Breaking the CODE

12 Code Obstacles to Smart Growth and What Cities are Doing to Remove Them

Jeffrey Tumlin
Nelson\Nygaard Consulting
12 Code Obstacles

1. Parking and Traffic Code
2. Building Code
3. Uniform Fire Code
4. Clean Water Act
5. Fair Housing Act
6. State Schools Codes
7. Congestion Management Program
8. Zoning & Subdivision Codes: Design and Parking
9. Road Design Code
10. Street Typologies and Transportation Performance Measures
11. Impact Fees
12. Environmental Compliance
1. Parking and Traffic Code

- Residential Parking Permit Districts
  - Critical for addressing spillover parking concerns of infill development
  - Requires neighborhood vote on parking district

- San Francisco residential permit program
  - Currently looking at limiting permits based upon spaces available and selling new permits at market rates

- Arlington County parking program to balance different stakeholder needs
  - Residents – permit program to reduce spillover from transit
  - Business operators – meters and short term shop front parking
  - Developers – appropriate provision of development parking
  - Government agencies – efficient operations and minimum cost
1. Parking and Traffic Code

- Parking management in Old Pasadena
  - $1/hour meters installed 1993
  - Garage fees
  - Annual revenues of $5.4 million
  - Tiny in-lieu of parking fees

- Revenues fund garages, street furniture, trees, lighting, marketing, mounted police, daily street sweeping & steam cleaning

- Focus on availability, not price

Old Pasadena, 1992-99:

Sales Tax Revenues Quadruple
2. Building Code

Many jurisdictions rely on the Building Officials and Code Administrators (BOCA) 1996/1999:

Establishes minimum requirements for materials and methods of construction, addresses loads and stresses, fire protection, special uses, lighting and ventilation, and means of egress.

Major issues when renovating old buildings:

- Many existing buildings were built to comply with an earlier building code or no code, yet are often still safe and sound
- Untapped housing stock in urban areas – old buildings must be brought into compliance with current building codes for new construction
- This is a very expensive process that may not result in better safety

Source: New Jersey’s Rehabilitation Subcode http://www.state.nj.us/dca/codes/rehab/pioneerart.shtml
Problem 1: Requirements

- Requirements for new structures cannot be met in existing buildings:
  - Do lumber and bricks meet the current material standards in the code?
  - Existing stairways are too steep and need to be replaced
  - Stairways with shorter risers and wider treads require more room and can often not fit into existing buildings without totally reconfiguring the space
  - Ceiling height requirements
  - Egress window requirements
  - Corridor and doorway width requirements

Source: New Jersey’s Rehabilitation Subcode
Problem 2: Predictability

- Code officials recognize that making an existing building meet all of the requirements of the code applicable to new buildings is impossible.
- However, there is little consistency among code officials about which requirements are necessary to improve safety.
- Building owner has no idea what will be required prior to submitting plans for review or meeting with the code official.
- The uncertainty makes building owners hesitant to undertake building improvements because they cannot predict the cost of the project.

Source: New Jersey’s Rehabilitation Subcode
Problem 3: Partial Renovation

• Rules that aim to impose new construction standards on existing buildings penalize building owners who want to improve their buildings:
  – BOCA Chapter 34 counts life safety improvements only when they are made to an entire structure, not if only one floor of a building is renovated
  – The additional costs for improving the entire structure, instead of just one floor, often make a rehabilitation project financially infeasible. Causes building owner to abandon planned improvements to the floor.

Source: New Jersey’s Rehabilitation Subcode
2. Building Code Solutions

- Create a Rehabilitation Code
- Creating the Code is a rigorous process with public hearings etc, including stakeholders from all sectors. Not done overnight.
- The Code should not only be a change in building code requirements, but a change in building code philosophy (if a building owner has money to spend on his building, he should be required to spend a good portion of that money to make the building approach the current code for new structures)
- Main goal: To revitalize older downtowns and neighborhoods, where buildings are currently underutilized due to the costs of rehabilitation

Source: New Jersey’s Rehabilitation Subcode
New Jersey’s Rehabilitation Subcode (1998)

- Developed by the Department of Community Affairs with guidance from:
  - a 30-member committee under the coordination of the Center for Urban Policy Research at Rutgers University
  - Code officials, fire officials, architects, historic preservationists, advocates for people with disabilities, and government representatives
  - Committee met over two years
  - 2 public hearings and publication of draft in New Jersey Register
New Jersey’s Rehabilitation Subcode (1998)

- Instead of basing requirements on the cost of the work to be performed, it is based on requirements on the nature of the work.

