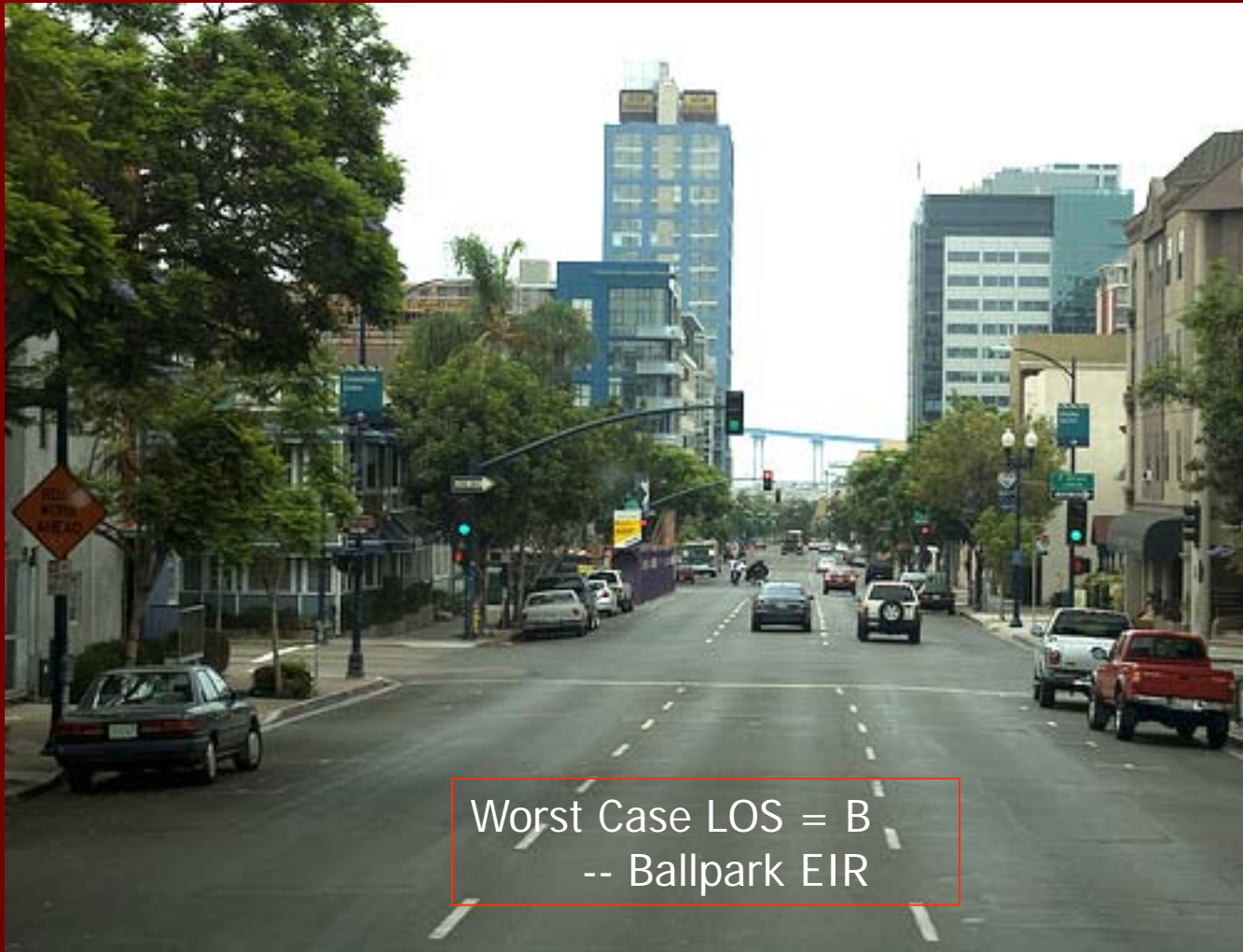


# Rethinking Street Design



Andy Hamilton

# Old Paradigm: Streets as Single Purpose Spaces



Worst Case LOS = B  
-- Ballpark EIR

# The Great Opportunity

- 25-30% of U.S. urban land is streets, sidewalks, and alleys.
- Largest portion of undeveloped urban land
- Already publicly owned
- Judicious re-allocation can address many unmet needs
- Better urban design has high ROI, at a time when cities need it most.

# The Challenges

1. Variety of users (travelers, utilities, emergency responders, arborists, merchants, historic preservationists).
2. Traffic engineers are asked to address only vehicle movement.
3. Opening the door: Lots of interests to serve. Lots of cats to herd.
4. High costs, incremental changes

# Streets As Opportunity

- Deficit of urban parks and "3<sup>rd</sup> Places"
- More amenities (seating, restrooms, shade, carts)
- Stormwater runoff alternatives
- Carbon capture – Urban forests
- Renewable energy; albedo & heat island effect
- Urban agriculture
- Improved aesthetic – Street as canvas
  - Economic Development
  - Health and Mental Health
  - Community Cohesion
  - Crime Prevention

