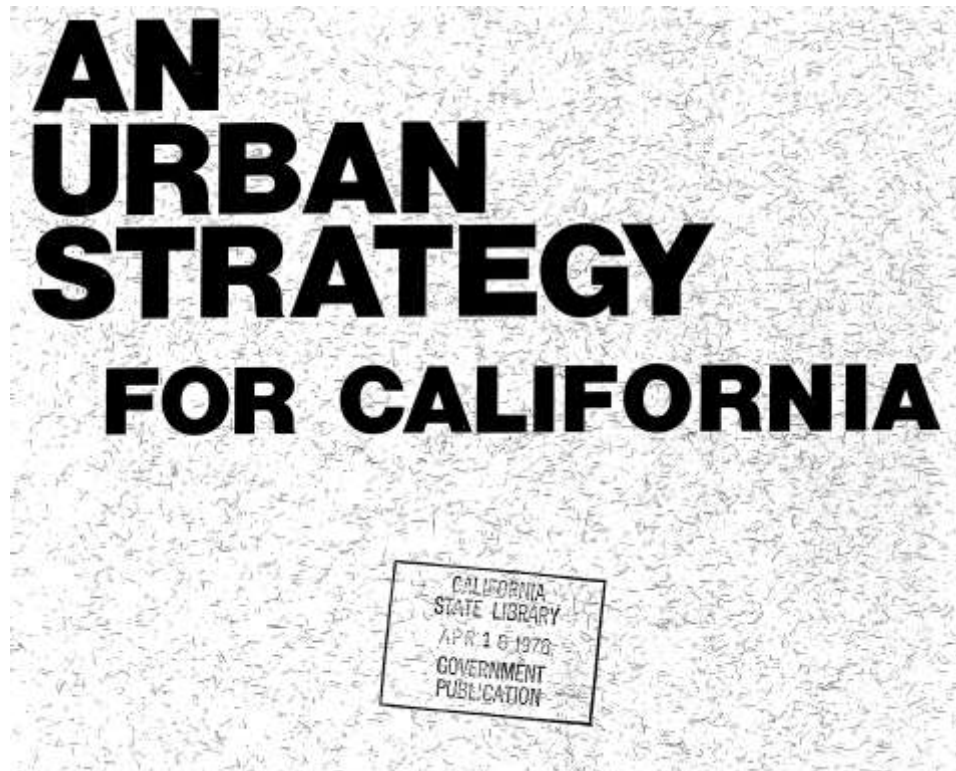


# A Shift from LOS to VMT in the California Environmental Quality Act





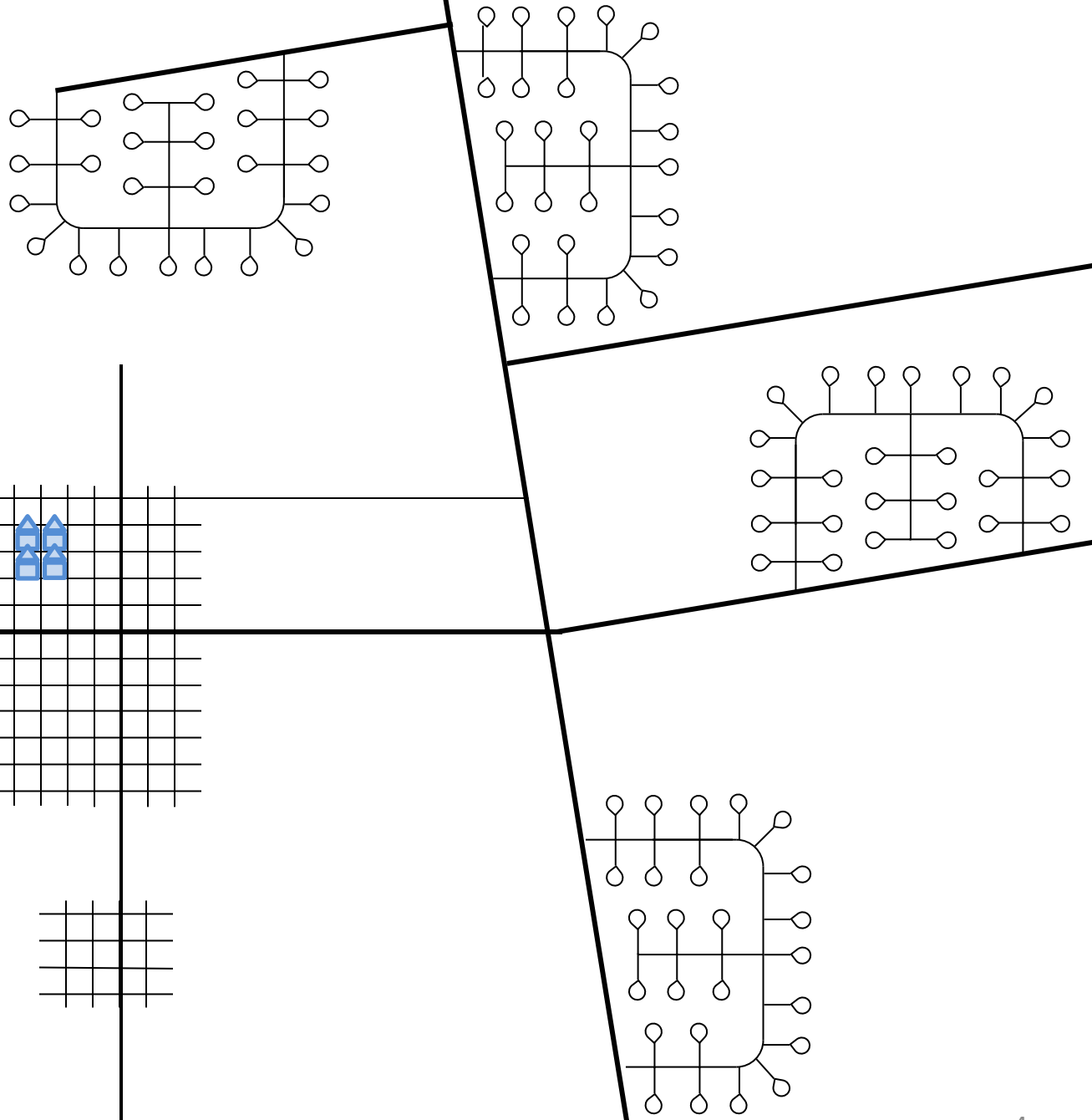
## **General Goal:**

Protect natural resources and improve quality of life by directing new growth to existing cities and suburbs

# What is CEQA?

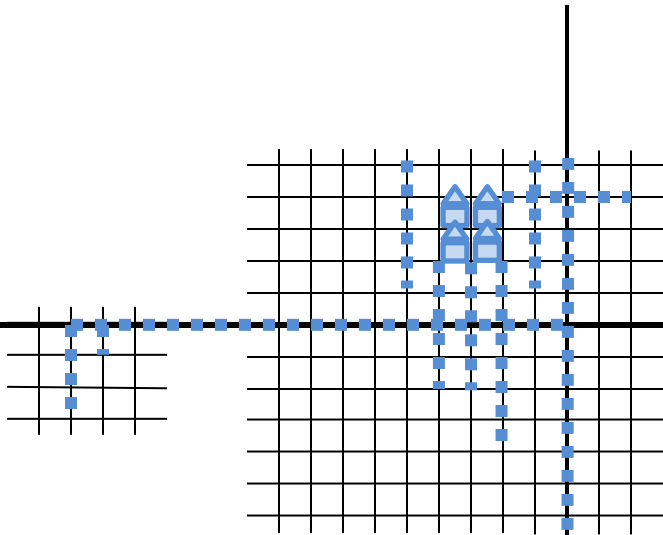