**Five sets of requirements:**
- Products and practices (items required and prohibited)
- Materials and methods (how to use them)
- New building elements (atriums, corridors, door openings)
- Basic requirements (egress, dead end corridors, exit signs)
- Supplemental requirements

**Three types of projects:**
- Rehabilitation (repair, renovation, alteration, reconstruction)
- Change of use
- Additions

Source: New Jersey’s Rehabilitation Subcode
New Jersey’s Rehabilitation Subcode (1998)

- Costs and Benefits:
  - Jersey City Building, vacant for eight years, was renovated. 24 apartments (low-, moderate-income senior citizens and daycare center). Estimated cost savings of $391,000, ¼ of total project costs.
  - Vacant Trenton office building (>50,000 Sq. Ft.) renovated for use as charter school. Saved an estimate of $100,000 to $125,000.
  - Largest benefit: Previously vacant buildings are now in use!

Source: New Jersey’s Rehabilitation Subcode
Maryland Smart Codes

- Designed to “give a shot in the arm to urban revitalization projects”
- Aim is to help “communities with older sections and dying old town sections that builders don’t want to come into because of overlapping codes” (Cliff Lee, senior plans examiner, City of Gaithersburg)
- The rules ease restrictions somewhat but don’t compromise public safety
- Helps create affordable housing at a better value

Source: http://www.dhcd.state.md.us/Website/programs/smartcodes/smartcodes.aspx
2. Other Rehabilitation Codes

– California’s State Historical Building Code
  http://www.dsa.dgs.ca.gov/StateHistoricalBuildingSafetyBoard/default.htm

– Rhode Island Rehabilitation Code
  http://www.rbfc.state.ri.us/

– Kansas City Building and Rehabilitation Code
  http://www.kcmo.org/codes.nsf/web/kcbc?opendocument

– Many others...
3. Uniform Fire Code (UFC)

“One critical component of a community’s transportation system is effective emergency response. In some instances, fire, ambulance, or police officials have expressed concerns with smart growth neighborhood street designs because of concerns about access.” (Source: Getting to Smart Growth II)

- Narrower streets
- Smaller intersections
- Shorter curve radii
- Fire equipments get larger and larger

- UFC: One of several model codes, created by Western Fire Chiefs Association, NOT a national standard
- Adopted by California, Oregon, some other states
- Requires 20’ clear street width between parked cars

Source: Getting to Smart Growth II http://www.smartgrowth.org/pdf/gettosg2.pdf
3. Uniform Fire Code (UFC)
3. Uniform Fire Code (UFC)

Traditional Neighborhood Development Mission:
Improve Overall Life Safety

<table>
<thead>
<tr>
<th></th>
<th>Fire</th>
<th>Traffic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatalities</td>
<td>3,671</td>
<td>41,611</td>
</tr>
<tr>
<td>Injuries</td>
<td>21,875</td>
<td>3,236,000</td>
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</tbody>
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Sources:
Traffic Safety Facts 1999, Overview, Publication No. DOT HS 809 092
Fire Loss in the United States During 1999, Michael J. Karter, Jr.
Southgate Neighborhood, Palo Alto

24 feet
**Conventional**
- 30-35 mph speeds comfortable
- Bare, stark, uninviting
- Survivable, but not fun

**Traditional**
- 20-25 mph speeds comfortable
- Green, sustainable, inviting
- Pleasant for walking, bicycling and driving
3. Uniform Fire Code (UFC) - Solutions

