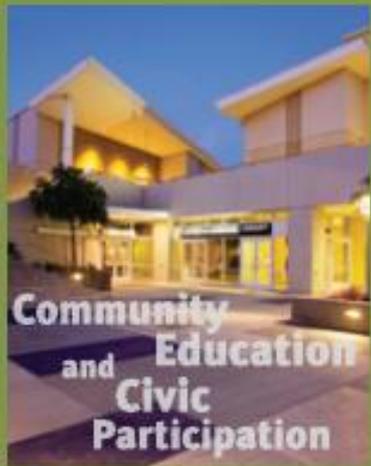
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- ❑ GIS mapping
- ❑ Transportation Demand Management reporting data
- ❑ Big Blue Bus GPS data
- ❑ Public perception surveys
- ❑ Traffic counts

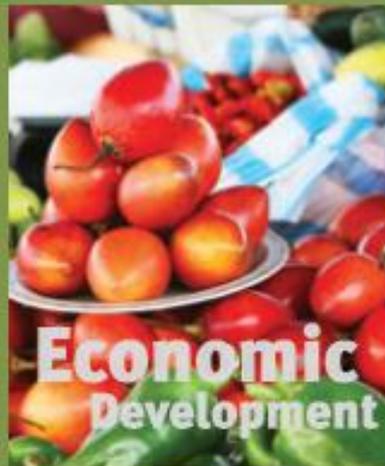
# Sustainable Santa Monica



**Arts  
and Culture**



**Community  
and Education  
and Civic  
Participation**



**Economic  
Development**



**Environmental  
and Public  
Health**



**Housing**



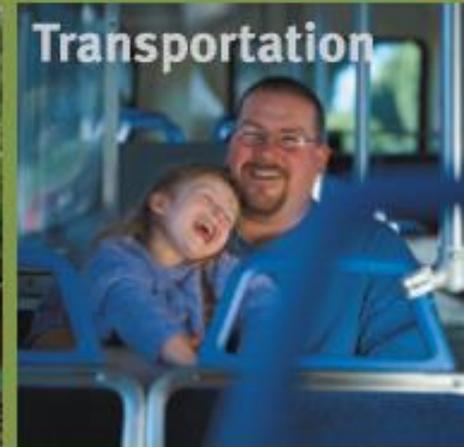
**Human Dignity**



**Open Space  
and Land Use**



**Resource  
Conservation**



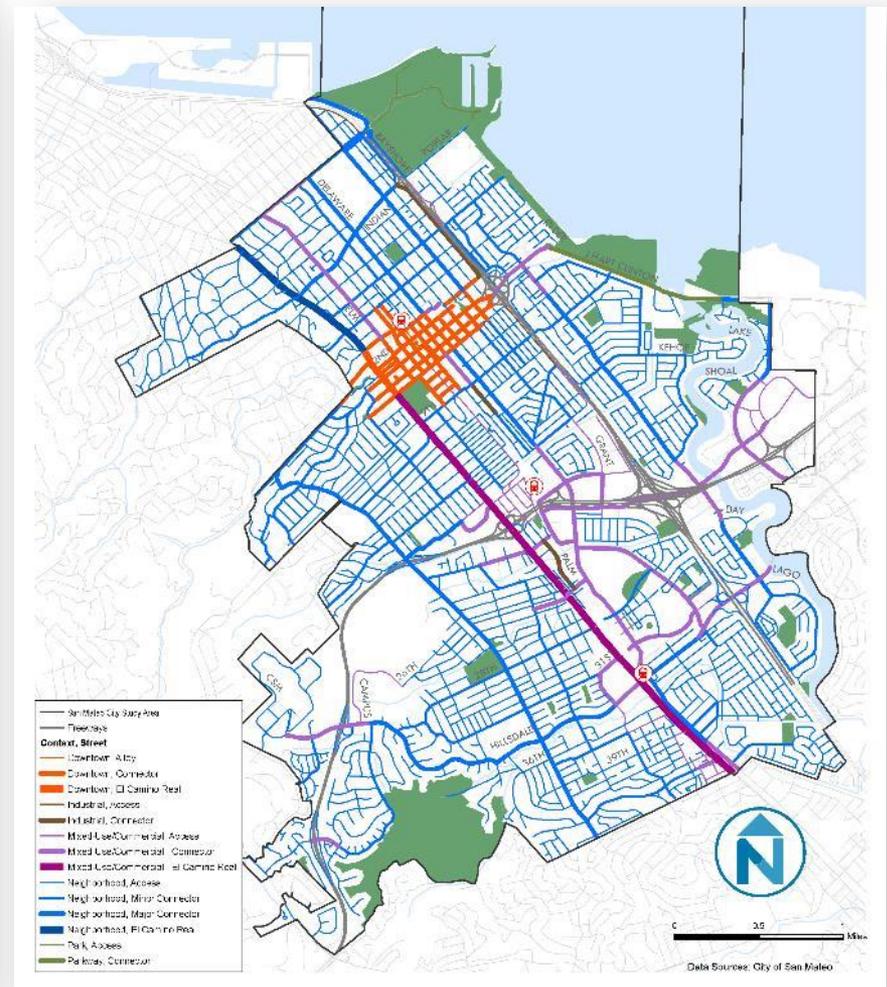
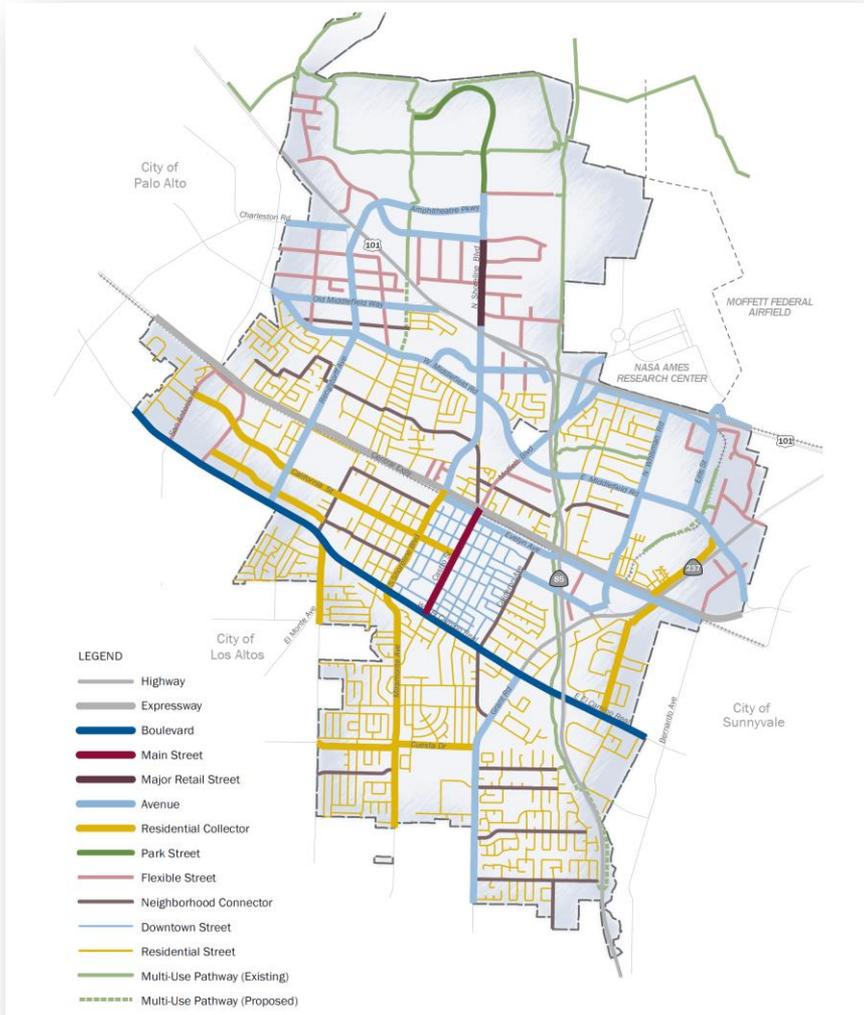
**Transportation**