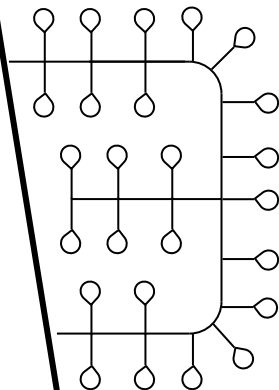
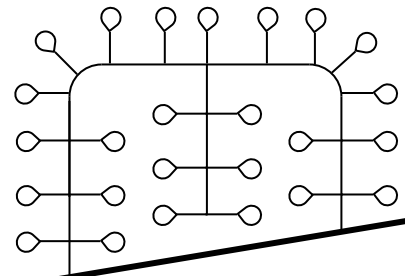
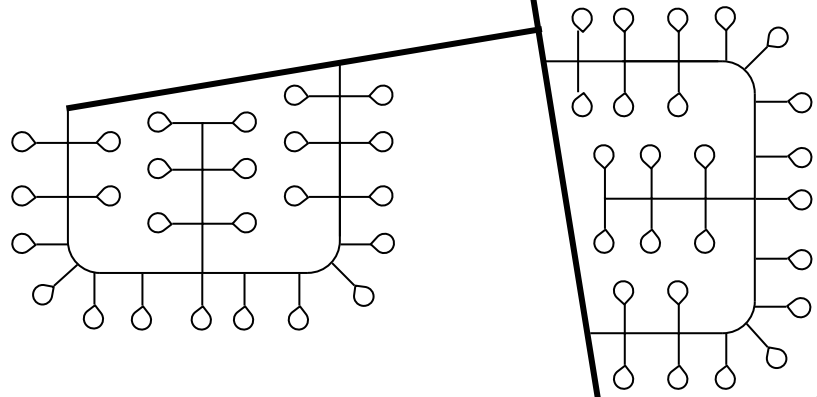
- California Environmental Quality Act
- “Little NEPA”, big role in California planning
  - De facto transportation planning mechanism: CEQA
  - De facto transportation metric used in CEQA: LOS

