Traffic Safety & Fire Safety *Can the Conflicts Be Reconciled?*

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agenda

1. Introduction: one potential goal
2. Sprawling suburbs
   - Consequences for traffic safety
3. Cul-de-sacs vs. connected street networks
4. Street Connectivity Ordinances
5. Conflicting codes
6. About this project: a search for consensus

One goal: improve life safety

United States, 1999		
	Fatalities	Injuries
Fire	3,671	21,875
Traffic	41,611	3,236,000
Emergency medical response – ??? lives saved		

My background

- 14 years as a transportation planner
- No formal training in fire safety or emergency response


POLICE
1060
STRATUS
4MOH755

How can we reduce traffic fatalities?

Traffic fatalities

= fatalities/vehicle mile traveled * vehicle miles traveled

Reducing traffic fatalities

fatalities = fatalities/vehicle mile traveled * vehicle miles traveled

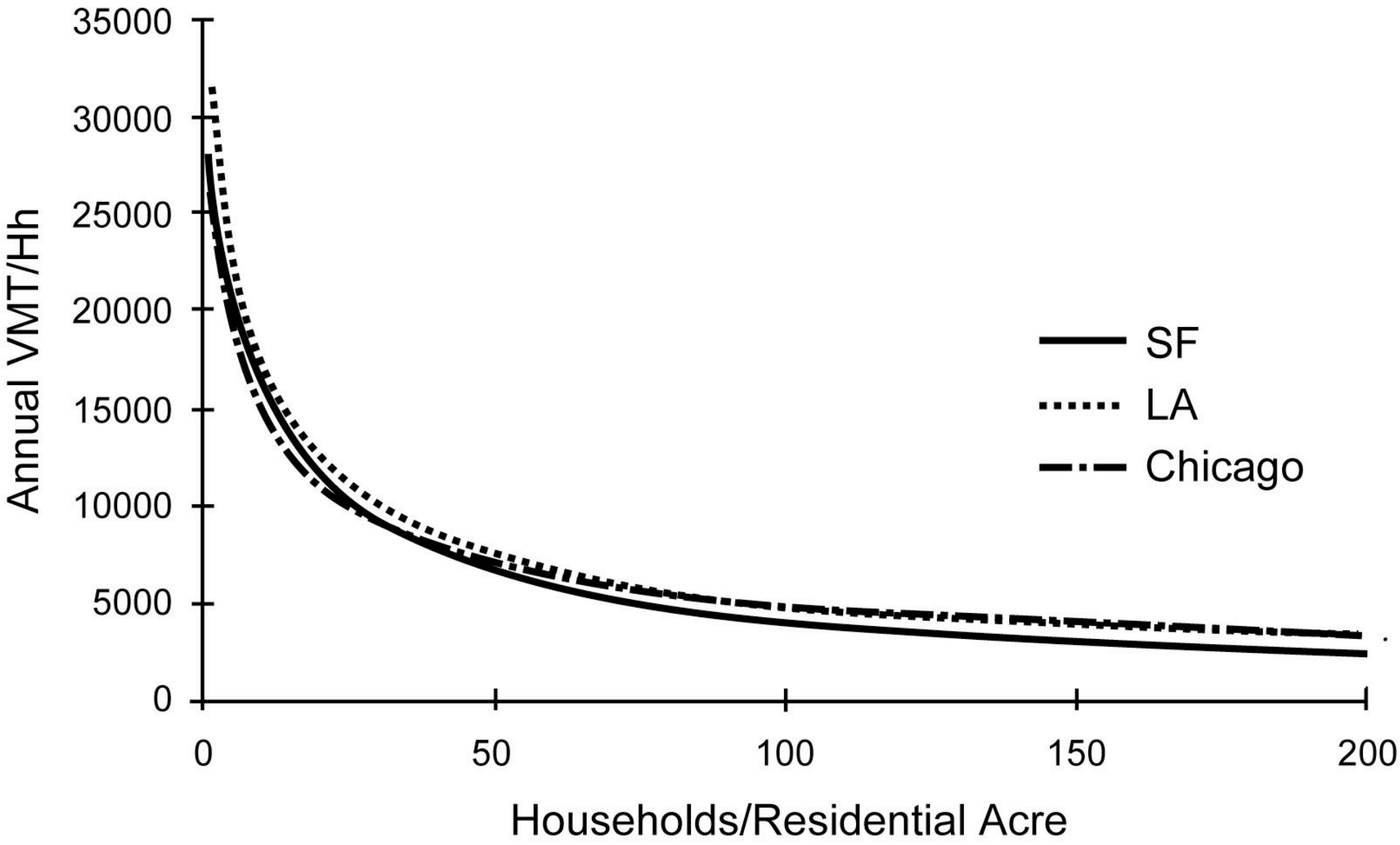
Potential solutions

1. Reduce fatality rate per mile
2. Reduce exposure (reduce miles traveled)