## 2012 Sustainable City Report Card

The Sustainable City Plan was created to enhance our resources, prevent harm to the natural environment and human health, and benefit the social and economic well-being of the community for the sake of current and future generations.

# Mountain View & San Mateo

Slide 43



# Best Practices

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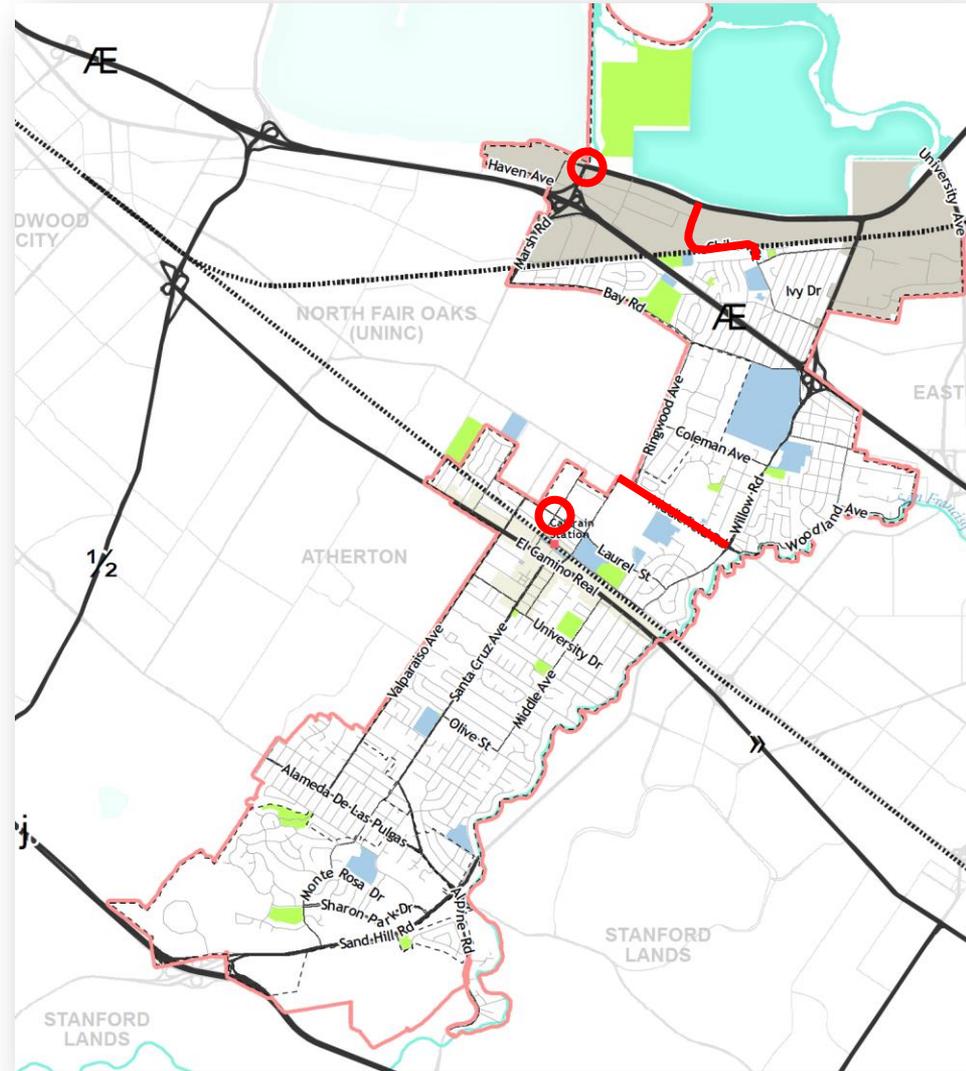
- ❑ Focus on outcomes
- ❑ Ensure your local values are reflected and quantified
- ❑ Use available or easily collectable data
- ❑ Focus on citywide or regional impacts
- ❑ For congestion, focus on per capita Vehicle Miles Traveled
- ❑ For transportation corridors, focus on quality