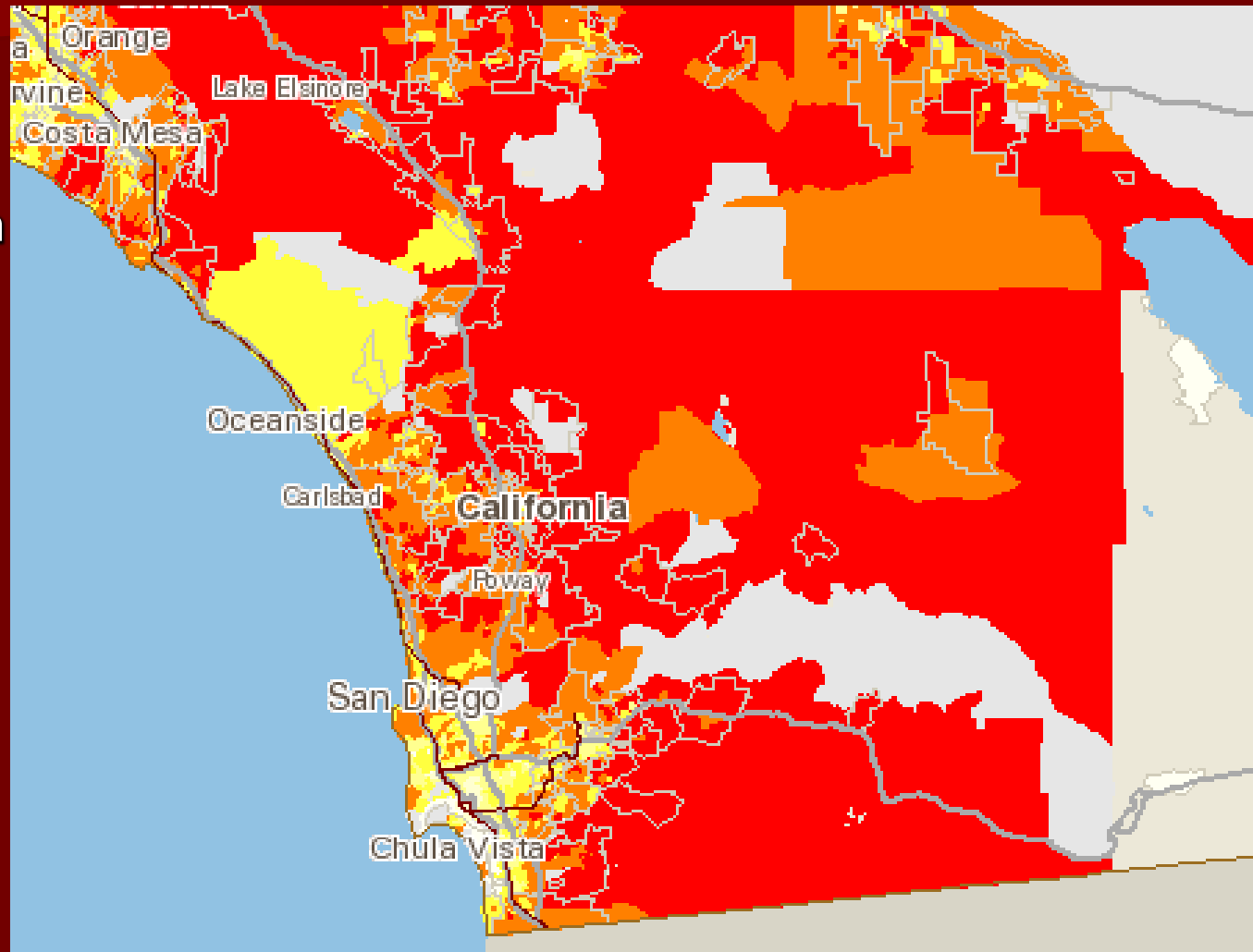
# CO<sub>2</sub> per Household

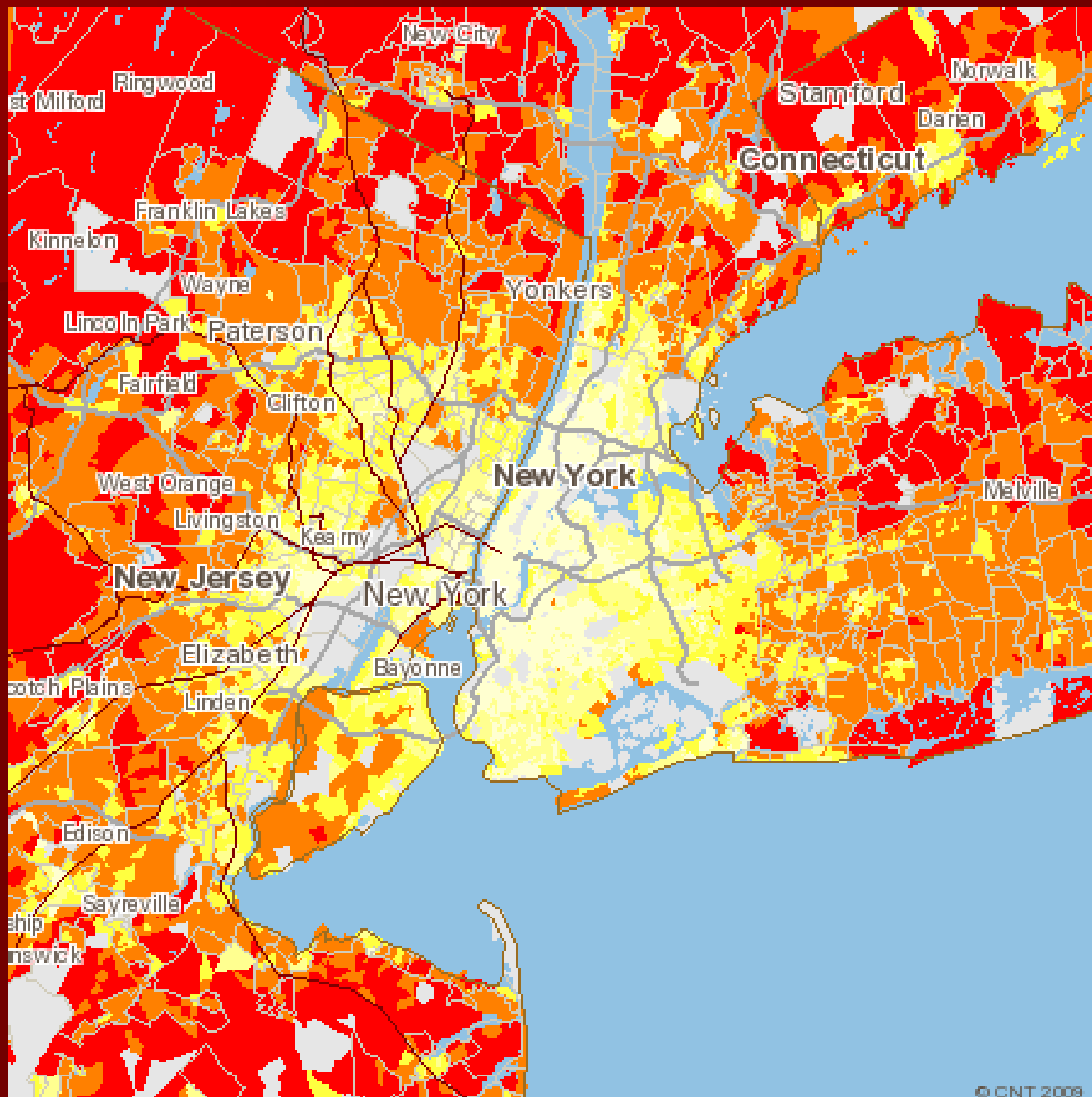
- SB 375  
"Requires"  
Reducing  
total CO<sub>2</sub> from  
passenger  
vehicles.

