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

<table>
<thead>
<tr>
<th></th>
<th>Fatalities</th>
<th>Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire</td>
<td>3,671</td>
<td>21,875</td>
</tr>
<tr>
<td>Traffic</td>
<td>41,611</td>
<td>3,236,000</td>
</tr>
</tbody>
</table>

Emergency medical response – ??? lives saved

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

- Annual VMT/Hh
- Households/Residential Acre
- SF
- LA
- Chicago
Average Daily Trips/Household vs Density
MTC’s 1990 Household Travel Survey

- Auto
- Walk
- Transit

Households/Residential Acre
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
“In all cases, the analysis showed far greater service efficiencies for those older neighborhoods with greater street connectivity.”
“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.”
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?
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.
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 adapted a specific set of guidelines for the Portland metropolitan region. *

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**Fire/Emergency Response**
* Bob Garrison (Office of State Fire Marshal) *
* Jeff Grunewald (Tualatin Valley Fire & Rescue) *
* Burton Weiss (Oregon Fire District Directors’ Association) *
* Gary Marshall (City of Bend Fire Marshal) *
* Ken Johnson (for Michael Sherman, Oregon Fire Chiefs Association) *
* Debbie Younans (Oregon Chiefs of Police Association) *

**Service Providers**
* Ron Felvi (NW Natural) *
* Kristian Mitchell (Oregon Refuse and Recycling Association) *
* John Fairchild (School Board Association) *

**Developers/Consultants**
* Ernie Platt (Oregon Building Industry Association) *
* Rod Tornichio (Tonnant Developments) *
* Ryan O’Brien (LDC Design Group) *

**Transportation Engineers/Planners**
* Jim West (Institute of Transportation Engineers; Kinsley-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 Peterson (1000 Friends of Oregon) *

**City Representatives**
* John McLaughlin (City Planning Directors’ Association; Community Development Director, City of Ashland) *
* Cameron Glass (City of Klamath Falls) *
* Jan Fritz (City Council of Sudbury) *
* Allen Lowe (City of Eugene Planning) *
* John Legros (City of Central Point Planning Commissioner) *
* Rob Dean (City of Roseburg Planning Commission Chair) *
* Margaret Middleton (Eric classy Weckro, City of Beaverton Engineering) *

**County Representative/Planner**
* Tom Tushner (Washington County) *
* Lori Mastrantonio-Meuser (Clackamas Planning Directors’ Association) *