- 1997 Oregon law clarified authority to establish street standards
  - Local government street standards shall “supersede and prevail over any specifications and standards for roads and streets set forth in a uniform fire code adopted by the State Fire Marshal, a municipal fire department or a county firefighting agency.”
  - Portland, other cities now allow safer streets
  - Leads to “Consensus Guidelines” book (pictured)
**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 Recy.
  - Oregon Building Industry Assoc.
  - Oregon Chapter of the American Planning Assoc.
  - Oregon Chapter of the American Public Works Assoc.
  - Assn. 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 Marshall)
* 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 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 Flat (Oregon Building Industry Association)
* Rod Tominja (Tominja Development)
* Ryan O'Brien (LDC Design Group)

**Transportation Engineers/Planners**
* Jim West (Institute of Transportation Engineers: Kendle-Horn Inc)
* Peter Fernandez (City of Salem)

**Public Works**
* Byron Meadow (American Public Works Association, Oregon Chapter: Marion County Public Works Operations Supervised)

**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 Weasley, City of Shaverton Engineering)

**County Representative/Planner**
* Tom Tushner (Washington County)
* Lori Mastrantonio-Meuser (County Planning Directors’ Association)
3. Uniform Fire Code (UFC) - Solutions

  - Supersedes the NCDOT standards in all TND neighborhoods
  - “A street should be no wider than the minimum width needed to accommodate the usual vehicular mix desired of that street”
  - “A high level of accessibility is offered to emergency vehicles by an interconnected TND network”

Source: http://www.doh.dot.state.nc.us/operations/tnd.pdf
3. Uniform Fire Code (UFC) - Solutions

- State of Wisconsin TND Ordinance
  - legalizes “yield” streets

Source: http://www.wisc.edu/urpl/people/ohm/projects/tndord.pdf
3. Uniform Fire Code (UFC) - Solutions

- **Sprawl:**
  - One fire route
  - Long distances
  - Access shut down with one double-parked car

- **Smart Growth:**
  - Many fire routes
  - Better response time
  - Redundant system can’t be blocked
3. Uniform Fire Code (UFC) - Solutions

• When planning for Smart Growth, consult emergency responders during the design phase instead of at the end of the process.
• For instance, by consulting with emergency teams:
  – road designers can create midblock bulb-outs that provide adequate space for staging.
  – parking can be moved further back from crucial intersections.
  – shoulders and curbs can be designed for emergency equipment use.
• If necessary, resolve arguments by taking equipment out for real-life tests or by driving emergency equipment through cones laid out to simulate the design of an intersection or street.

Source: Getting to Smart Growth II [http://www.smartgrowth.org/pdf/gettosg2.pdf]
4. Clean Water Act – Section 303

- Requires states to set and then achieve Total Maximum Daily Load limits, limiting total pollution into each waterbody
- Problem: Resulting state and/or local requirements discourage infill
  - On-site storm water retention requirements even on downtown lots
  - Lot coverage limits (often 45% max.) favor sprawl on outlying farmland
  - River setbacks even in town centers
- Solution: Think regionally, act locally
  - Build vital, compact towns

Source: Belle Hall Study
http://www.doverkohl.com/project_graphic_pages_pdf/Belle%20Hall%20project%20page.pdf
4. Water Quality and Smart Growth

Which is Better for Water Quality on a Watershed Basis?

Low Density

OR

Higher Density

Reference: Department of Community and Economic Development
4. Water Quality and Smart Growth

EPA Research on Smart Growth & Water

**Scenario A:**
- 1 unit/acre
- Impervious cover = 20%
- Runoff/acre = 19,000 ft³/yr
- Runoff/unit = 19,000 ft³/yr

**Scenario B:**
- 4 units/acre
- Impervious cover = 38%
- Runoff/acre = 25,000 ft³/yr
- Runoff/unit = 6,000 ft³/yr

**Scenario C:**
- 8 units/acre
- Impervious cover = 65%
- Runoff/acre = 40,000 ft³/yr
- Runoff/unit = 5,000 ft³/yr
4. Water Quality and Smart Growth

But watershed managers are not dealing with 8 houses...