# Analysis of **infill** development using LOS



# Analysis of infill development using LOS

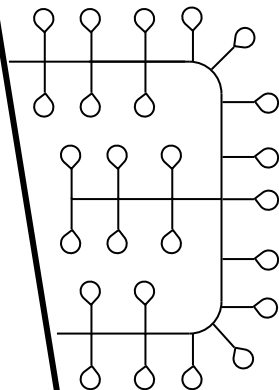
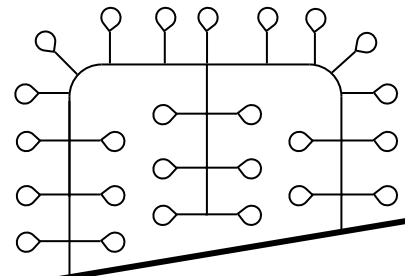
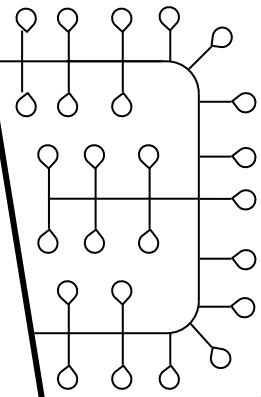
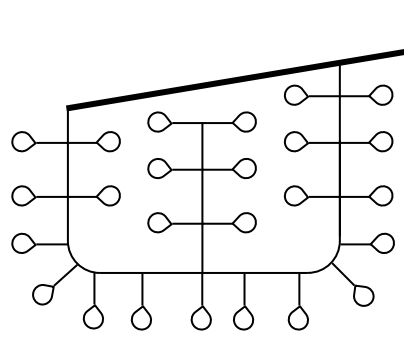
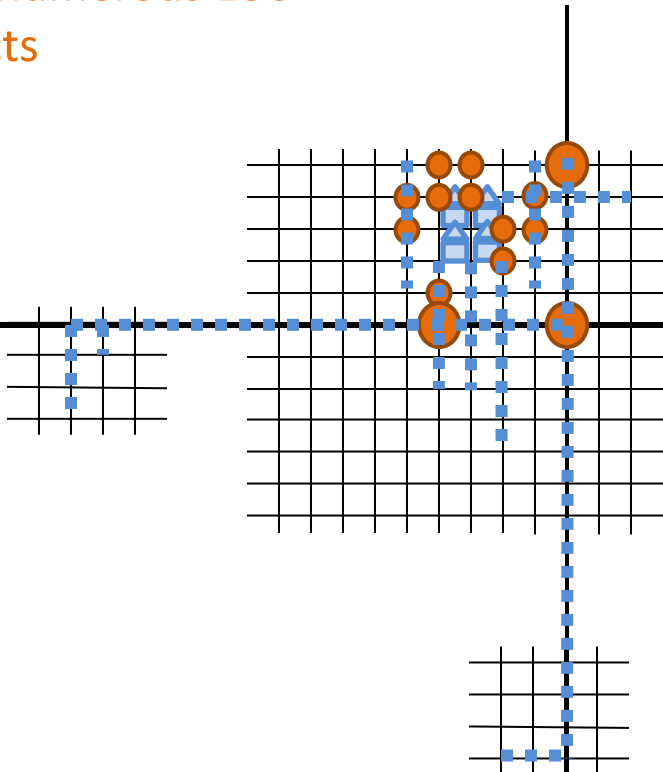
Relatively little vehicle travel loaded onto the network



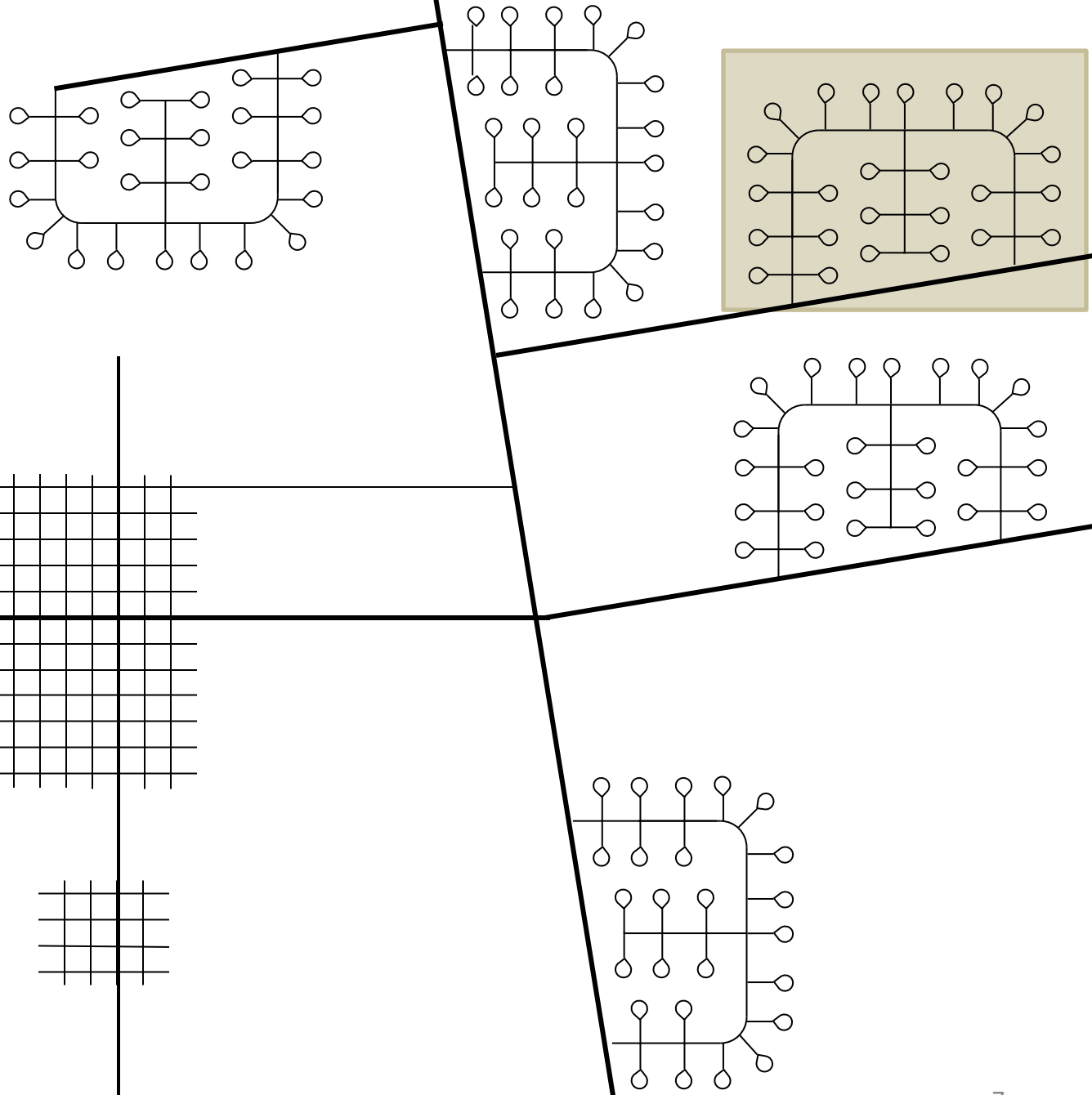
# Analysis of infill development using LOS