Doe Mill in Chico, CA: 8 units/acre

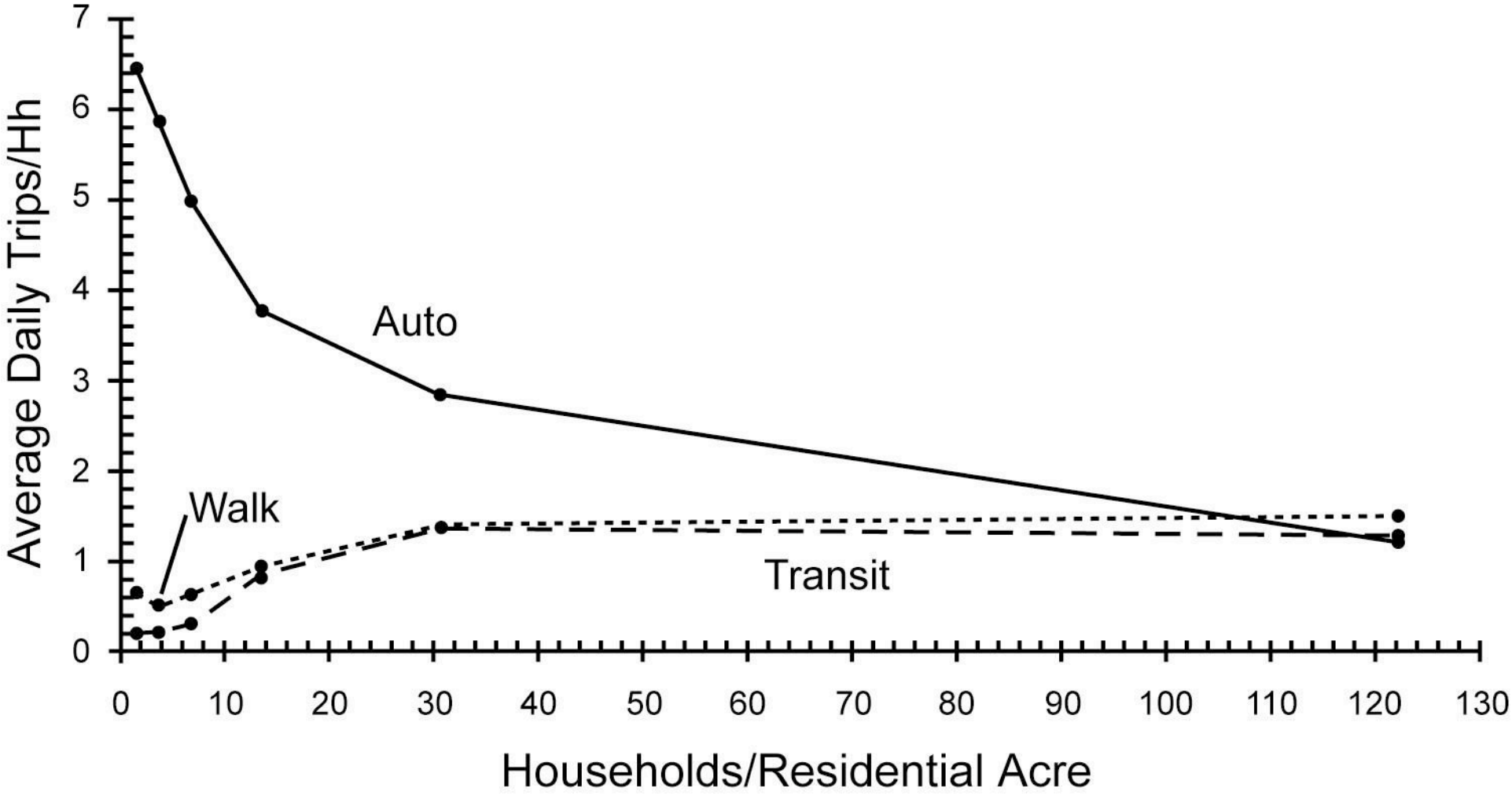

Sierra Nevada: < 1 unit/acre

Driving vs Residential Density



Average Daily Trips/Household vs Density

MTC's 1990 Household Travel Survey




Sierra Nevada: < 1 unit/acre
an example of "ex-urban sprawl"

Ex-Urban Sprawl As a Factor in Traffic Fatalities and EMS Response Times in the Southeastern United States

Fatal traffic crash rates per 10,000 people:

Urban areas: 2.5

Ex-urban areas: 6.3

EMS Run Times:

Urban areas: 7.6 minutes

Ex-urban areas: 10.7 minutes

Response time
= average speed * response distance

Response time = average speed * response distance

To improve response times

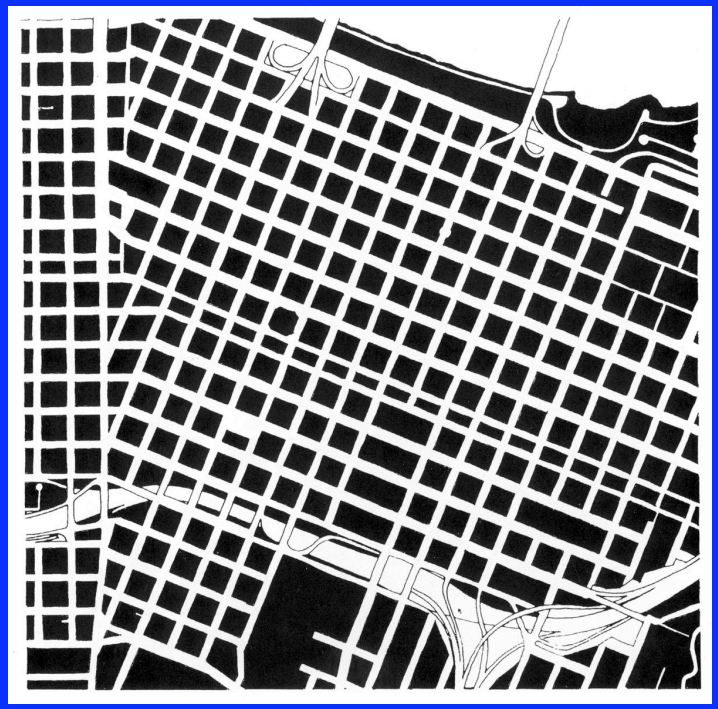
Option 1: Increase speeds

Option 2: Reduce response distances

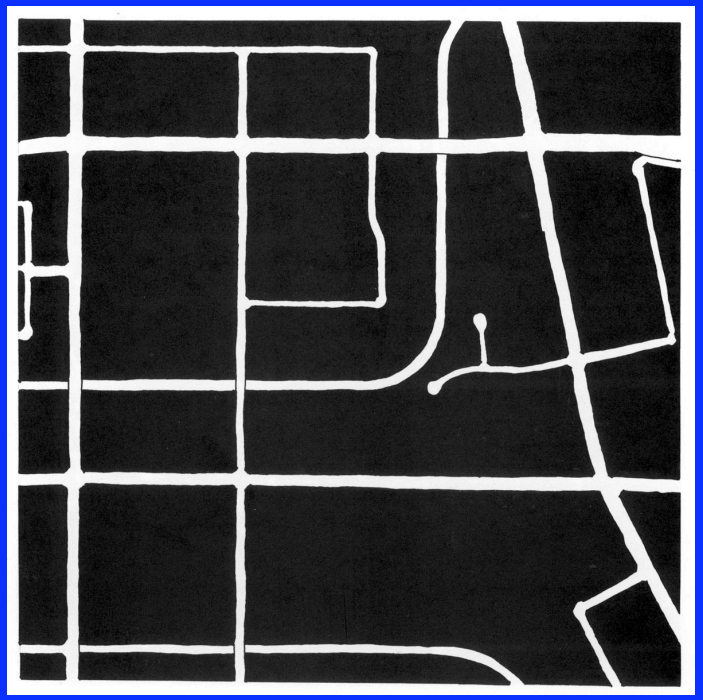
- Keep homes closer to existing firehouses
- Design shorter routes from firehouse to homes

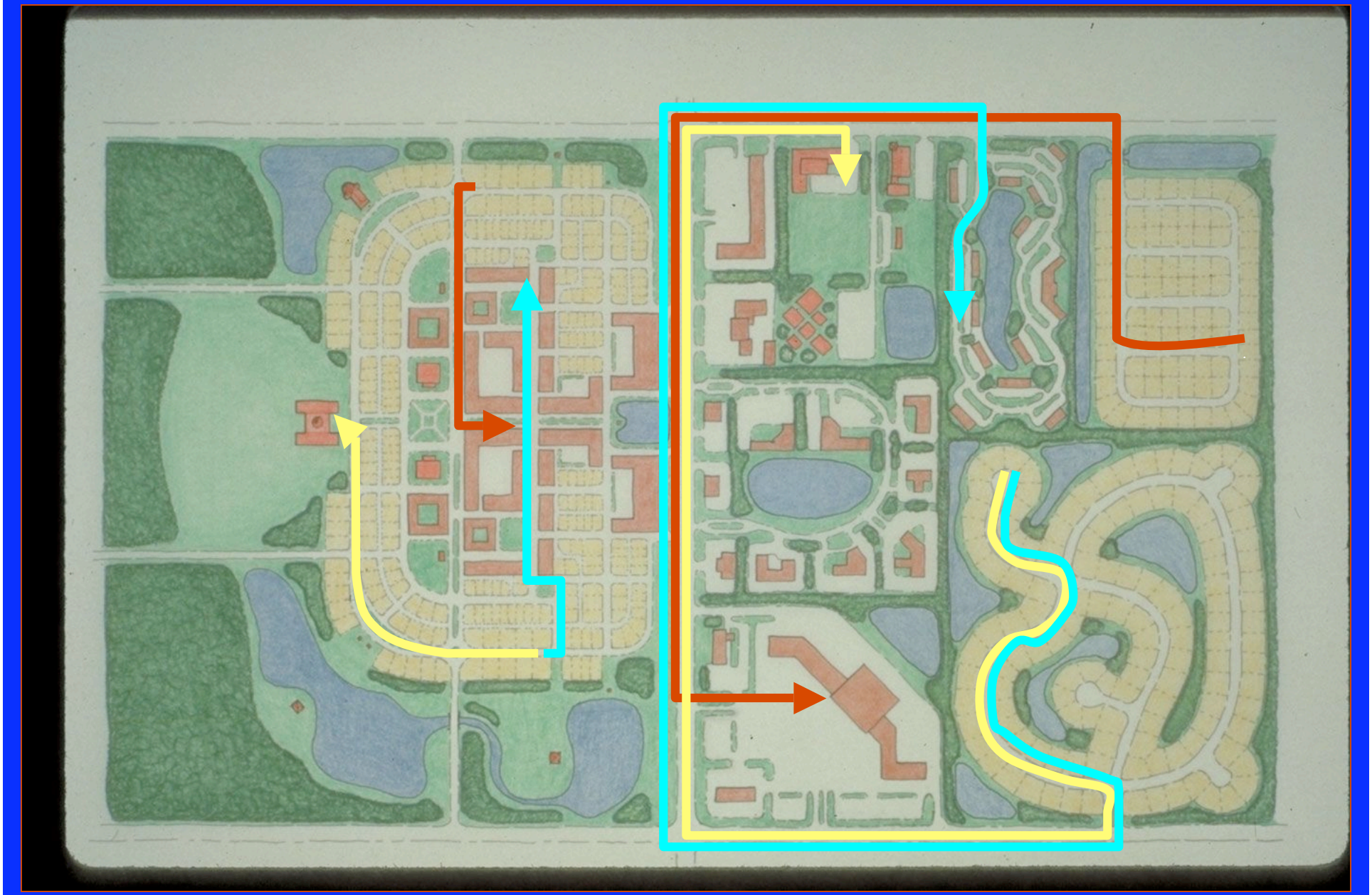
Connected Street Networks vs. Cul-De-Sacs