10,000 houses on 10,000 acres produce 187 million ft³/yr stormwater runoff
Site: 20% impervious
Watershed: 20% impervious

10,000 houses on 2,500 acres produce 62 million ft³/yr stormwater runoff
Site: 38% impervious
Watershed: 9.5% impervious

10,000 houses on 1,250 acres produce 49.5 million ft³/yr stormwater runoff
Site: 65% impervious
Watershed: 8.1% impervious

The lower density scenario creates more run-off and consumes 2/3 more land that the higher density scenario

Reference: Department of Community and Economic Development
5. Fair Housing Act & Other Disability Law

- If a building with 4+ units has an elevator and opened after 3/13/91, then ALL units and ALL public and common areas must be wheelchair accessible.
- Conflict: Accessibility vs. courtyard housing and other compact housing.
- Courtyard housing: For privacy & cost-savings, 2nd floor units have private entrances via stair – no outdoor hallway past your windows.
- If ALL housing must be wheelchair accessible, only ranch houses & corridor-loaded apts. can be built.

Reference: http://www.hud.gov/offices/fheo/FHLaws/yourrights.cfm
5. Fair Housing Act & Other Disability Law

Partial Solution:

Redesign projects as multiple separate buildings.
Courtyard housing pictured – 10 townhouses in four buildings
5. Fair Housing Act & Other Disability Law

- Fair Housing Act - If a building with 4+ units has no elevator and opened after 3/13/91, then ALL ground floor units must be wheelchair accessible.

- Conflict: Wheelchair Accessibility vs. ground-floor privacy.

- Partial solution: Vermillion in Huntersville NC: alleys graded to create no-step entries.
Privacy in front, zero-step entry at rear
6. State Schools Standards
6. State Schools Standards

Barriers to Smart Growth Schools

1. Acreage Standards
2. State Funding Biases
3. Conflicts Between Community Planning and School Planning
4. Building Codes

6. State Schools Standards

Barriers to Smart Growth Schools

1. Acreage Standards

(Recommended by Council of Educational Facility Planners International (CEFPI))

- Elementary School: At least 10 acres of land plus one acre for every 100 students
- Middle School: At least 20 acres of land plus one acre for every 100 students
- High School: At least 30 acres of land plus one acre for every 100 students

School children are unable to walk or bike to school as schools are located in outlying areas to comply with acreage standards.
6. State Schools Standards

Barriers to Smart Growth Schools

2. State Funding Biases

- State reimbursement policies can favor building new schools over upgrading existing schools.

- “Two-thirds rule:” If the cost of renovating an older school exceeds the two-thirds of the cost of a new school, the school district should build a new school if the district wants to receive financial assistance from the state.

- The Two-thirds rule is arbitrary, if all new construction costs are factored into the cost analysis, renovation projects may meet the rule more easily.
6. State Schools Standards

Barriers to Smart Growth Schools

3. Conflicts between Community Planning and School Planning

- School districts may choose to ignore community zoning, planning and other growth management laws

- Construction of new schools in outlying areas can alter a community’s future growth patterns, paving the way for residential sprawl.
6. State Schools Standards

Barriers to Smart Growth Schools

4. Building Codes

- Architects specializing in renovation can retrofit older schools to provide a level of life safety and ADA compliance.
- However, if architects overestimate retrofitting costs, the school district will choose to build a new school even though renovation may be cheaper.
- School districts and school renovation advocates should hire consultants experienced in renovation and code compliance to assist in cost estimates.
6. State Schools Standards

Solutions to State School Standards

- Eliminate acreage standards.
- Encourage State laws that provide funding for renovations and good maintenance of existing schools.
- Establish lines of communication between land use, transportation and school planning offices.
- Recognize that multiple story school buildings, wooden frame buildings and existing buildings can be brought up to safety and ADA codes.
- Promote smaller schools. The Gates Foundation has funded 1457 new small high schools.
7. Congestion Management Systems

- California approved a 9c gas tax increase in June 1990:
  - introduced transportation blueprint for more flexible and effective transportation planning and programming
  - required urbanized counties of 50,000+ to develop Congestion Management Programs (CMPs) to identify and fund “comprehensive strategies needed to develop appropriate responses to transportation needs” (32/58 counties)