Relatively little vehicle travel loaded onto the network

...but numerous LOS impacts

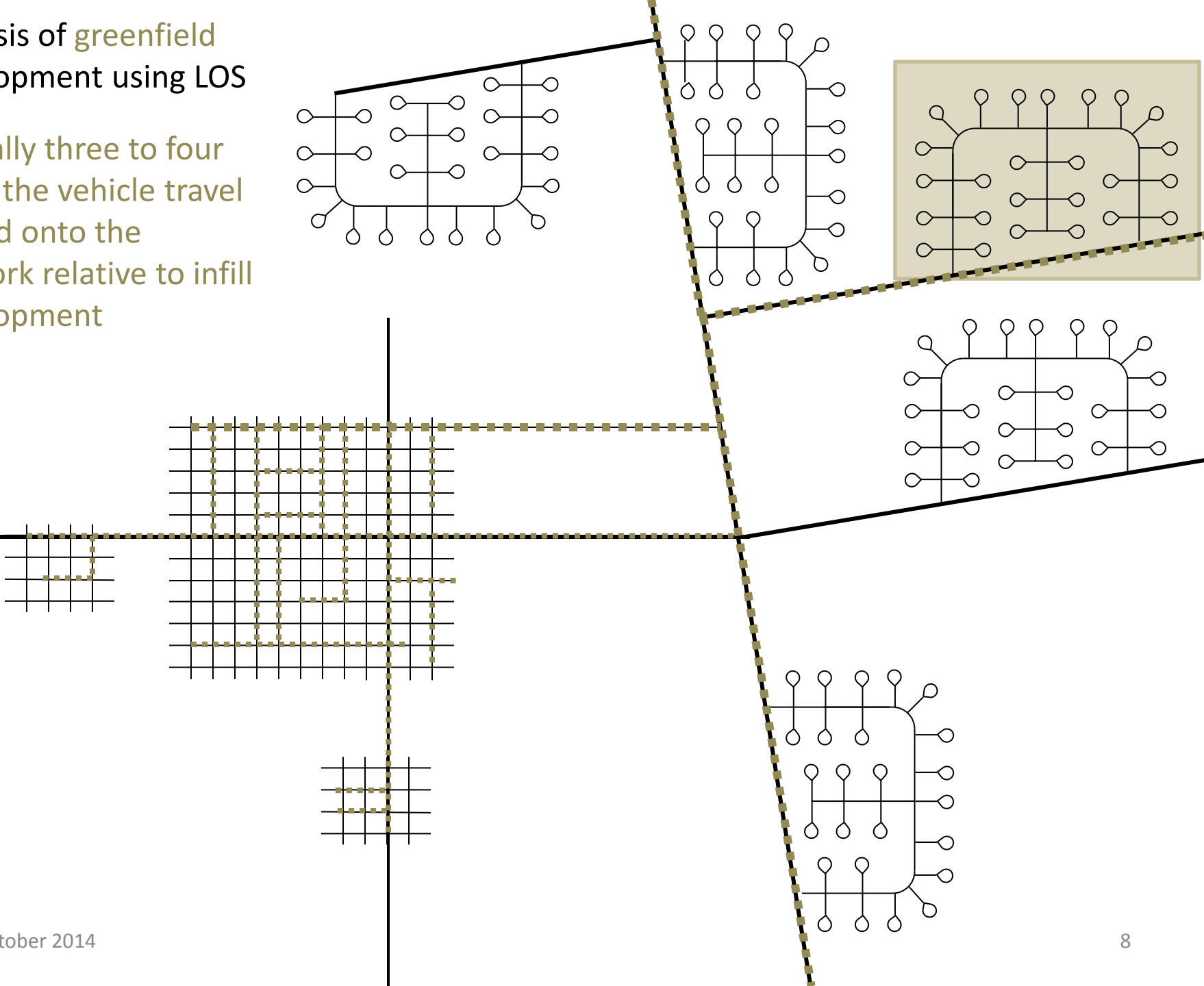


# Analysis of greenfield development using LOS



# Analysis of greenfield development using LOS

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



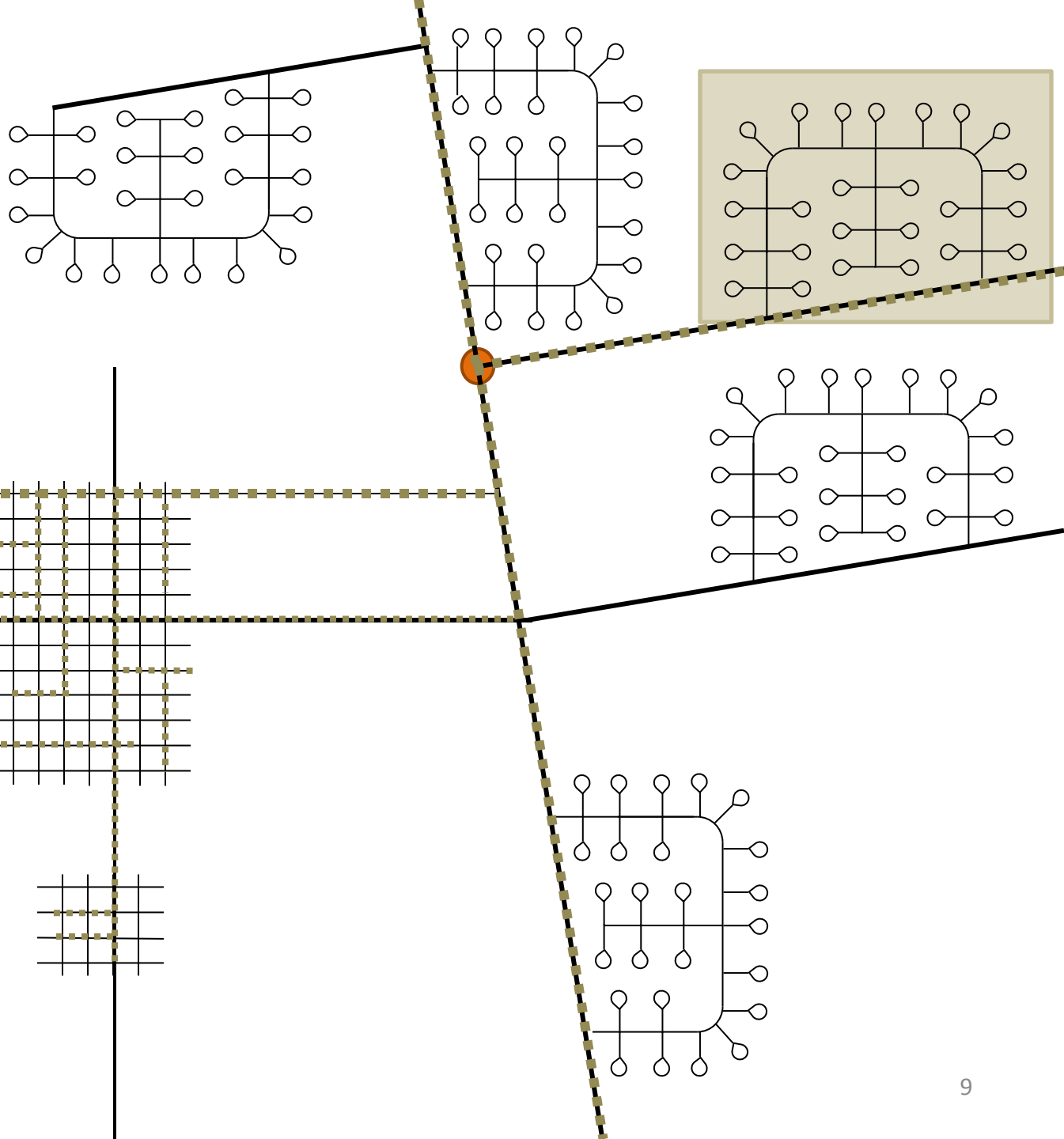


# Analysis of greenfield development using LOS

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.

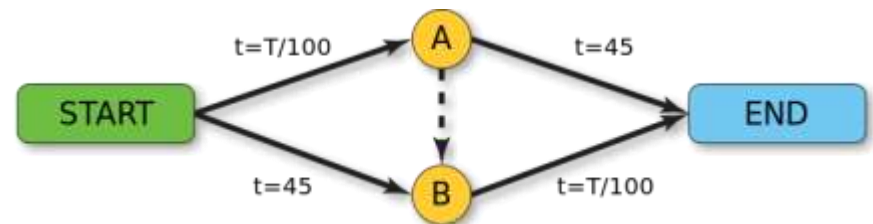


# Problems with LOS

- 1. Bias against infill because of “last-in development” problem**
  - Infill loads relatively little traffic onto the regional network
  - However, LOS methodology adds traffic generated by infill to existing traffic, triggering thresholds
- 2. Scale of analysis is too small**
  - Registers impacts adjacent to project, ignores impacts regionally
  - Spot metric can misrepresent effect on corridor and network