Traditional:
highly connected!



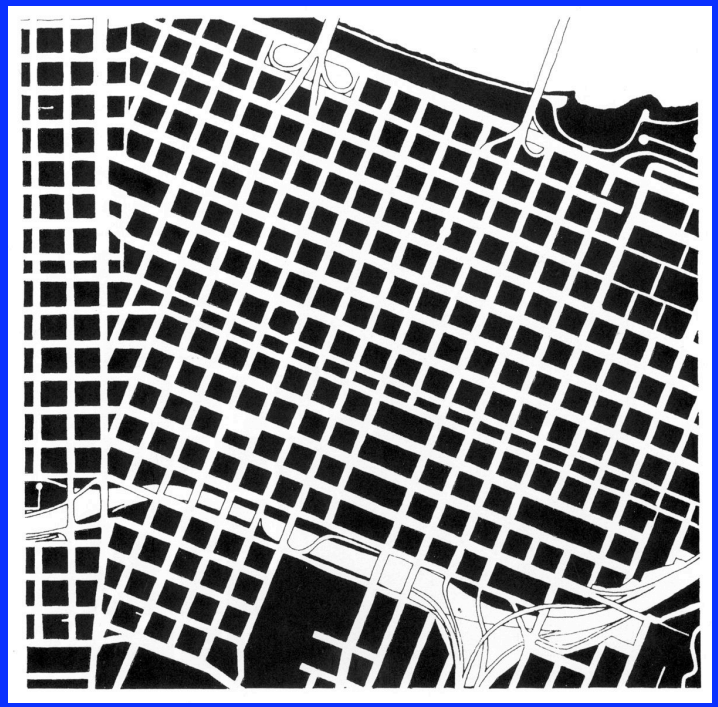
Conventional:
few connections

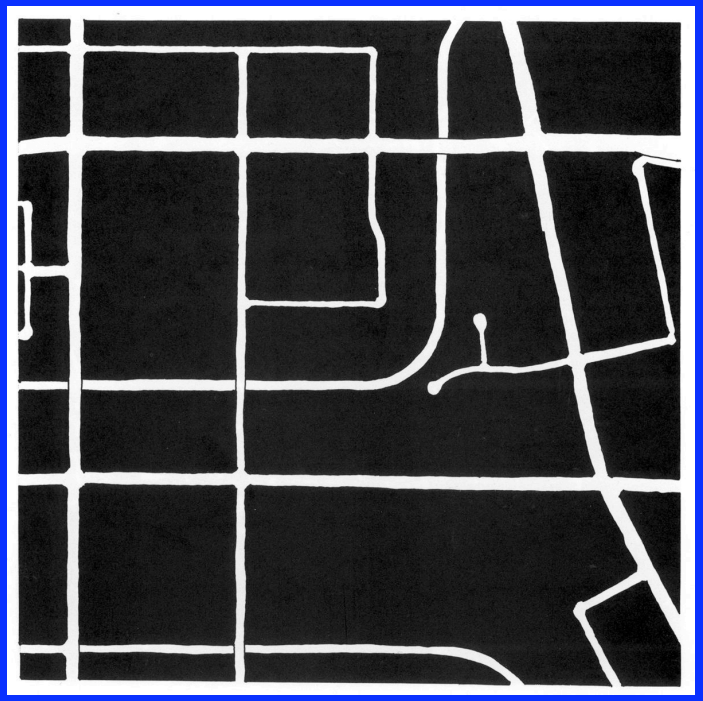




Benefits of Street Connectivity for Traffic

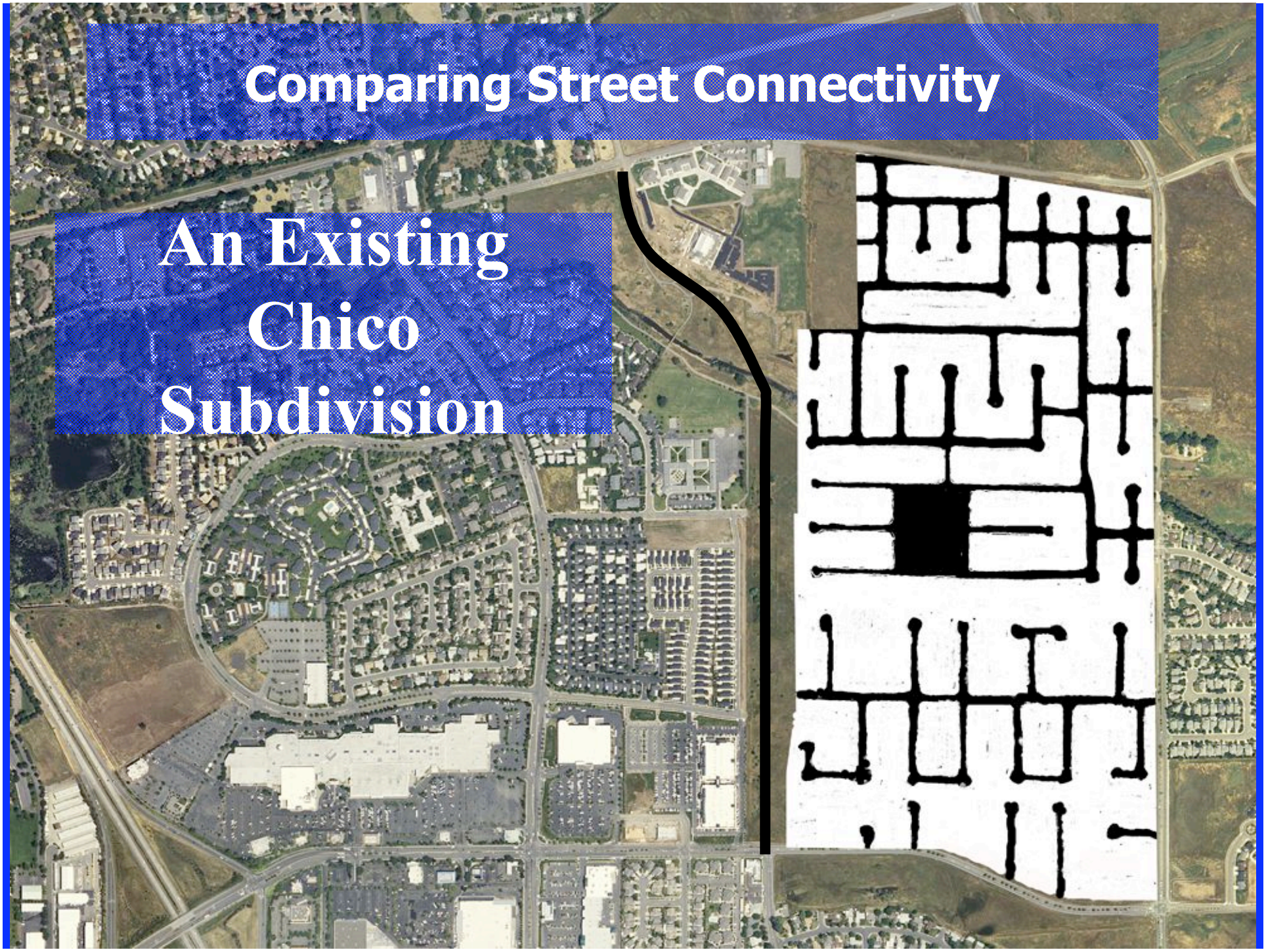
1. More trips stay on local streets => less congestion on arterial streets
2. More direct routes => fewer VMT