# **MENLO PARK - EXISTING CONDITIONS**

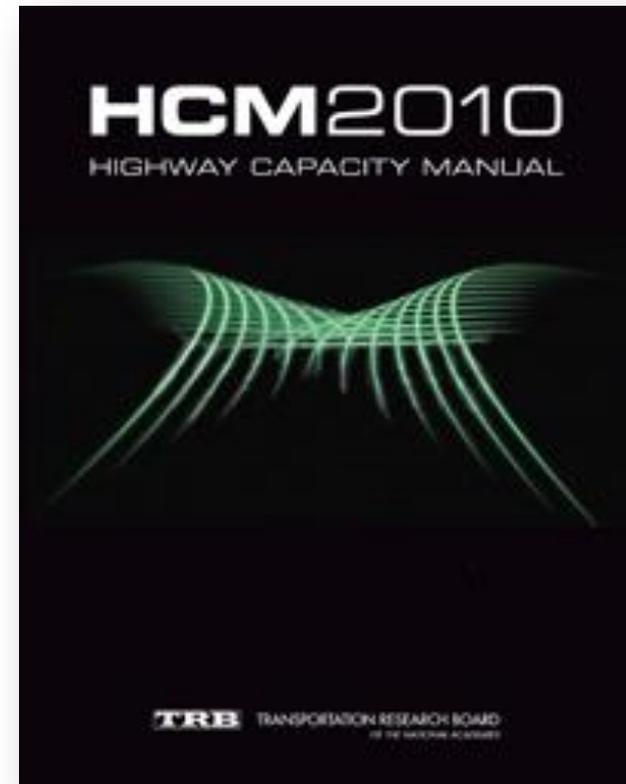
# Four Menlo Park Locations Selected

- Intersections
  - Marsh & Bayfront
  - Oak Grove & Laurel
- Corridors
  - Middlefield from Ravenswood to Willow
  - Chilco from Bayfront to Terminal Avenue



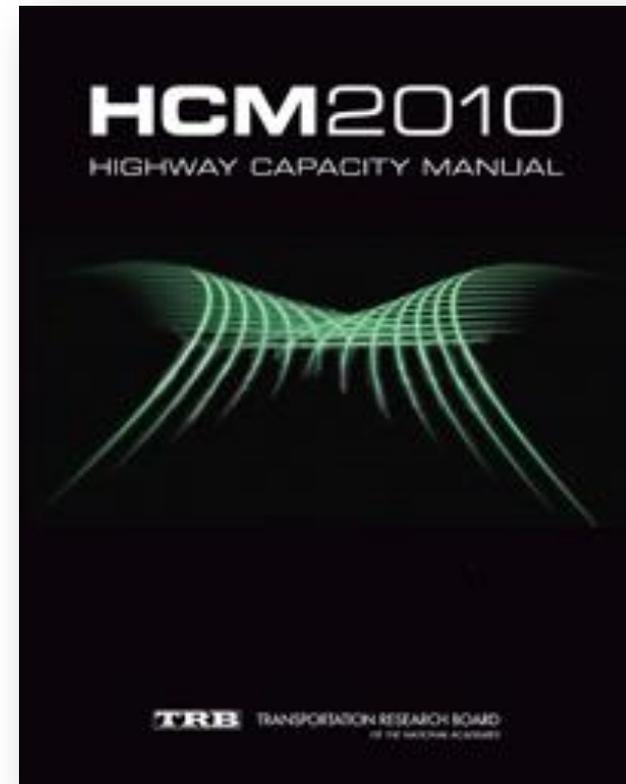
# Highway Capacity Manual (HCM) LOS

- Focused on volumes, roadway capacity, and delay for automobiles
- Defined at the intersection level
  - LOS A: Free flowing traffic
  - LOS F: Gridlock



# HCM Multimodal Level of Service (MMLOS)

- Measures each major mode's LOS
  - Auto
  - Transit
  - Bicycle
  - Pedestrian
- Does **not** combine the measurements for each category



# HCM Multimodal Level of Service (MMLOS)

- ▣ Pedestrian LOS (PLOS) and bicycle LOS (BLOS)
  - ▣ Link, segment, and facility level
- ▣ Capacity or Perception
  - ▣ Capacity:
    - ▣ Useful at high pedestrian/bicyclists volumes
    - ▣ More intensive data collection and calculations
  - ▣ Perception:
    - ▣ Simpler data collection
    - ▣ Requires general physical attributes, auto volumes, speeds, signal timing

# Intersection Analysis Marsh & Bayfront

## Overview

- Auto-dominated intersection
- Operates like a quasi-freeway
- Opportunity for multimodal trail connections



# Pedestrians

- ❑ Uninviting pedestrian infrastructure
- ❑ Disconnected
- ❑ Not ADA compliant
- ❑ Long wait times at signals



# Bicyclists

- Opportunity to connect to bike trails in the park
- No current bicycle infrastructure to connect cyclists to this amenity from the south