Yellow: 0-3.3  
tons/hh/yr

Red: 8.3+  
tons/hh/yr

Source: Center for  
Neighborhood  
Technology





# Street Design & Obesity

- 10% of healthcare costs in 2009.
- 21% of healthcare costs by 2018.
- Walking is #1 form of exercise





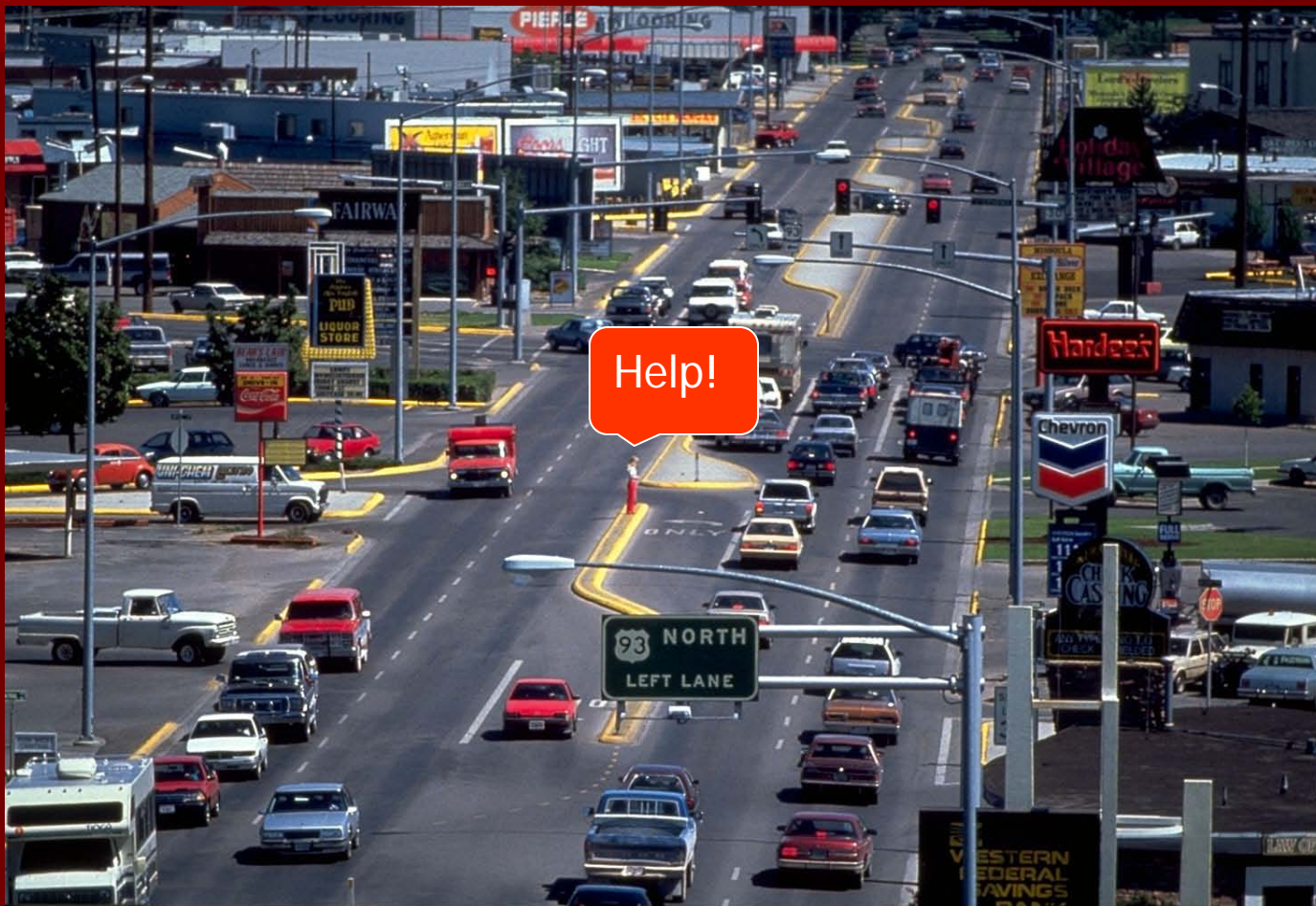
# *ReThink*: Traffic Level of Service

- A = free flow; F = stop 'n' go traffic
- "Maintaining LOS" = Wider streets, lower density, ever increasing vehicle use
- Significant driver of sprawl and CO<sub>2</sub> emissions
- Primary cause of traffic fatalities

This street meets LOS,  
but where's the pedestrian?