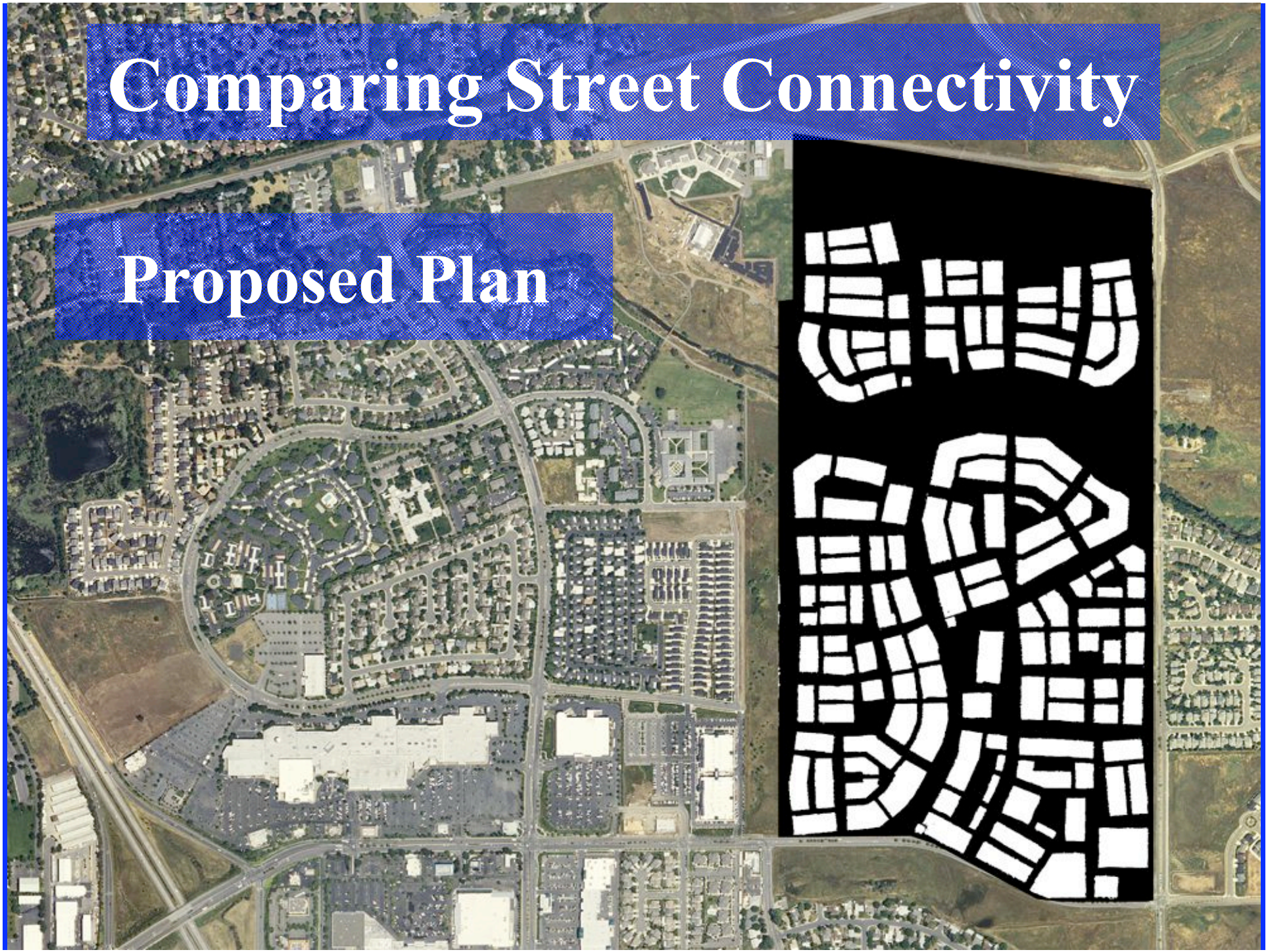
Comparing Street Connectivity

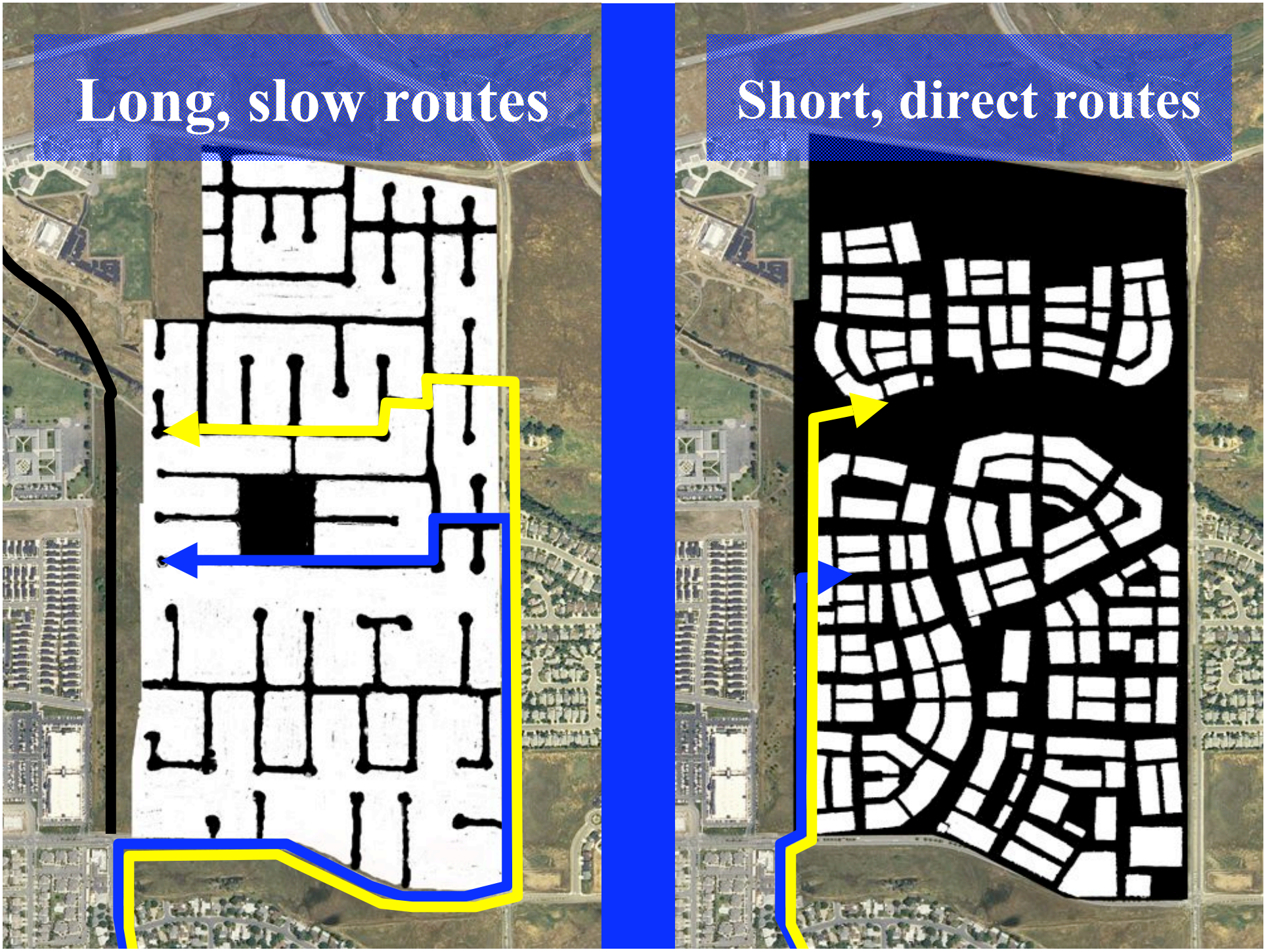
An Existing Chico Subdivision



Comparing Street Connectivity

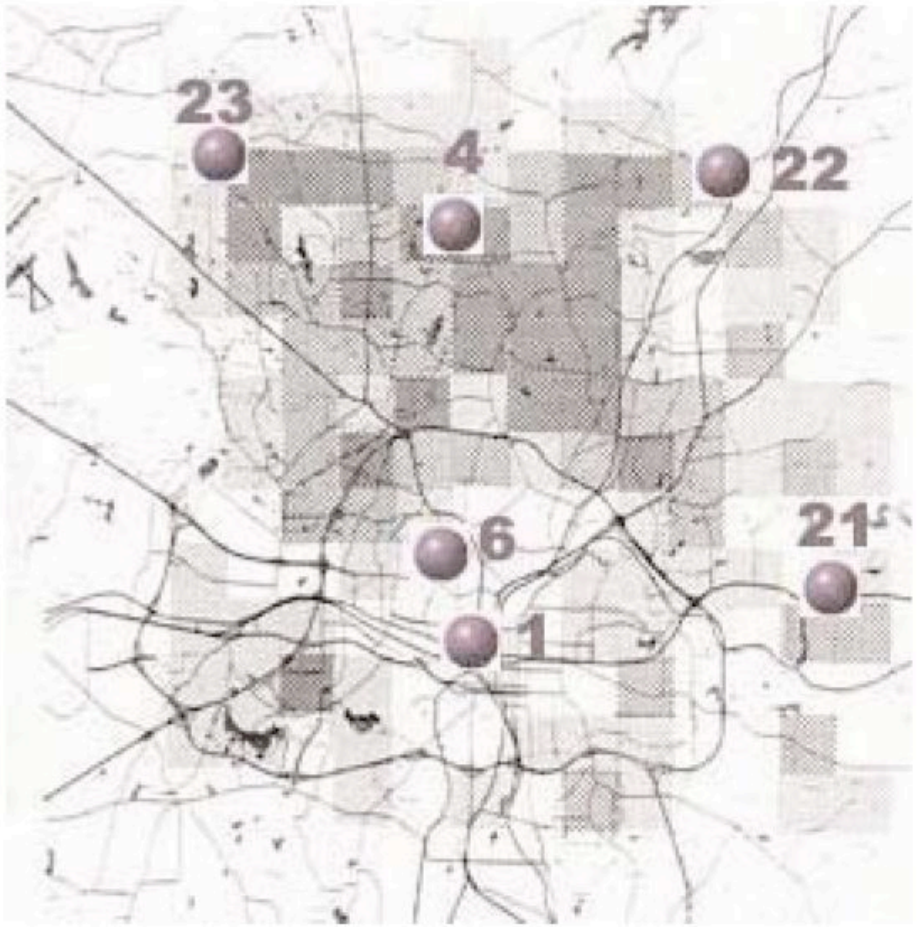
Proposed Plan




Long, slow routes
Short, direct routes

Raleigh, NC, Fire & EMS service efficiency research

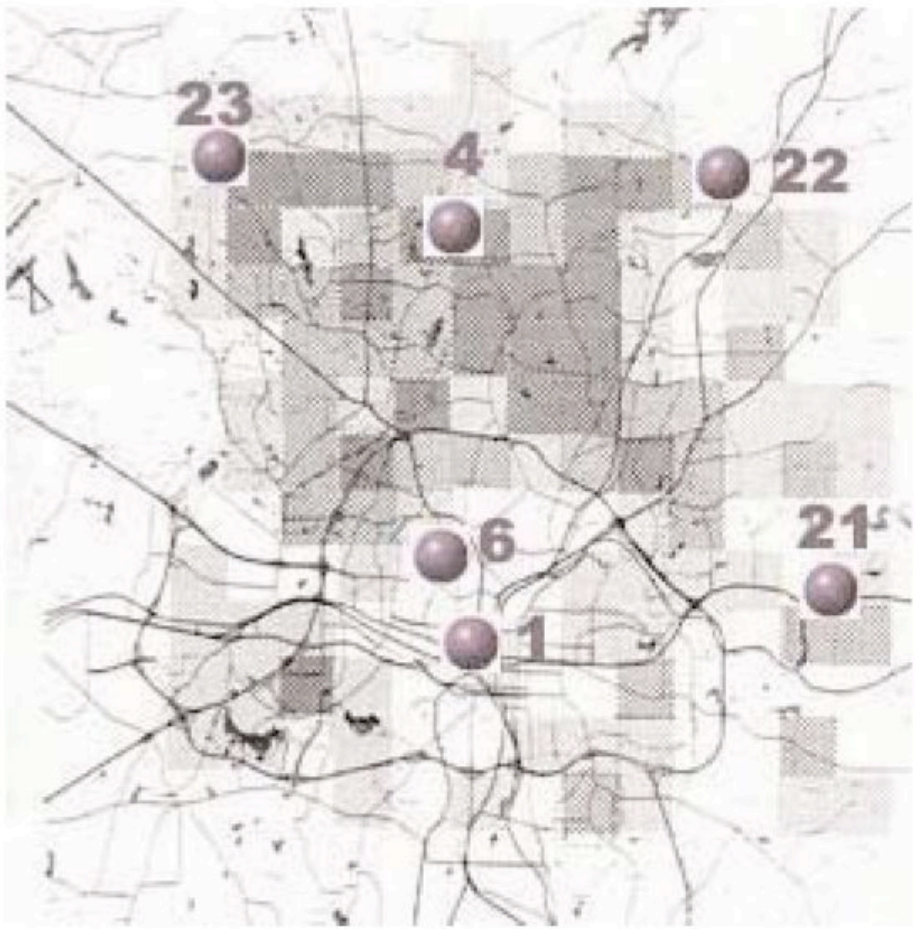
- Calculated acreage that could be serviced within 1.5 miles of a fire station.
- Compared:
  - Older neighborhoods with dense urban grade
  - 1970-80s neighborhood with less connectivity
  - 1980-90s neighborhood with many dead-end streets



Cul-de-sac Density Map showing locations of Fire stations used for response area test. Stations 1 and 6 are located in a relatively dense grid of streets established prior to 1950. Stations 21-23 are in outlying areas in a relatively disconnected network of streets. Station 4 is in a typical collector and cul-de-sac network established in the 1970's and 80's.