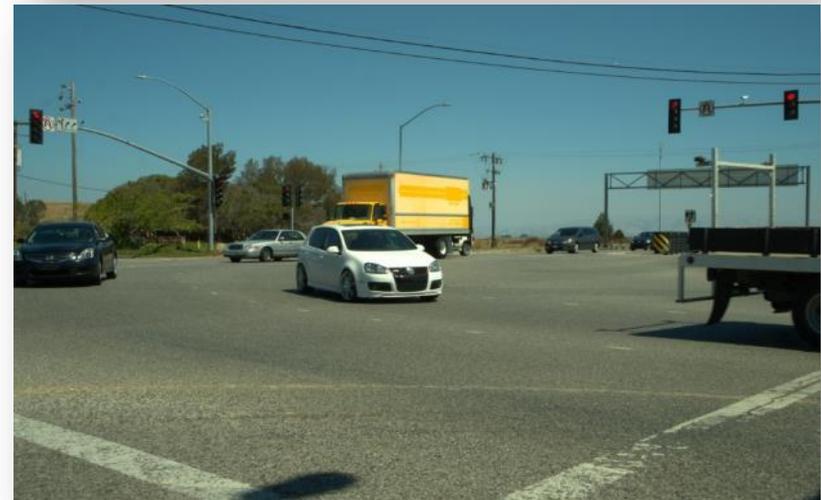


# Auto-Dominated Quasi-Highway

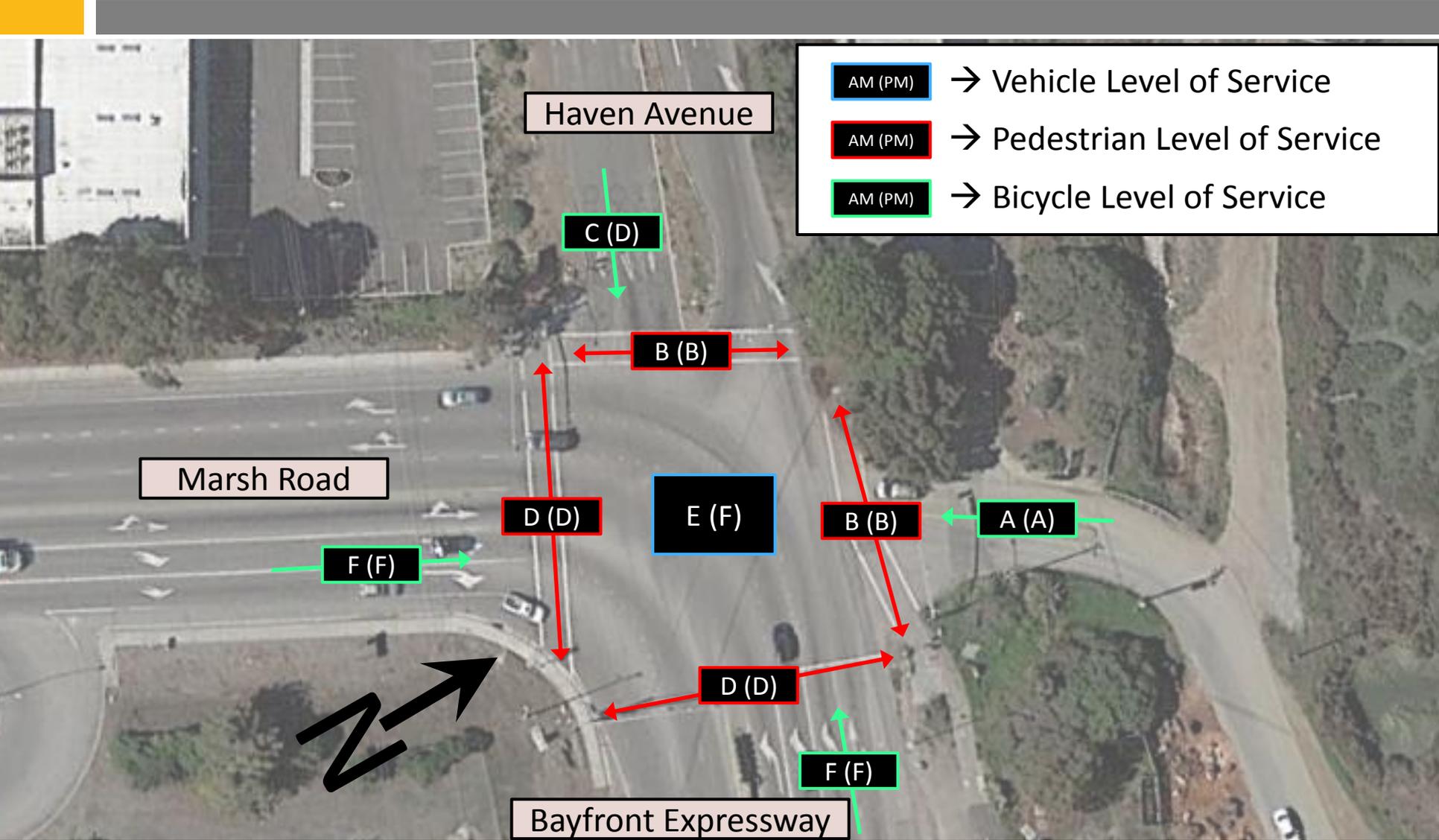


# Autos

- Street built for auto priority
- Wide roadway
- Truck traffic from US-101 off-ramp/ industrial uses nearby
- Part of major thoroughfare between Dumbarton Bridge and US 101. Experiences significant peak hour congestion and delays.



# HCM LOS & MMLoS



# Potential Metrics

- Pedestrian
  - Long wait times, no or minimal facilities
  - **Pedestrian Qualitative LOS = F**
- Bicycle
  - Adjacent to trail, but no connections in intersection
  - **Bicycle Qualitative LOS = E**
- No transit stops at intersection
- Auto
  - Delay