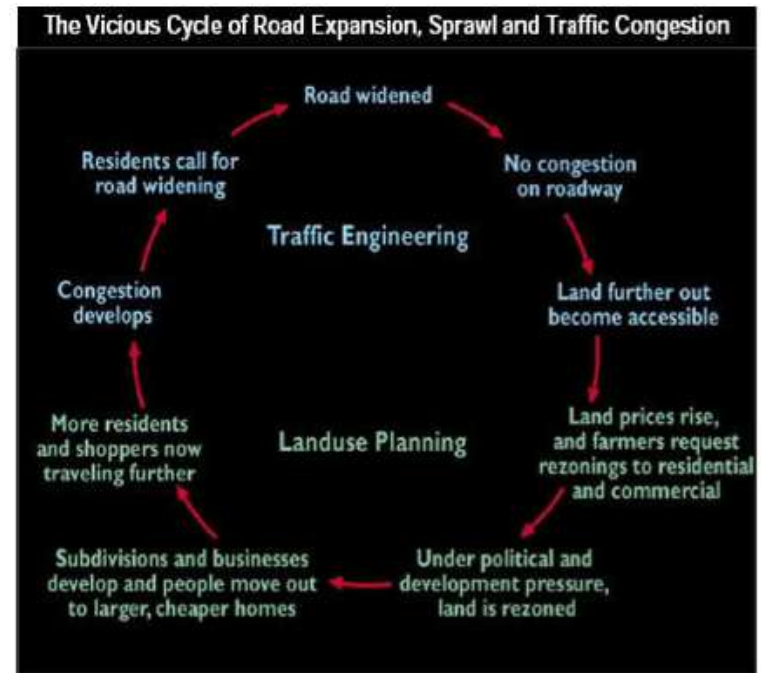
David Paul Morris / SFC



# Problems with LOS

## 3. LOS mitigation is itself problematic

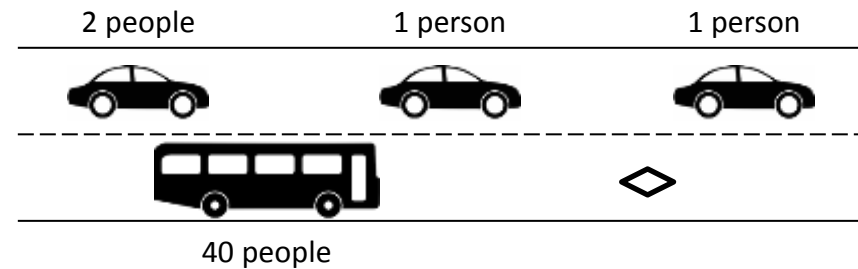
- Reducing project size pushes development to outlying locations
- Widening roadways worsens livability, induces vehicle travel



Graphic: NJ DOT

## 4. Mischaracterizes transit, biking, walking as detriments to transportation

- A transit priority lane worsens LOS even as it improves person-throughput
- LOS characterizes pedestrians and cyclists as obstructions to cars, to be channeled/restricted



# Problems with LOS

## 5. There is a well-developed methodology for estimating future LOS, but it isn't as accurate as VMT

- Hard to estimate future vehicle volume at a certain intersection, and delay is sensitive to vehicle volume
- Total travel loaded onto the network can be estimated more accurately

Table V.84-3  
Intersection Critical Movement Analysis (CMA) and Level of Service (LOS) Summary  
Existing (2001) and Future (2005) Conditions

No.	Intersection	Peak Hour	Existing		Without Project		With Project		With Project + Mitigation			
			CMA	LOS	CMA	LOS	CMA	LOS	CMA	LOS	Impact	
1.	Sunset Boulevard & Beverly Glen Boulevard (E.)	AM PM	0.894 1.023	D F	1.038 1.225	F F	1.037 1.216	F F	-0.001 -0.006	1.036 1.216	F F	-0.002 -0.010
2.	Sunset Boulevard & Beverly Glen Boulevard (W.)	AM PM	1.168 1.062	F F	1.388 1.264	F F	1.388 1.251	F F	0.003 -0.013	1.385 1.249	F F	0.000 -0.015
3.	Wilshire Boulevard & Beverly Glen Boulevard	AM PM	0.868 0.884	D D	1.030 1.140	F F	1.030 1.133	F F	0.000 -0.007	1.029 1.133	F F	-0.001 -0.007
4.	Santa Monica Boulevard (N.) & Diamond Avenue	AM PM	0.861 0.814	D D	1.076 1.082	F F	1.086 1.054	F F	0.004 -0.020	1.078 1.054	F F	0.002 -0.028
5.	Santa Monica Boulevard (S.) & Overland Avenue	AM PM	0.478 0.428	A A	0.358 0.465	A A	0.358 0.465	A A	0.000 0.000	0.358 0.465	A A	0.000 0.000
6.	Santa Monica Boulevard (N.) & Beverly Glen Boulevard	AM PM	0.849 0.823	D D	1.090 1.139	F F	1.107 1.130	F F	0.008 0.000	1.104 1.128	F F	0.005 -0.011
7.	Santa Monica Boulevard (S.) & Beverly Glen Boulevard	AM PM	0.940 0.884	D D	0.464 0.575	A A	0.464 0.575	A A	0.000 0.000	0.464 0.575	A A	0.000 0.000
8.	Santa Monica Boulevard (S.) & Century Park West	AM PM	0.325 0.397	A A	1.006 0.594	F E	1.007 0.960	F E	0.001 -0.010	1.005 0.960	F E	-0.001 -0.018
9.	Santa Monica Boulevard (N.) & Club View Drive	AM PM	0.613 0.707	B C	0.213 0.408	A A	0.213 0.408	A A	0.000 0.000	0.213 0.408	A A	0.000 0.000
10.	Santa Monica Boulevard (N.) & Avenue Of The Stars	AM PM	0.625 0.755	D C	1.191 0.987	F E	1.205 0.958	F E	0.014 -0.011	1.199 0.955	F E	0.008 -0.012
11.	Santa Monica Boulevard (S.) & Avenue Of The Stars	AM PM	0.508 0.544	A A	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
12.	Santa Monica Boulevard (N.) & Century Park East	AM PM	0.759 0.686	C B	0.950 0.846	E D	0.955 0.805	E D	0.005 -0.041	0.953 0.804	E D	0.003 -0.042
13.	Santa Monica Boulevard (S.) & Century Park East	AM PM	0.771 0.645	C B	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
14.	Santa Monica Boulevard (N.) & Wilshire Boulevard	AM PM	1.066 1.046	F F	1.261 1.294	F F	1.263 1.268	F F	0.002 -0.000	1.263 1.267	F F	0.002 -0.007