Raleigh, NC, Fire & EMS service efficiency research

- "In all cases, the analysis showed far greater service efficiencies for those older neighborhoods with greater street connectivity."



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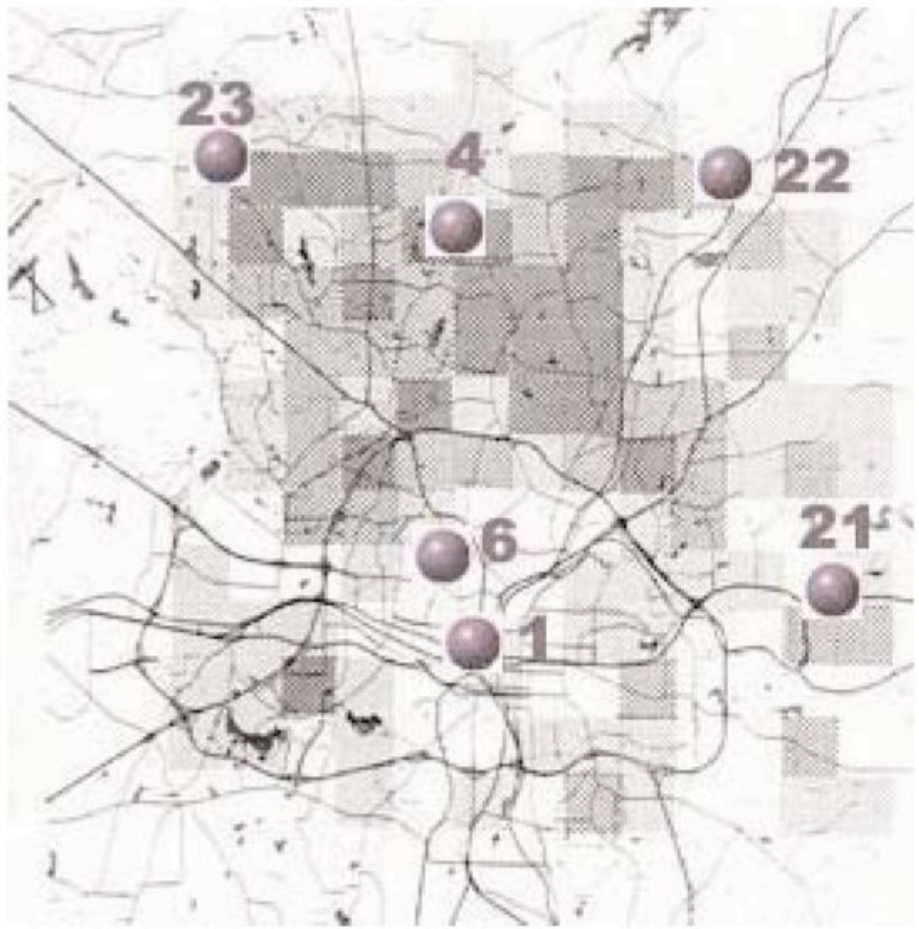
Raleigh, NC, Fire & EMS service efficiency research

- "In sum, a fire station in the most interconnected neighborhood could provide service to more than three times as many commercial and residential units as the least connected neighborhood."



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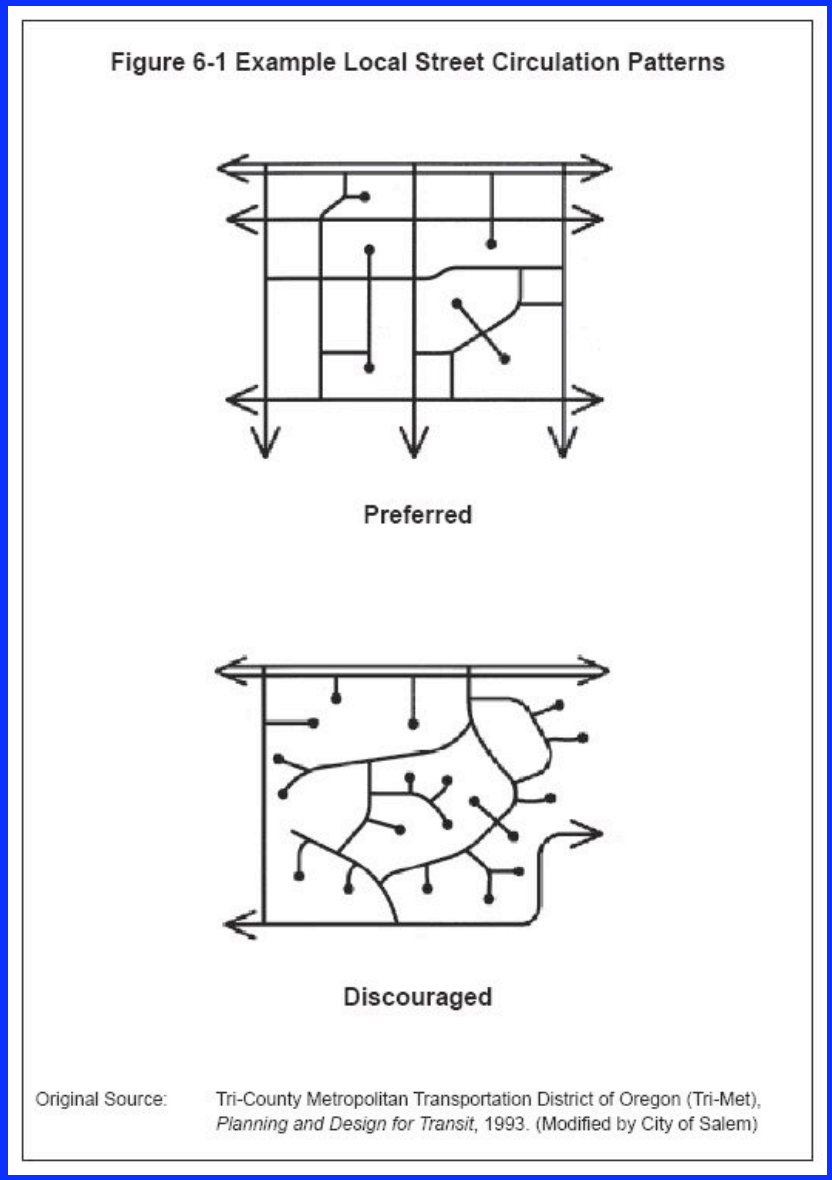
Communities with street connectivity ordinances

- Portland, OR
- Beaverton, OR
- Eugene, OR
- Fort Collins, CO
- Boulder, CO
- Cary, NC
- Huntersville, NC
- Cornelius, NC
- Conover, NC
- Middleton, DE
- Orlando, FL
- Etc.