# Intersection Analysis

## Oak Grove & Laurel

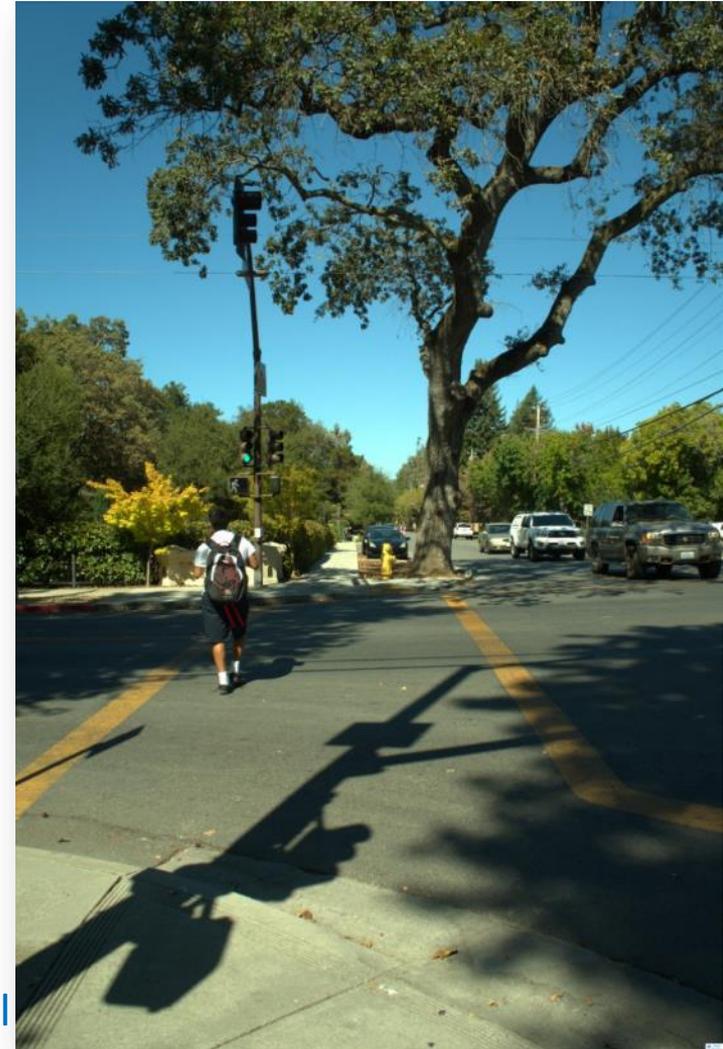
### Overview:

- Popular Safe Routes to School route
- Lots of bicyclists/youth bicyclists
- Parking allowed in the bike lane on one side
- Bus stops are minimal



# Pedestrians

- ❑ Leading Pedestrian Intervals (3-4 seconds)
- ❑ Yellow transverse crosswalks
- ❑ No Rights on Red when children are present
- ❑ Crosswalk buttons



# Bicyclists

- ❑ Significant population of youth cyclists
- ❑ Unobstructed bike lanes on one side
- ❑ Day-time bike lane on other side (7am-6pm) (Parking overnight and on weekends)

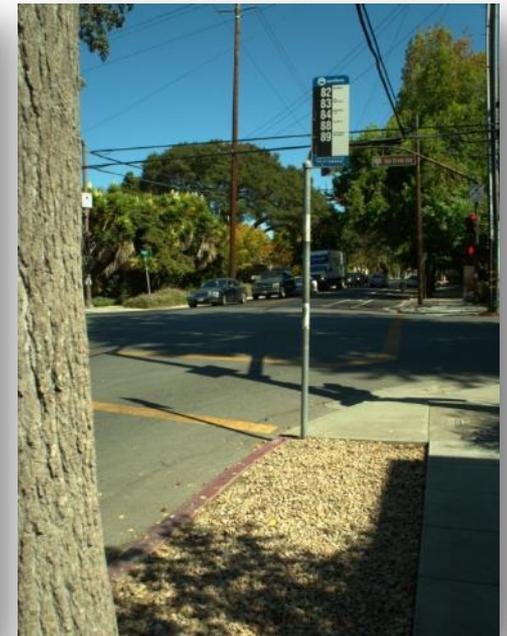
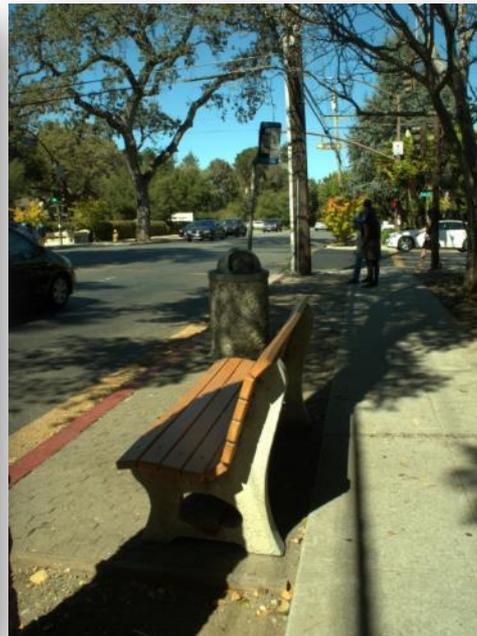


# Bike Lanes On Laurel



# Transit

- ❑ Bus stop facilities minimal
- ❑ Need for pedestrian-scale lighting
- ❑ Buses don't always pull up to the curb