# This street meets LOS, but where's the pedestrian?



# Busy Streets Can Be a Good Thing



# New CEQA Approach

- March 18- New CEQA Greenhouse Guidelines Become Effective
- Appendix G – Transportation impact metrics are up to the reviewing agency
- LOS and accommodating traffic are no longer paramount

# San Francisco's Approach

- Reduce vehicle trips, not relieve congestion
- Mitigation may be pedestrian, bicycle, or transit improvements, carpooling, telecommuting, etc.



# Complete Streets



# AB 1358: Complete Streets Act

- Signed into law in 2008
- Applies during General Plan or Circulation Element updates
- Requires accommodation of all users of the circulation system
- State will issue guidance document



# Implementing Complete Streets

1. Revise street design guidelines and policies
2. Revise decision process to include ALL users
3. Staff training
4. Collect *imperial evidence* of effectiveness
5. Evaluate and innovate
6. Repeat

# *ReThink: Safety*

"Current safety objections to the use of livable street treatments are not based on empirical evidence, but are instead the result of a design philosophy that systematically overlooks the real-world operating behavior of road users."

– Eric Dumbaugh, PhD, PE

“More than 56% of the 6,367 pedestrian deaths in urban areas...occurred on arterial roads.”

- *Dangerous by Design, 2009*



# "Forgiving Highways" Approach Adopted for Local Streets

"What we must do is to operate the 90% or more of our surface streets just as we do our freeways."

- Kenneth Stonex, General Motors  
1966 National Highway Safety hearing

# Traffic Safety Studies

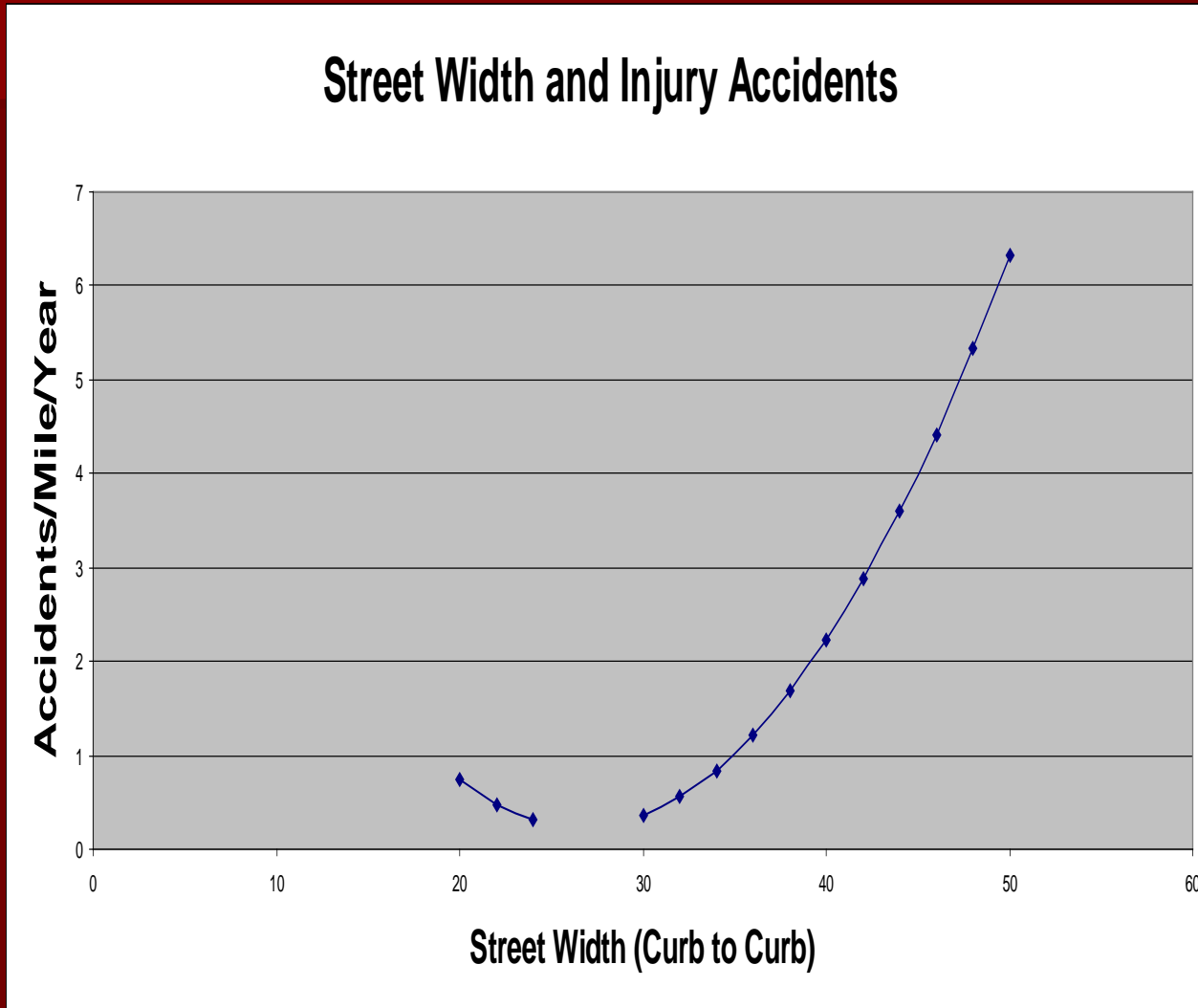
- Ignore confounding variables
  - demographics
  - medical care
  - seatbelt use
  - alcohol use
- Factoring out the confounding variables: current safety approaches result in slightly more crashes, not fewer.