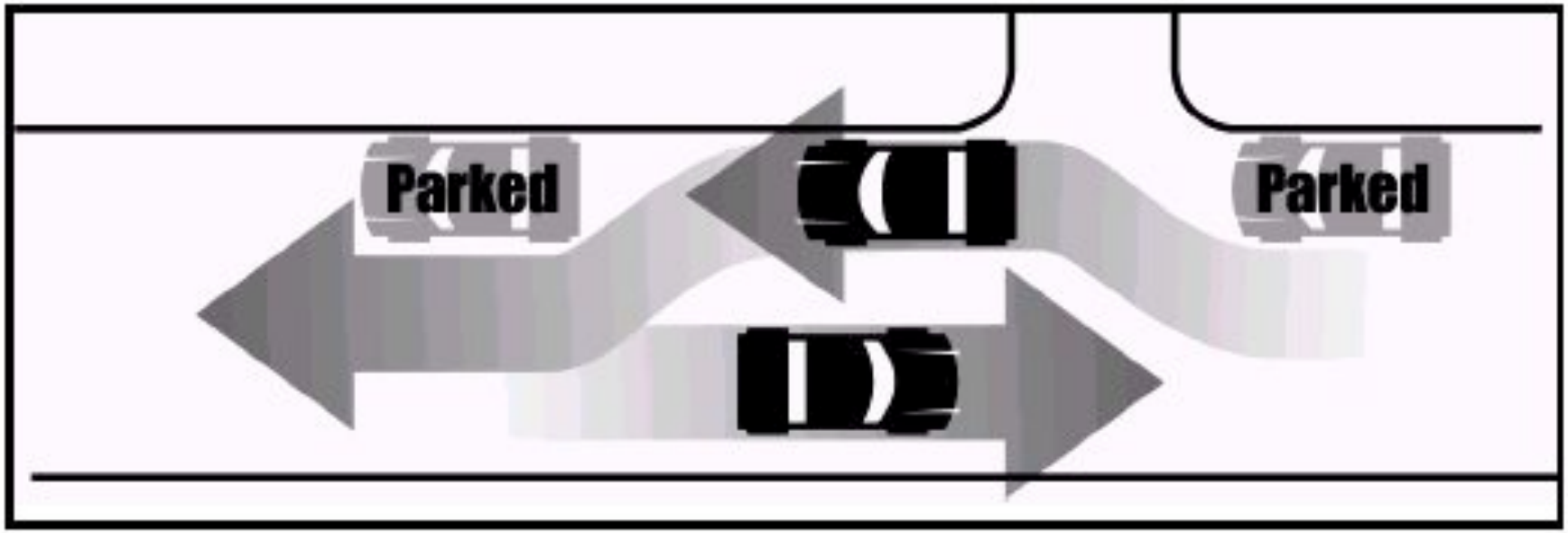


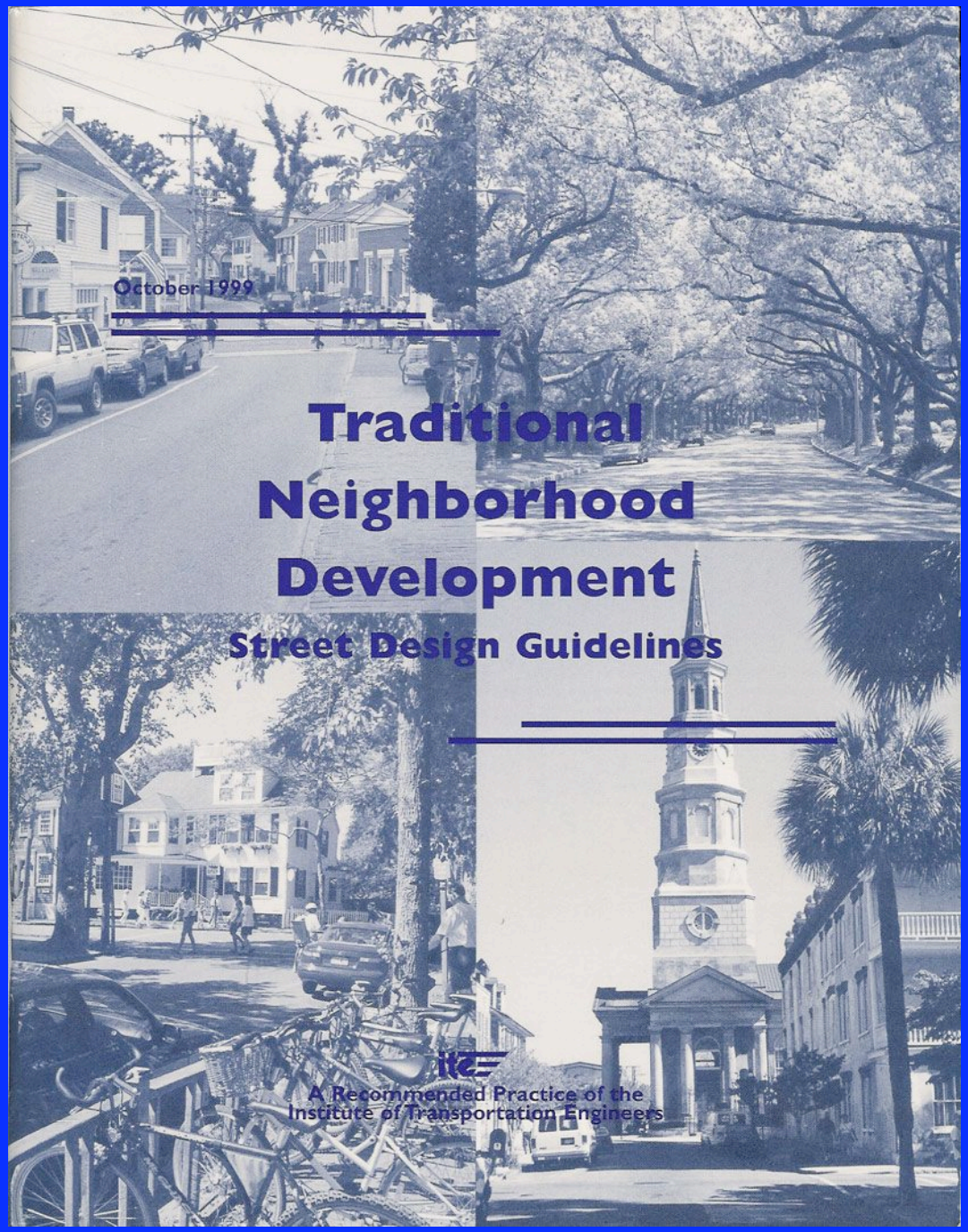
Wide, connected streets have speeding & cut through traffic problems

How do towns respond?


BUMP
15
MPH

√ ***Queuing.*** Designing streets so that moving cars must occasionally yield between parked cars before moving forward, as shown below, permits development of narrow streets, encourages vehicles to move slower, and allows for periodic areas where a 20-foot wide clear area is available for parking of fire apparatus.




October 1999
Traditional Neighborhood Development
Street Design Guidelines
ite
A Recommended Practice of the Institute of Transportation Engineers