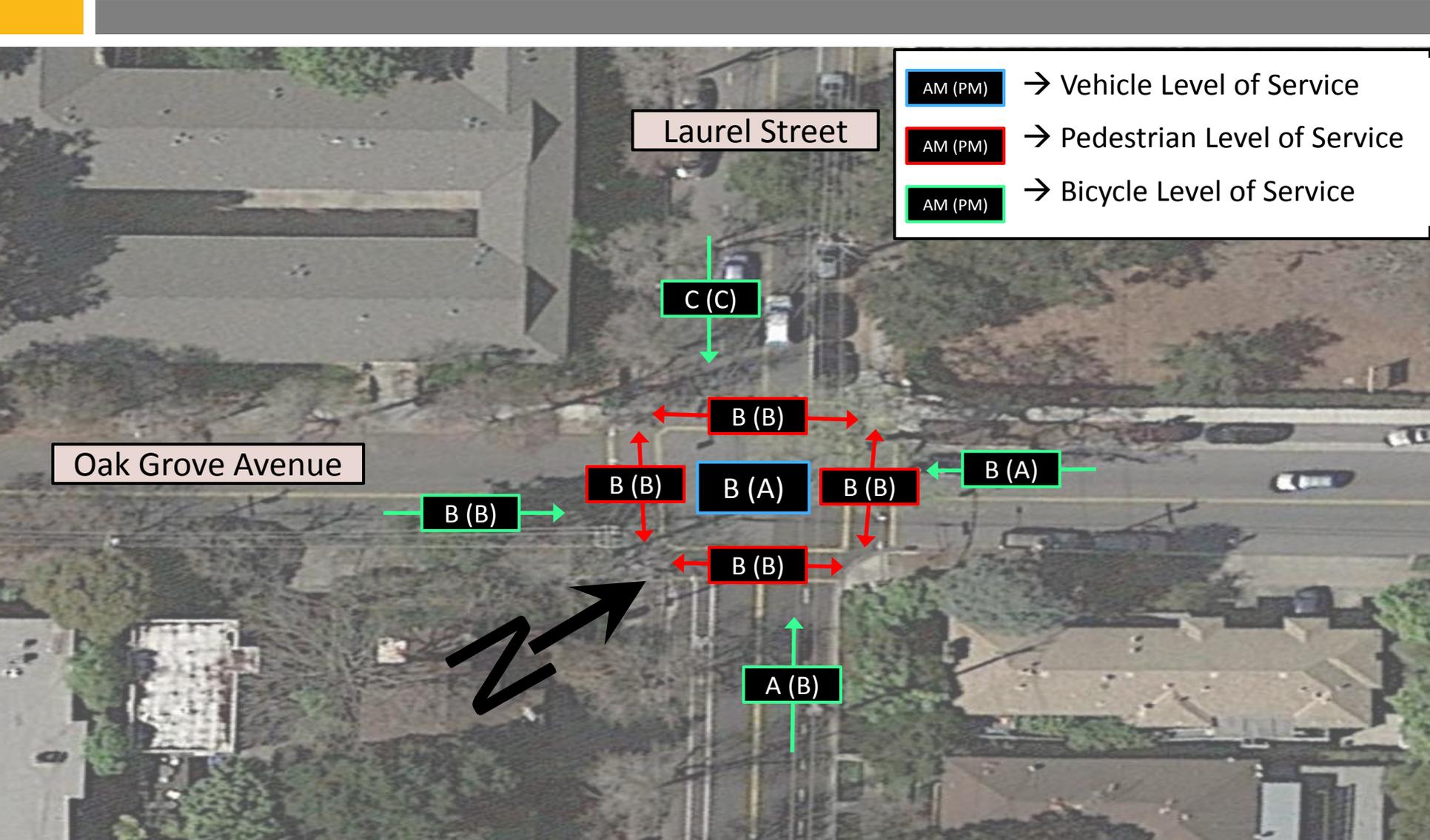


# Autos & Parking

- ❑ Vehicular traffic and queuing during school commute hours
- ❑ Left-turn permitted phasing
- ❑ Bike/bus/car conflicts
- ❑ Parking inside the bike lane
- ❑ Parking in the bike lane after 6pm



# HCM LOS & MMLoS



# Potential Metrics

- ▣ Pedestrian
  - ▣ 1 bulbout, landscaped separation from street, short cycle length, some visibility issues, no continental crosswalk
  - ▣ **Pedestrian Qualitative LOS = C**
- ▣ Bicycle
  - ▣ Slower vehicle speeds, some bike facilities
  - ▣ **Bicycle Qualitative LOS = C**
- ▣ Transit
  - ▣ Some service, minimal stop facilities
  - ▣ **Transit Qualitative LOS = C**
- ▣ Auto

## Corridor Analysis

# Middlefield: Ravenswood to Willow

### Overview:

- Bike lanes on each side
- Wide street with a median (opportunity)
- Landscaping adjacent sidewalks



# Pedestrians

- Landscaped sidewalks
- Construction on pedestrian refuge island
- Meandering sidewalk on opposite side



# Bicyclists

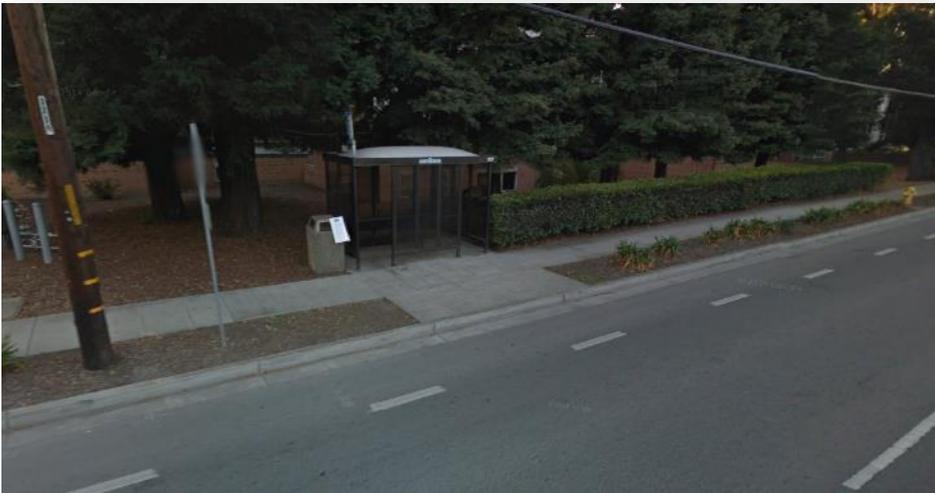


- Bike lanes along Middlefield
- (Transitional green zones on Willow to illuminate potential interactions)



# Transit

- ❑ Several SamTrans routes along corridor
- ❑ Some transit shelters, some minimal facilities
  - ❑ Bus stops in bicycle lane