Source: Noland 2003

# Vehicle Crashes Increase With...

- Lane widths > 9-11' (Noland 2003)
- Added lanes (Fridstrom and Ingebrigsten 1991)
- Eliminating curves (Shankar 1995)
- Increasing design speed on curves (Shankar 1995)
- Larger shoulder widths (Ivan et al. 2000)
- Cul-de-sac neighborhood form (Marshall and Garrick 2008)
- Increased speed (many studies)
  - Pedestrians are most often killed on arterial roads (NHTSA).

# Max. Safety = 24' Width



Source: Swift, Painter and Goldstein, 2006

# Dutch Approach

1. Rejected wider, straighter, faster for urban arterials
2. Equal emphasis on walking, bicycling, and driving
3. Strict access controls on arterials

Result: 40% lower fatality rate, even though they started out 20% higher than U.S.

**= 22,000 U.S. lives saved per year**





# *ReThink:* Pavement

“Depaving” in Portland, OR



# Seattle

## "Street Edge Alternatives" Pilot

- 11% less impervious surface
- 99% less stormwater runoff
- 20% lower cost to build



# Chicago

## Green Alleys Program

- Permeable pavements reduce runoff 80%
- Reduce standing water
- High albedo surface reduces heating
- Use of recycled materials
- 80 projects as of 2008



# Before



# After



# Portland, OR Green Streets Program



# Sustainable Streets: Examples





# *ReThink:* Purpose of Streets







# Dual Bike Lanes - Sacramento



# Street Redesign, Hamburg, NY



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refreshing delicious  
**NOW** 649-5840

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\$10 PIZZA

# New York City Street Design Policy

1. **Safety:** Move people and goods safely.
2. **Access and Mobility:** Accommodate all street users, giving priority to the most energy- and space-efficient modes.
3. **Context:** Respond to neighborhood character.
4. **Livability:** Create a vibrant public realm with high-quality public spaces.

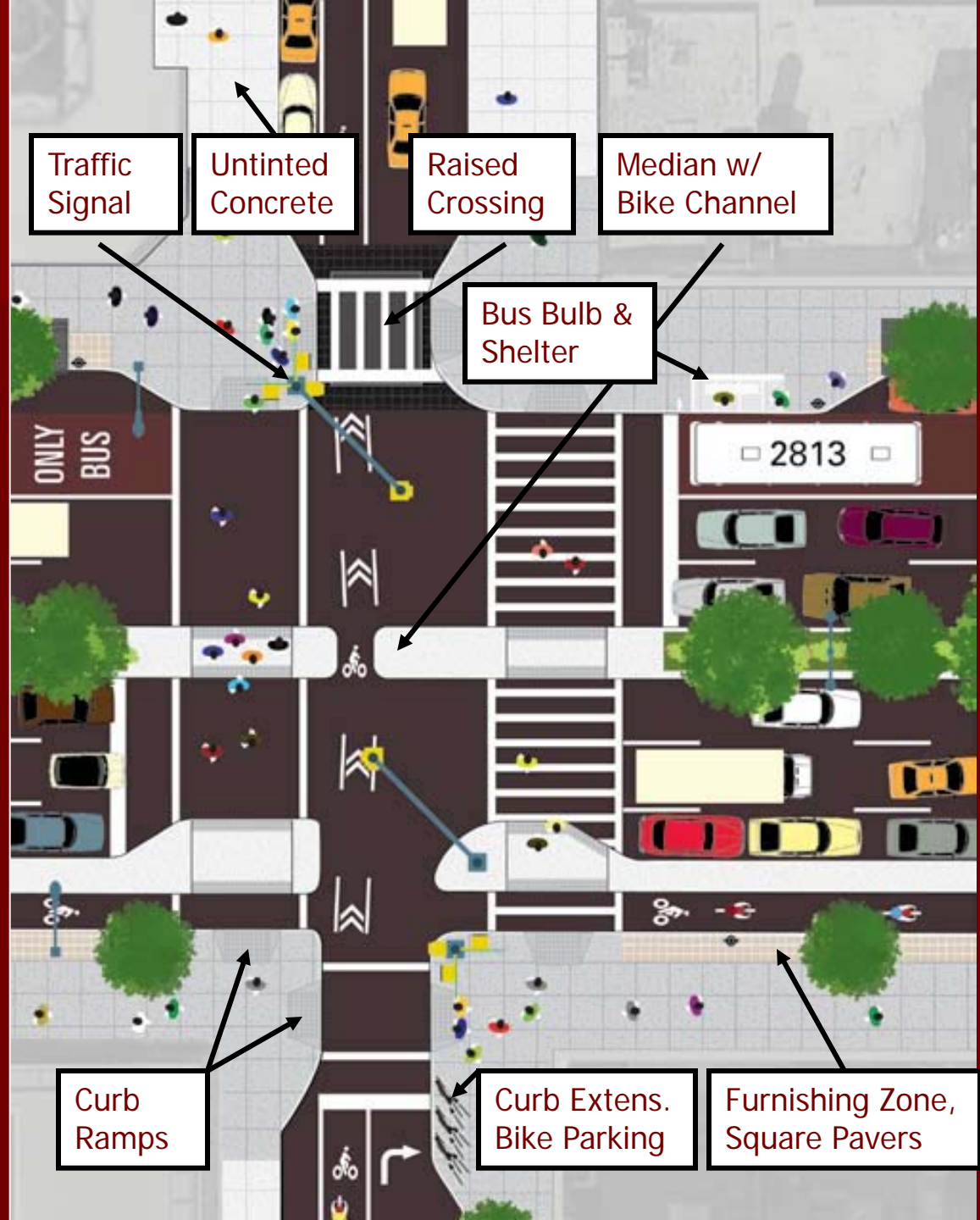
# New York City

## Street Design Policy (cont.)

5. **Sustainability:** Contribute to a healthier and more sustainable environment.
6. **Visual Excellence:** Create coherent and harmonious streetscapes.
7. **Cost-Effectiveness:** Provide the greatest possible value to the public.