- Federal requirement for CMSs under ISTEA (1991):
  - aim to “provide for effective management of new and existing facilities through the use of travel demand reduction and operational management strategies”
  - include methods to monitor/evaluate system performance, identify alternative strategies to alleviate congestion/enhance mobility, assess/implement cost-effective actions, and evaluate effectiveness

Reference: http://ntl.bts.gov/DOCS/153IAW.html
CMS Requirements

- Designate roadways e.g. arterial, highway (vehicle use)
- Adopt traffic LOS standards no lower than LOS E or current (if worse than LOS E)
- Establish standards for transit frequency, routing and operator coordination
- Adopt and implement local ordinances for trip reduction and travel demand
- Set up program to analyze transportation impacts of local land use decisions
- Develop 7-year capital improvement program to maintain or improve traffic LOS and transit performance

CMP Obstacles to Smart Growth

• Focuses on short range and congestion management
• Requires local agency prepare a "deficiency plan" for locations that fall below the adopted LOS standard
  – Smart growth housing or mass transit projects with any discernable traffic impacts in congested main streets
  – Plans usually include costly intersection enhancement/road widening
• Employs traditional LOS analysis methodology which:
  – Uses ITE method & studies based on a suburban model
  – Does not consider policies to effect mode shift
  – Does not consider regional benefits of infill and reduced car use
  – Have thresholds set too low for a smart growth context
• Forces development to areas with no major traffic impacts e.g. greenfield sites far from city and town centers

Reference: http://www.abag.ca.gov/planning/smartgrowth/technical%20sessions/1/Session%20Materials/PolicyCapsule.pdf
Overcoming CMP Obstacles

• California’s SB1636 (Figueroa, signed 2002) “infill opportunity zones” law for counties of 400,000+
  –Designates infill opportunity zones which are zoned for compact residential or mixed-use within 1/3 mile of a transit stop with frequent service
  –These zones can be declared exempt from LOS traffic standards specified in State Congestion Management Act
  –Cities can either employ alternative CMP LOS standards or approve a list of flexible LOS mitigation options that would enhance walkability and transit service
8. Zoning & Subdivision Codes: Design

- Conventional zoning’s intent:
  - limit height & density
  - segregate uses
  - require setbacks
  - provide ample free parking

- Starting to be addressed well in form-based codes

- Solution: To provide assurance to developers and reduce risk:
  - Codes must allow transit-oriented development AS OF RIGHT
SmartCode

- Duany Plater-Zyberk & Company (http://www.dpz.com)
- 6 transect zones
Solution: *Draw a Form-Based Code*

- Translate lengthy, unpredictable text codes into compact diagrams
- *Flexible* about land uses, *Precise* about building form

**Form-Based Codes in California**

**Azusa**

**Hercules**

**Petaluma**
http://www.ci.petaluma.ca.us/cdd/cpsp.html

**Sonoma**
http://www.sonomacity.org/Forms/Codebook.pdf
Petaluma Smart Code

- Form-based code for 400 acres
- Parking requirements drastically reduced, then abolished
- Nov ’02: Project start
- June ’03: Code adopted
- June ’03: $75 million project (theater, retail, apartments, office) submitted
- July ’03: project approved, now under construction.
Petaluma Smart Code – Code Page

Breaking the Code: 12 Obstacles to Smart Growth

Jeffrey Tumlin, Nelson\Nygaard Consulting
Petaluma Smart Code: Precise About Building Form

4.30 - Building Placement

The provisions of this Section illustrate the standards for the location of a building on a parcel required by Section 4.10 (Urban Standards: Notes).

**Edge Yard:** A building that occupies the center of its lot with setbacks on all sides. This is the least urban of types as the front yard sets it back from the frontage, while the sideyards weaken the spatial definition of the public thoroughfare space. The front yard is intended to be visually continuous with the yards of adjacent buildings. The rear yard can be secured for privacy by fences and a well-placed backbuilding and/or outbuilding.

**Side Yard:** A building that occupies one side of the lot with the setback to the other side. The visual opening of the sideyard on the street frontage causes this building type to appear freestanding. A shallow front setback defines a more urban condition. If the adjacent building is similar to a blank party wall, the yard can be quite private. This type permits systematic climatic orientation in response to the sun or the breeze.