Source: Google



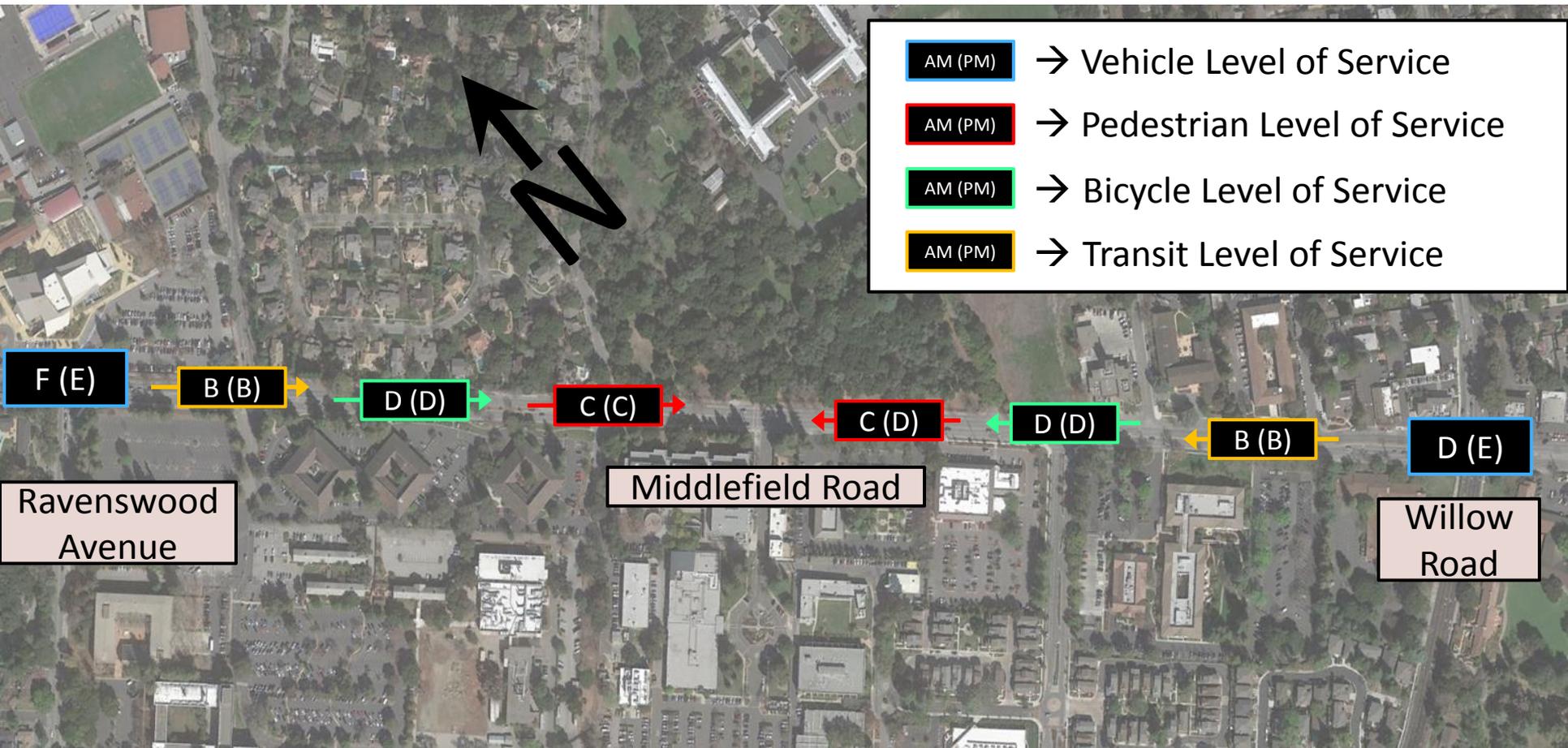
Source: Google

# Autos & Parking

- Road is wide from Willow to Ravenswood, but narrows after
- Protected left turns
- No on-street parking



# HCM LOS & MMLoS



# Potential Metrics

- Pedestrian
  - Minimal width, some segments with landscaped separation from roadway
  - **Pedestrian Qualitative LOS = C**
- Bicycle
  - Standard bike lane, no separation, high vehicle speeds
  - **Bicycle Qualitative LOS = D**
- Transit
  - Multiple routes, adequate stop spacing, some facilities sub-standard
  - **Transit Qualitative LOS = C**
- Auto
  - Corridor travel time

# Corridor Analysis

## Chilco: Bayfront to Terminal

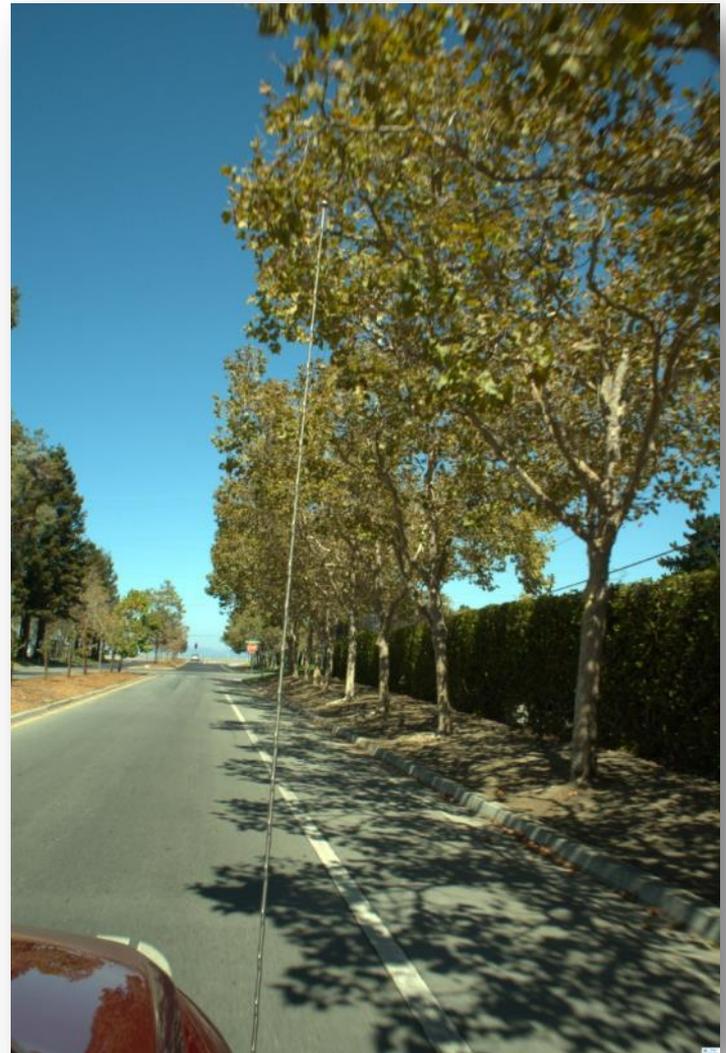
### Overview:

- From Bay through Industrial to dense single family residential
- Bike lane ends at railroad
- Good pedestrian environment near Terminal



# Pedestrians

- No sidewalks for the majority of the segment
  - ▣ Sidewalks after rail tracks
- Pedestrians forced onto the dirt/grass shoulder or bike lane



# Bicyclists



- Bike lanes along Chilco
  - 4-5 feet wide
- Bike lane ends at rail tracks
- Dirt/debris enters bike lane easily

# Autos & Parking

- Long transition road without driveways
- Speed limit 40 mph
- One lane in each direction, no parking
- Median between Bayfront and Constitution
- Becomes residential (with parking) after tracks



# Potential Metrics

- No HCM LOS or MMLOS for segment due to limitations in methodology – unsignalized intersections
- Pedestrian
  - No sidewalk
  - **Pedestrian Qualitative LOS = F**
- Bicycle
  - Wide bike lane, no separation, high vehicle speeds
  - **Bicycle Qualitative LOS = D**
- No transit on segment (school buses present)
- Auto
  - Travel time

# Conclusion – Potential Metrics

- Citywide metrics
  - VMT/capita
  - GHG/capita
  - Travel time in key corridors
  - Social, economic metrics
- Transportation corridor metrics
  - Qualitative rating of pedestrian, bicycle, transit, auto



## Modal Tradeoff Examples

- Parking lane <-> Bike lane
- Travel lane <-> Wide sidewalk
- Travel lane <-> Wide median
- Bike lane <-> Bus priority
- Bike lane <-> Street trees

# Next Steps

- Continued existing conditions analysis
- Potential strategies
  - LOS vs. other metrics
  - Street types in addition to functions
  - Transportation Management Association(s)
  - Dumbarton Rail Corridor – trail, BRT, shuttle, etc.
  - M-2 specific conditions



# For More Information

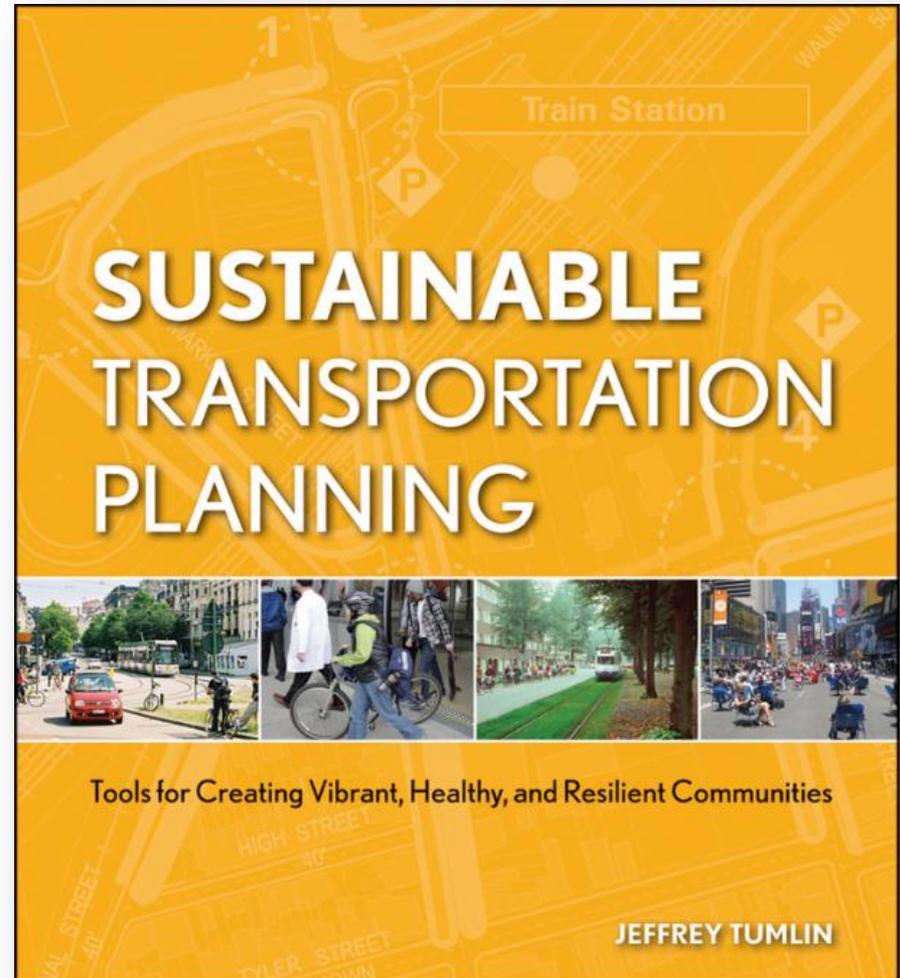
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# For More Information



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- ▣ Visit: [www.menlopark.org/connectmenlo](http://www.menlopark.org/connectmenlo)
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