# NYC Design Manual

- Plan entire ROW
- Detailed checklist of considerations
- What other opportunities does a given project present?
- What innovations can be tried?
- Sustainability opportunities?





“Accommodate all users”





“Safe...Healthy...Sustainable”



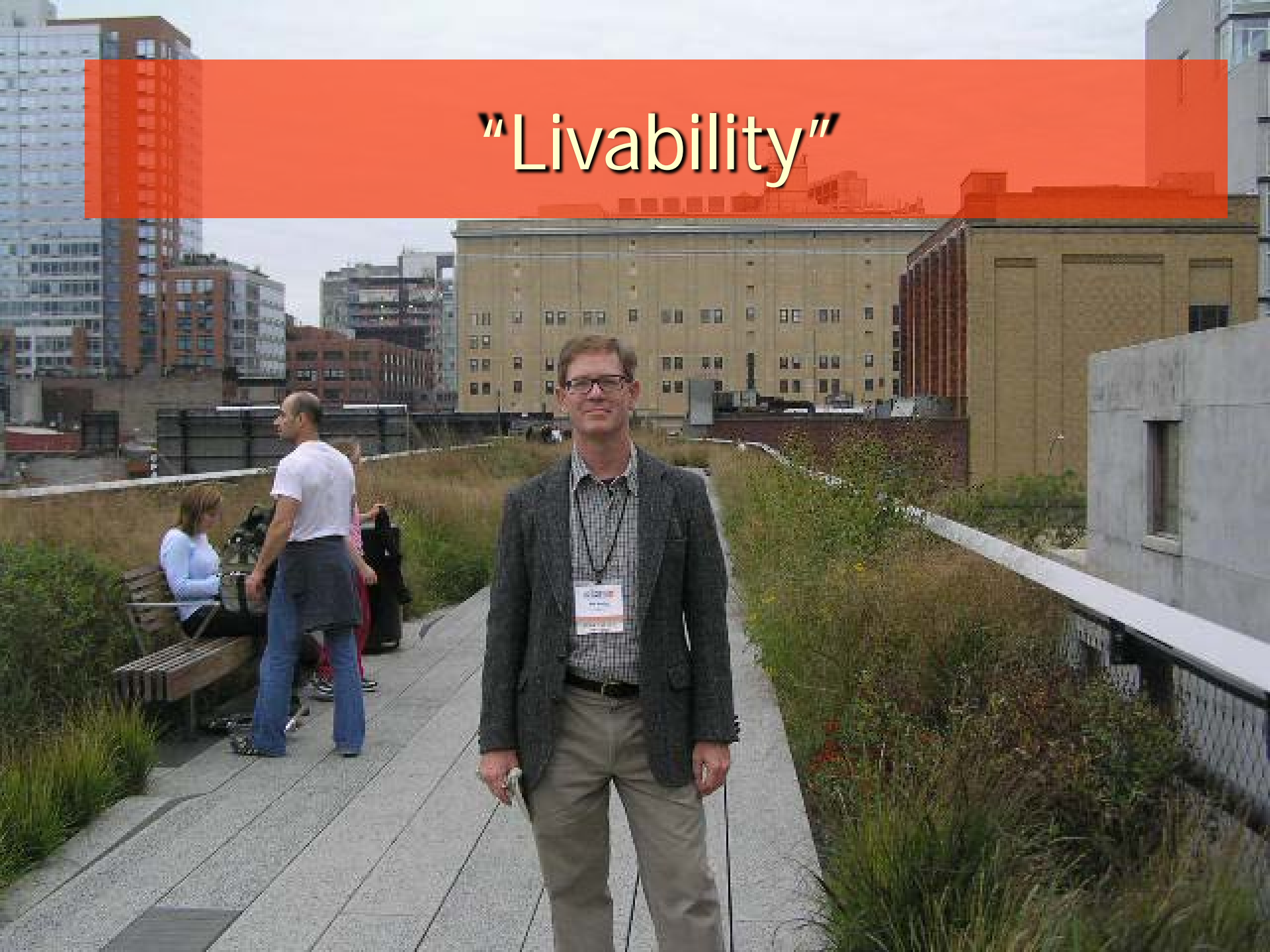
“Livability...Cost-Effective”