**Rear Yard:** A building that occupies the full frontage, leaving the rear of the lot as the side yard. This is a very urban type as the continuous facade clearly defines the public thoroughfare. The rear elevations may be articulated for functional purposes. In its residential form, this type is a rowhouse. For commercial, the rear yard can accommodate substantial parking.

**Court Yard:** A building that occupies the boundaries of its lot while interiorly defining one or more private patios. This is the most urban of types, as it is able to shield the private realm from all sides while strongly defining the public thoroughfare. Because of its ability to accommodate incompatible activities masking them from all sides, it is recommended for workshops, lodging and schools. The high secrecy provided by the continuous enclosure is useful for crime-prone areas.

**Specialized:** A building that is not subject to categorization. Buildings dedicated to manufacturing and transportation, such as factories or airports, are often detached by the trajectories of movement. Certain buildings, which may express the separations of institutions, may be included. Certain types, such as hospitals, may also require exemption from placement requirements.

"With this (plan) I feel I can now really commit to mixed-use development."

- Walt Haaka, Petaluma Developer
8. **Zoning Code: Parking Requirements**

- Continued over-reliance on ITE *Parking Generation Manual*. Use this only for isolated, auto-oriented uses.

- Requirements often set **50-100% higher** than average demand seen in *Parking Generation* manual.

- Strategies
  - Adjust based upon local conditions
  - Incentivize parking strategies to reduce traffic and improve design
  - Abolish minimums
  - Establish maximums

- **Examples**...
Palo Alto, CA – parking requirements adopted in 1951
Minimum Parking Requirements

Purpose

- Palo Alto: "to alleviate traffic congestion"?

- In reality, minimum parking requirements prevent spill-over parking problems
Tailored Parking: Palo Alto

- **Existing Requirement:** 4.0 spaces per 1000 s.f.
- **Need** 5,744 spaces above observed demand to bring all downtown to 4.0 standard. At $51K/space, $293 million
- **Downtown, Observed peak:** 1.9 spaces per 1000 s.f.
- **Palo Alto** updating its zoning code to vary parking requirements by
  - Density
  - Transit Access
  - Income
  - Household size
Tailored Parking

- Mountain View and San Jose – parking reductions for TOD
- San Rafael – reduced parking requirements downtown
- Menlo Park and Milpitas – reduced requirements for high-density housing
Incentivized Parking

- Strategies to reduce parking demand:
  - Pricing
  - Unbundling
  - Car-Sharing
  - Other demand management (e.g. EcoPasses)

- Strategies to reduce parking impacts:
  - Shared parking
  - Structured parking
  - Stacked parking/parking lifts
  - Design requirements (e.g. wrap parking in active uses)
Incentivized Parking: Boulder

- Downtown developers discouraged from building parking
- Instead, they pay a parking and transportation in lieu fee
- Fees used to build well managed public garages – and fund transit, bicycle and pedestrian improvements
- Program managed by downtown Business Improvement District, CAGID
Constrain Parking Supply

- Overall principle: encourage less auto-oriented development
- Promotes self-selection – residents with fewer cars live close to transit
- Different approaches:
  - Parking maximums
  - Requirements/incentives for demand management
- Needs to be complemented with Residential Permit Parking or other strategies to stop overspill
Parking Maximums

- Promote alternatives to the private automobile
- Can tackle congestion if related to roadway capacity or mode shift goals
- Maximize land area for other uses
- Appropriate in areas with strong real estate market where priority is to minimize auto dependence
- Examples: downtown San Francisco, Portland, Cambridge
## Parking: High & Low Traffic Strategies