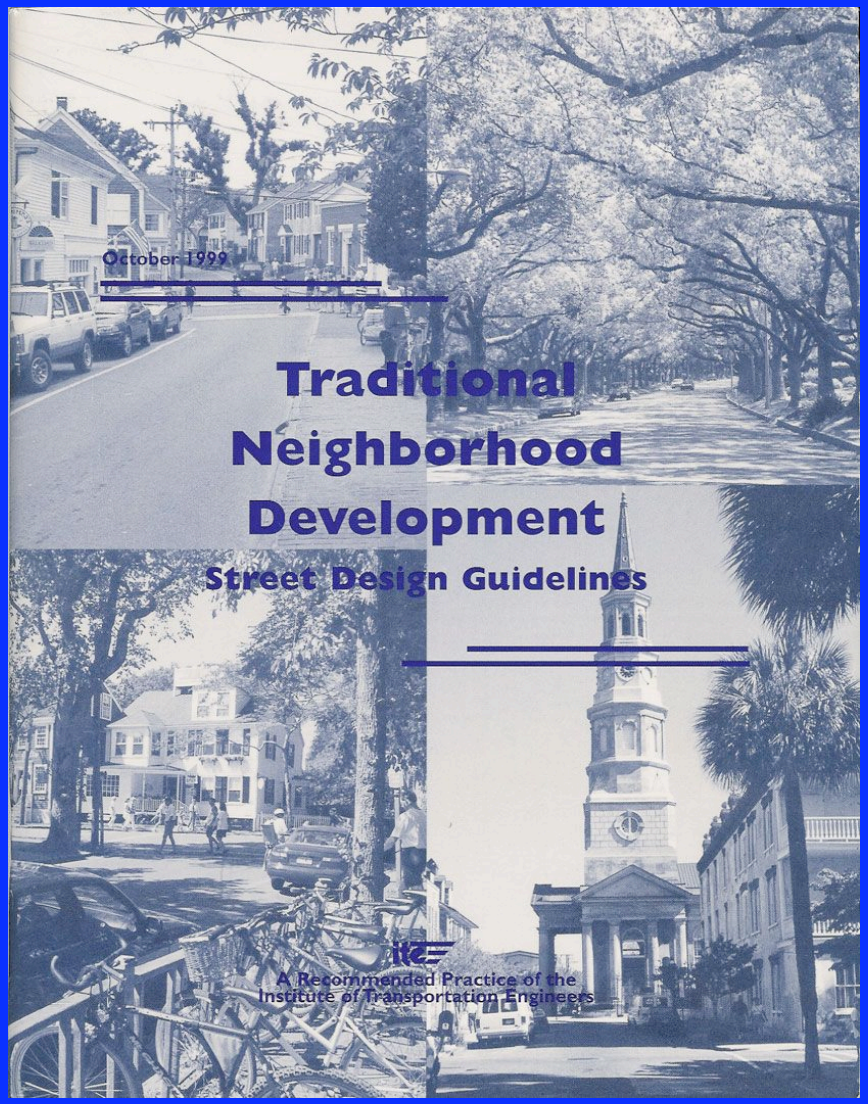
Institute of Transportation Engineers committee process for developing Recommended Practices

Committee process

- Review period
- Open input

Committee members

- Most committee members are licensed professional engineers
- Fire service personnel on committee?



International Code Council committee process for developing model codes

Example: International Fire Code

Committee process

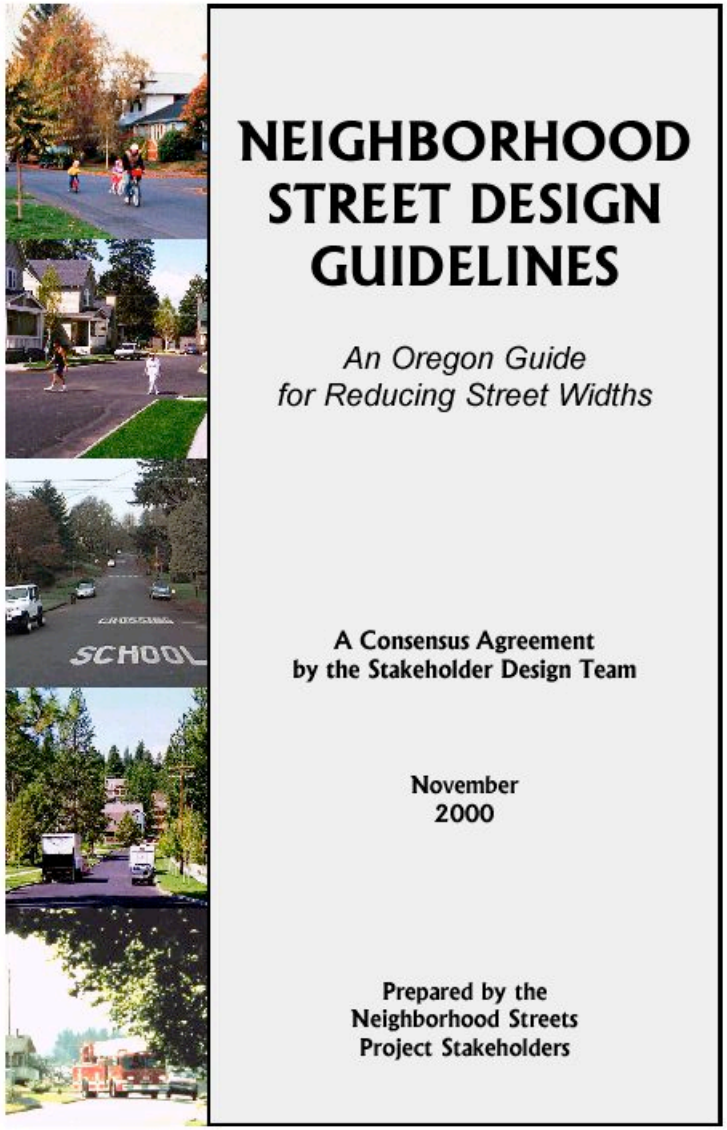
- Review period
- Open input

Committee members

- Voting members are code enforcement & fire officials
- Transportation engineers or planners on committee?

This project:

A search for consensus



PROJECT STAKEHOLDERS

These Guidelines have been endorsed by . . .

- **Office of the State Fire Marshal**
- **Oregon Fire Chiefs Assoc.**
- **Oregon Fire Marshal's Assoc.**
- **Oregon Chiefs of Police Assoc.**
- **Oregon Refuse and Recycling Assoc.**
- **Oregon Building Industry Assoc.**
- **Oregon Chapter of the American Planning Assoc.**
- **Oregon Chapter of the American Public Works Assoc.**
- **Assoc. of Oregon City Planning Directors**
- **Livable Oregon, Inc.**
- **1000 Friends of Oregon**
- **Oregon Department of Land Conservation & Development**
- **Oregon Department of Transportation**
- **Metro also supports the guidelines and has adopted a specific set of guidelines for the Portland metropolitan region.**

*** Design Team Members**

The Design Team was responsible for the overall collaborative process with assistance from a facilitator and DLCD staff. The Design Team vested themselves with responsibility for negotiating the issues and guiding the development of this agreement.

Fire/Emergency Response

* Bob Garrison (Office of State Fire Marshal)
* Jeff Grunewald (Tualatin Valley Fire & Rescue)
* Burton Weast (Oregon Fire District Directors' Association)
Gary Marshall (City of Bend Fire Marshal)
Ken Johnson (for Michael Sherman, Oregon Fire Chiefs Association)
Debbie Youmans (Oregon Chiefs of Police Association)

Service Providers

Ron Polvi (NW Natural)
Kristan Mitchell (Oregon Refuse and Recycling Association)
John Fairchild (School Board Association)

Developers/Consultants

* Ernie Platt (Oregon Building Industry Association)
Rod Tomcho (Tennant Developments)
Ryan O'Brien (LDC Design Group)

Transportation Engineers/Planners

* Jim West (Institute of Transportation Engineers: Kimley-Horn Inc.)
Peter Fernandez (City of Salem)

Public Works

* Byron Meadows (American Public Works Association, Oregon Chapter; Marion County Public Works Operations Supervisor)

Non-Profit Groups

* Amber Cole Hall (Livable Oregon, Inc.)
Lynn Petersen (1000 Friends of Oregon)

City Representatives

* John McLaughlin (City Planning Directors' Association; Community Development Director, City of Ashland)
Cameron Gloss (City of Klamath Falls)
Jan Fritz (City Councilor of Sublimity)
Allen Lowe (City of Eugene Planning)
John Legros (City of Central Point Planning Commissioner)
Bob Dean (City of Roseburg Planning Commission Chair)
Margaret Middleton (for Randy Wooley, City of Beaverton Engineering)

County Representative/Planner

Tom Tushner (Washington County)
Lori Mastrantonio-Meuser (County Planning Directors' Association)