## 6. Delay-based metrics are problematic for modern transportation planning

- The purpose of transportation is *access to destinations*
- With smart growth, delay metrics sometimes get that backwards

### Denver 1982

1.09

50.6 minutes

46.4 mins

4.2 mins



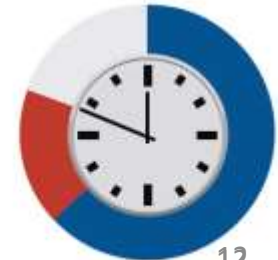
### Denver 2007

1.31

49.6 minutes

37.9 minutes

11.7 minutes



# Problems with LOS

## 7. LOS pushes us to build roads that we cannot afford to maintain

- Substantial maintenance funding shortfalls even for existing roads
- Maintaining LOS thresholds creates additional maintenance burden



# SB 743

Requires the Office of Planning and Research to develop new metrics for transportation impacts for environmental review



New metric must promote:

- Reduction in GHGs
- Development of multimodal transportation networks
- A diversity of land uses

# VMT, Environment, Health, Cost

## Environment

- Emissions
  - GHG
  - Regional pollutants
- Energy use
  - Transportation energy
  - Building energy
- Water
  - Water use
  - Runoff – flooding
  - Runoff – pollution
- Consumption of open space
  - Sensitive habitat
  - Agricultural land

## Health

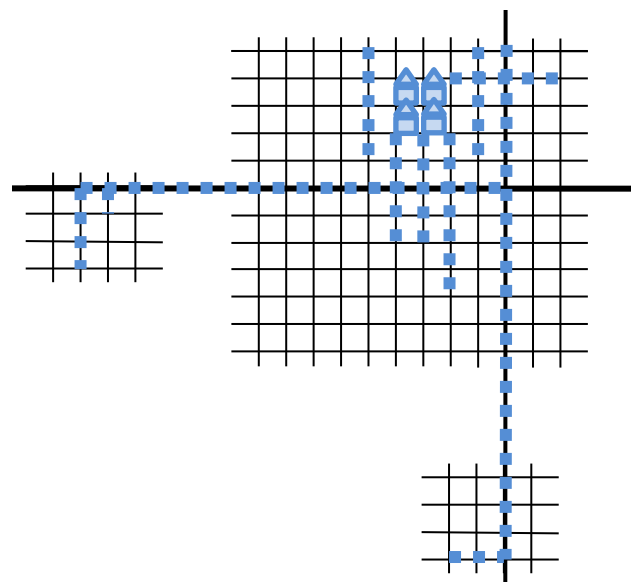
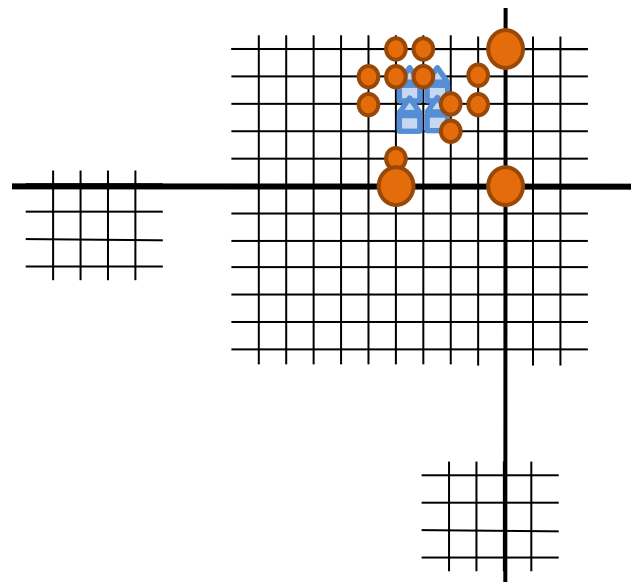
- Collisions
- Physical activity
- Emissions
  - GHGs
  - Regional pollutants
- Mental health

## Cost

- Increased costs to state and local government
  - Roads
  - Other infrastructure
  - Schools
  - Services
- Increased private cost
- Housing supply/demand mismatch → future blight