<table>
<thead>
<tr>
<th>Typical Tools</th>
<th><strong>Typical Minimum Requirements</strong></th>
<th><strong>‘Tailored’ Minimum Requirements</strong></th>
<th><strong>Abolish Minimum Requirements</strong></th>
<th><strong>Set Maximum Requirements</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Requirement &gt; Average Demand • Hide all parking costs</td>
<td>Adjust for:</td>
<td>• Market decides • Garages funded by parking revenues • Manage on-street parking</td>
<td>• Limit parking to road capacity • Manage on-street parking • Market rate fees encouraged/required</td>
</tr>
<tr>
<td><strong>Typical</strong></td>
<td></td>
<td>• Density • Transit • Mixed Use • ‘Park Once’ District • On-street spaces • ...etc.</td>
<td>• Residential pkg permits allowed by vote</td>
<td></td>
</tr>
<tr>
<td><strong>Traffic</strong></td>
<td><strong>High</strong></td>
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<tr>
<td><strong>Housing Costs</strong></td>
<td><strong>High</strong></td>
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<tr>
<td><strong>Pollution</strong></td>
<td><strong>High</strong></td>
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</tbody>
</table>

Typical Tools:
- Requirement > Average Demand
- Hide all parking costs

'Tailored' Minimum Requirements:
- Adjust for:
  - Density
  - Transit
  - Mixed Use
  - ‘Park Once’ District
  - On-street spaces
  - ...etc.

Abolish Minimum Requirements:
- Market decides
- Garages funded by parking revenues
- Manage on-street parking
- Residential pkg permits allowed by vote

Set Maximum Requirements:
- Limit parking to road capacity
- Manage on-street parking
- Market rate fees encouraged/required

**Traffic**: High → Low

**Housing Costs**: High → Low

**Pollution**: High → Low
9. Street Design Codes

- AASHTO *Green Book*: NOT a standard, fairly flexible
- But state DOT manuals often adopt largest dimensions in *Green Book*
- Major confusion between California Highway Design Manual and local street codes.
- Highway Design: Safe for high-speed rural roads where few pedestrians are present. Accommodates “driver error.”
- Urban streets: Accommodating fast auto speeds creates danger for everyone.
- Arterial/Collector/Local framework – no place for main streets or boulevards
The Esplanade, Chico, CA: Safe, Beloved and Illegal
The Esplanade, Chico, CA: Safe, Beloved and Illegal
9. Street Design Codes - Solutions

- ITE “Traditional Neighborhood Street Design Guidelines – A Recommended Practice”
- ITE “Traffic Calming: State of the Practice” – its standards directly challenge/contradict old practices
- Vermont – New flexible state standards invite departures from AASHTO, senior agency engineers transferred
- Maryland – dumped state standards, reverted to Green Book

Useful Articles: “From Highway to My Way”
http://www.its.berkeley.edu/techtransfer/resources/newsletter/01spring/myway.html
http://user.gru.net/domz/main.htm
http://www.citebc.ca/Nov97_Asphalt.html
9. Street Design Codes - Solutions

  – Saturday, 1:45-3:15 Audubon Room
10. Street Typologies and Performance Measures

- Definitions buried in code language part of the problem, particularly “arterial,” “collector,” “local” suburban classifications that only describe the auto flow function of streets.

- Seattle’s new street typologies include:
  - Priority for each mode
  - Urban context
  - Physical form
10. Seattle Street Typologies

- Start with urban context:
  - Urban Center
  - Urban Village Center
  - Urban Village
  - Single-Family Residential Neighborhood
  - Manufacturing/Industrial Centers
10. Seattle Street Typologies

- Add Transit layer
  - 1\textsuperscript{st} priority transit network
  - 2\textsuperscript{nd} priority transit network
  - 3\textsuperscript{rd} priority transit network
10. Seattle Street Typologies

- Add automobile layer:
  - 1<sup>st</sup> priority auto network: freeways and major arterials
  - 2<sup>nd</sup> priority auto network: arterials and collectors
  - 3<sup>rd</sup> priority auto network: "local" streets
10. Seattle Street Typologies

- Add bicycle layer
  - 1st priority bike network
  - 2nd priority bike network
10. Seattle Streets

- Can also add:
  - Pedestrians
  - Freight
  - Environmental priorities
  - Special place types

- Result: Shorthand classification code that addresses both the context and full function of every street:
  - Broadway: $C_{UC}T_2A_2P_1$
  - Aurora: $C_{UV}T_2A_1$