# "Visual Excellence"



# “Livability”





comcast

STAPLES

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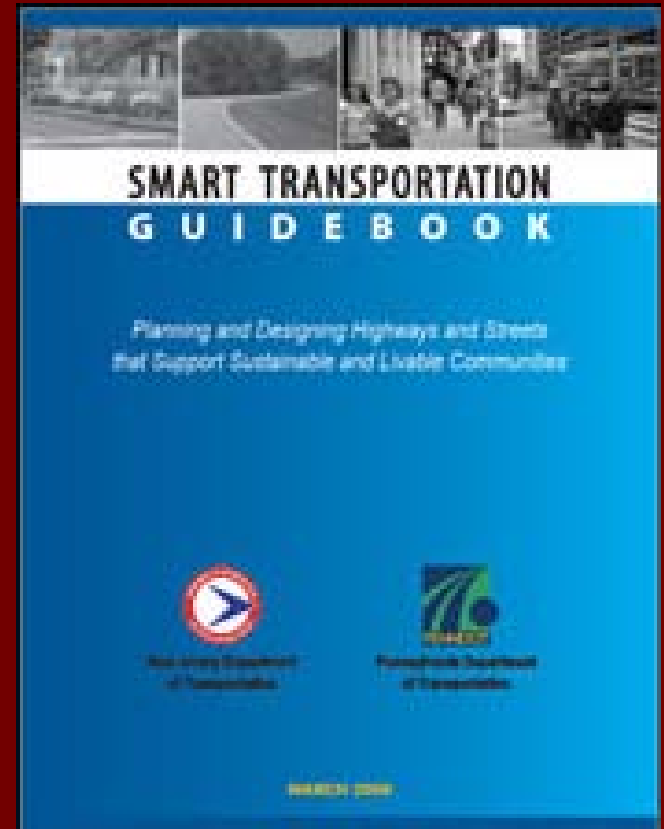


# Urban Agriculture



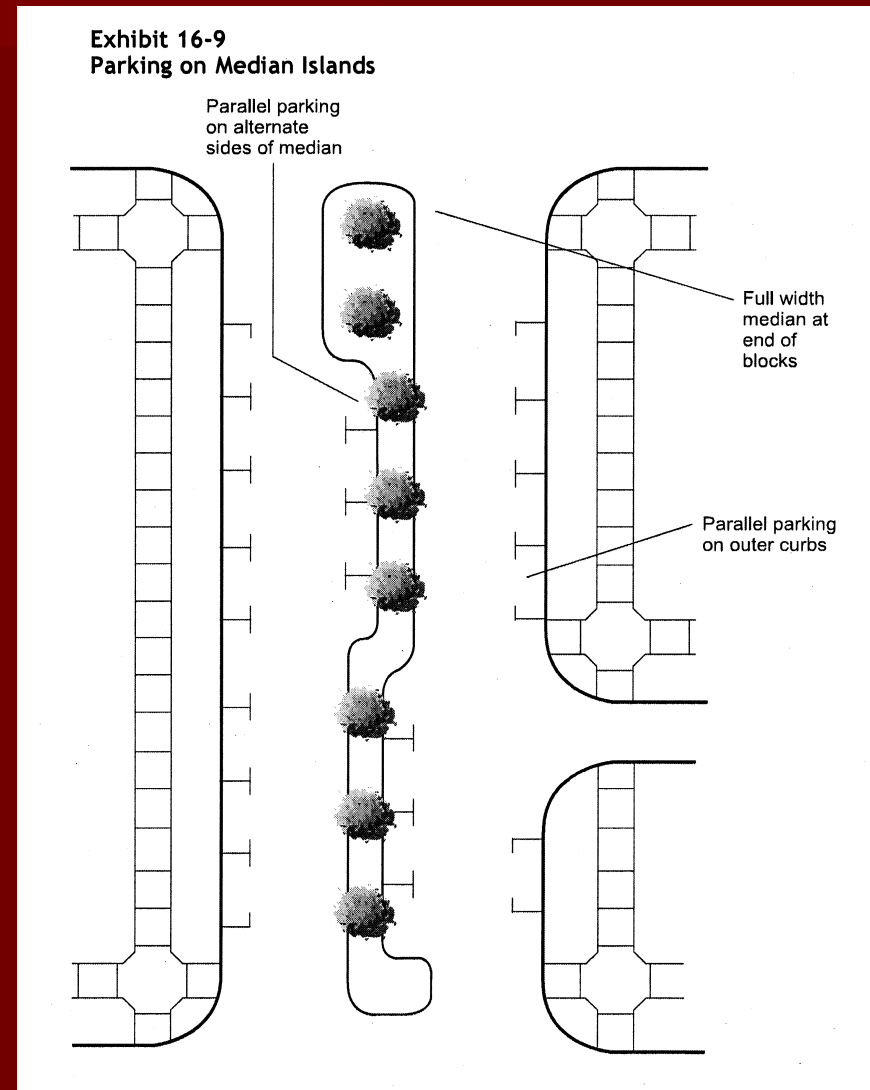
# US Adoption of the Livable Streets Approach

- *Smart Transportation Guide*, Pennsylvania DOT/New Jersey DOT
- Charlotte
- San Francisco
- Denver
- Savannah
- Portland



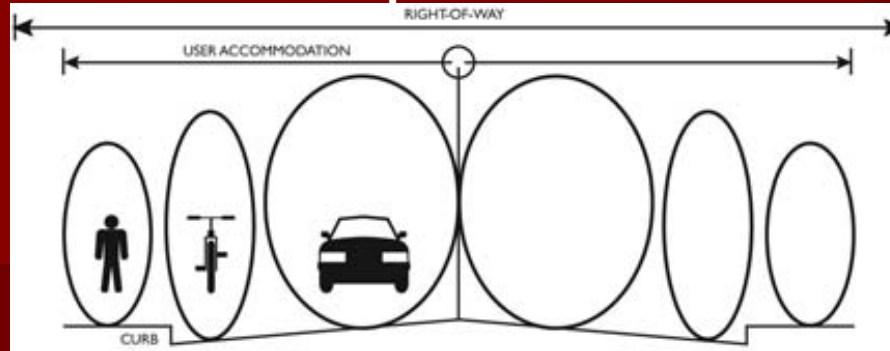
# Mass. Highway Design Manual

- Award-winning
- Emphasizes Context Sensitive Solutions
- A few innovations such as this one:



# Mass. HDM

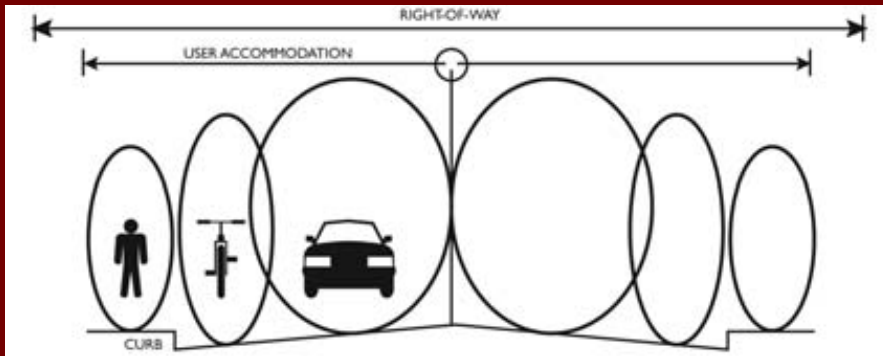
## 1. Full Separation of all Modes



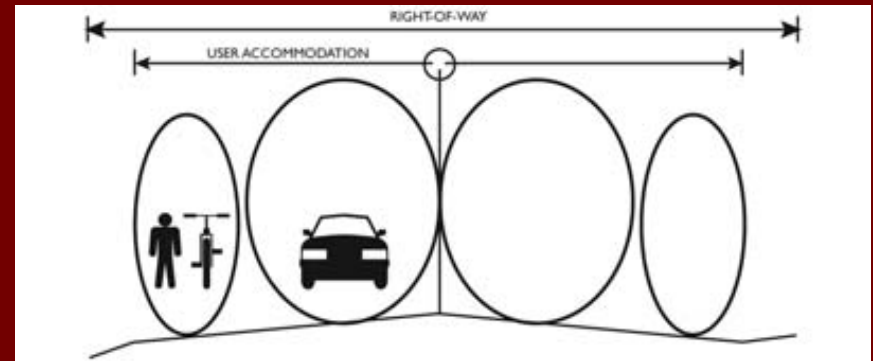
-Which is preferred?

-Which is safest?

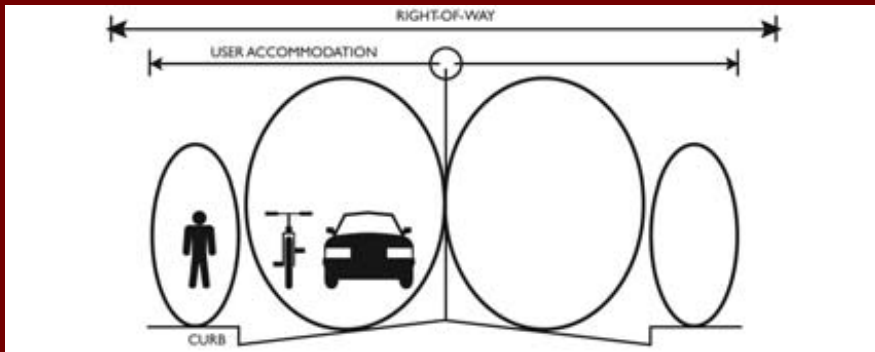
## 2. Partial Sharing – Bike/Vehicle



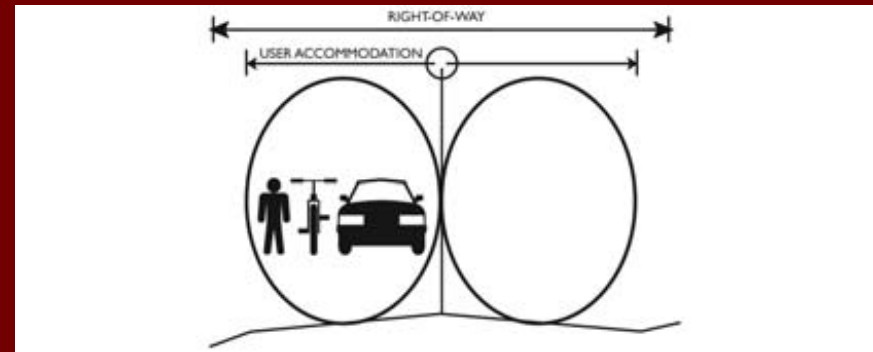
## 4. Shared Ped/Bike



## 3. Shared Bike/Vehicle



## 5. Fully Shared – All Modes



# Naked Streets (aka Shared Space)

No curbs  
No markings  
No signs  
No certainty  
No speeding  
Eye Contact



# Sustainable Streets

## EPA & UC Davis

- **Movement** – Right-sized, speed-appropriate, serving all users safely and well, minimizing VMT.
- **Ecology** – Water recharge, landscaping, trees, reduced emissions, heat, noise, waste.
- **Community** – Identity, sociability, supporting compact development, local materials/designs, value, safety, environmental justice.

# WANTED

## Better Public Process

- Current process is
- NIMBY's are not
- Who speaks for t



# Perth Model

- Establish a volunteer “jury” pool
- For each project, draw 50 jurists
- Train them on the project & all issues
- They present their findings at public hearing after the Proponents and NIMBY's have spoken



"The livability revolution has begun.  
There is no turning back."

– Robert Sullivan, NY Times, November 27, 2008



# A Proposal

- One year from today, San Diego APA issue a guidance document on how the region's municipalities should revise their street design standards and practices to:
  - Advance the promise of SB 375.
  - Comply with the Complete Streets guidance.
  - Increase walking and bicycling mode shares.
  - Reduce traffic fatalities throughout the region.