# Transportation Impacts of Land Use Projects

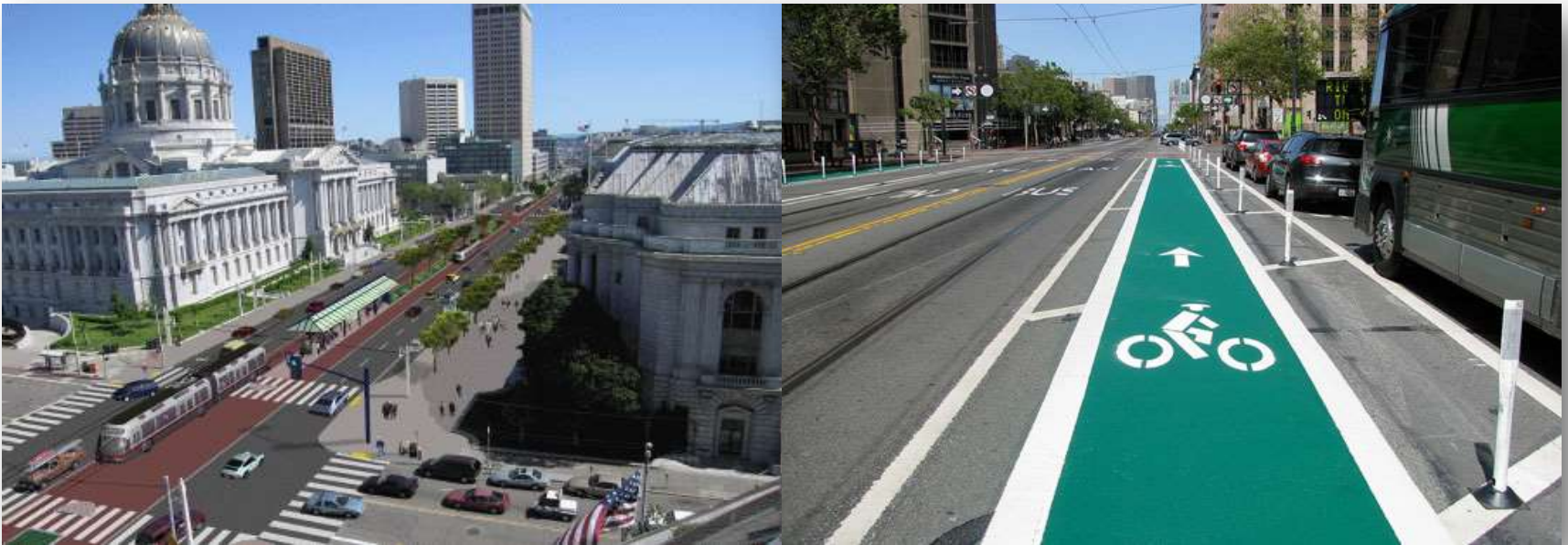
- Old: LOS on local intersections and highway segments
- New: VMT loaded onto the roadway network





# Transportation Impacts of Transit and Active Transport Projects

- Old: Transit, active transportation projects slow automobile traffic, trigger LOS “impact to transportation”
- New: Transit, active transportation presumed to reduce VMT unless demonstrated otherwise



# Transportation Impacts of Roadway Expansion Projects

- Old: LOS impacts at nearby intersections from rerouted/induced vehicle travel  
(Also: Induced VMT analysis required for GHG calculation)
- New: Induced (or reduced) VMT



# Next Steps

- Preliminary Discussion Draft of the CEQA Guidelines available for public review, comment through November 21
- Next:
  - Work out technical details and stakeholder concerns
  - Then, 6-8 month formal rulemaking and legal process
- Phased implementation to allow local governments time to make the change

# Thanks!

Chris Ganson

[chris.ganson@opr.ca.gov](mailto:chris.ganson@opr.ca.gov)

Extra Slides

# Estimating VMT from Roadway Capacity Increasing Projects

# Roadway expansion projects typically increase VMT

Roadway expansion reduces travel time, which leads to:

1. Longer trips
2. Mode shift toward automobile
3. Newly generated trips
4. Route changes (can ↑ or ↓ or VMT)
5. More disperse land use development

# Empirical Study

- 30+ studies on induced vehicle travel
- Long-run elasticities typically 0.6 to 1.0
- Recent ARB assessment
  - Policy Brief  
[http://www.arb.ca.gov/cc/sb375/policies/hwycapacity/highway\\_capacity\\_brief-4-21-14.pdf](http://www.arb.ca.gov/cc/sb375/policies/hwycapacity/highway_capacity_brief-4-21-14.pdf)
  - Background Technical Document  
[http://www.arb.ca.gov/cc/sb375/policies/hwycapacity/highway\\_capacity\\_bkgd-4-21-14.pdf](http://www.arb.ca.gov/cc/sb375/policies/hwycapacity/highway_capacity_bkgd-4-21-14.pdf)
- VMT effects extend beyond project



# Estimation

A travel demand model can estimate:

1. Longer trips
2. Mode shift toward automobile
3. Newly generated trips [in some cases]
4. Route changes

But not:

5. Land use changes

# Estimation

Options for estimating land use changes:

- Employ a land use model
- Employ an expert panel, e.g. using Delphi method
- Examine gap between modeled and typical empirical results; adjust and/or explain model results