<table>
<thead>
<tr>
<th>Classification</th>
<th>Shorthand</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CONTEXT</strong></td>
<td></td>
</tr>
<tr>
<td>Urban Core and Urban Center main streets</td>
<td>$C_{UC}$</td>
</tr>
<tr>
<td>Commercial streets in Hub and Residential Urban villages</td>
<td>$C_{CS}$</td>
</tr>
<tr>
<td>Hub urban villages and residential urban villages</td>
<td>$C_{UV}$</td>
</tr>
<tr>
<td>Single family residential areas</td>
<td>$C_{SF}$</td>
</tr>
<tr>
<td>Manufacturing/ Industrial Centers</td>
<td>$C_{MI}$</td>
</tr>
<tr>
<td><strong>TRANSIT ROLE</strong></td>
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</tr>
<tr>
<td>UVTN (Primary Transit)</td>
<td>$T_1$</td>
</tr>
<tr>
<td>Secondary Transit</td>
<td>$T_2$</td>
</tr>
<tr>
<td>Tertiary Transit</td>
<td>$T_3$</td>
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<tr>
<td><strong>AUTO</strong></td>
<td></td>
</tr>
<tr>
<td>Primary Auto</td>
<td>$A_1$</td>
</tr>
<tr>
<td>Secondary Auto</td>
<td>$A_2$</td>
</tr>
<tr>
<td>Tertiary Auto</td>
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</tr>
<tr>
<td><strong>BICYCLE</strong></td>
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</tr>
<tr>
<td>Primary Bicycle</td>
<td>$B_1$</td>
</tr>
<tr>
<td>Secondary Bicycle</td>
<td>$B_2$</td>
</tr>
<tr>
<td><strong>PEDESTRIAN</strong></td>
<td></td>
</tr>
<tr>
<td>Primary Pedestrian</td>
<td>$P_1$</td>
</tr>
<tr>
<td>Secondary Pedestrian</td>
<td>$P_2$</td>
</tr>
<tr>
<td><strong>TRUCK</strong></td>
<td></td>
</tr>
<tr>
<td>Primary Truck ('Heavy Vehicle')</td>
<td>$H_1$</td>
</tr>
</tbody>
</table>
10. Seattle Street Performance Measures

- Appropriate typologies allow for performance measures that balance all modes. *Quality* of Service rather than *Level* of Service.

<table>
<thead>
<tr>
<th>MODE / FUNCTION</th>
<th>CONTEXT ZONE</th>
<th>Minimum QOS</th>
<th>Desirable QOS</th>
<th>Preferred QOS</th>
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<tbody>
<tr>
<td>Transit</td>
<td>All</td>
<td>Transit QOS</td>
<td>Transit QOS</td>
<td>Transit QOS</td>
</tr>
<tr>
<td>UVTN</td>
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<td>≥0.5</td>
<td>≥1</td>
</tr>
<tr>
<td>Secondary transit</td>
<td>Urban Center Village</td>
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<td>≥+1</td>
<td>≥1</td>
</tr>
<tr>
<td></td>
<td>Urban Village Commercial Streets</td>
<td>≥0.5</td>
<td>≥+0.5</td>
<td>≥+0.5</td>
</tr>
<tr>
<td></td>
<td>Hub/Residential Urban Villages</td>
<td>≥0.5</td>
<td>≥+1</td>
<td>≥+1</td>
</tr>
<tr>
<td></td>
<td>Single family residential areas</td>
<td>≥0.5</td>
<td>≥+1</td>
<td>≥+1</td>
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<tr>
<td>Other transit</td>
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<td>≥0.5</td>
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<tr>
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<td>All</td>
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<td>Vehicular V:C</td>
<td>Vehicular V:C</td>
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<td>&lt;1.2</td>
<td>&lt;0.8</td>
<td>&gt;0.6</td>
</tr>
<tr>
<td></td>
<td>Urban Village Commercial Streets</td>
<td>&lt;1.2</td>
<td>&lt;1.0</td>
<td>&gt;0.6</td>
</tr>
<tr>
<td></td>
<td>Hub/Residential Urban Villages</td>
<td>&lt;1.0</td>
<td>&lt;0.8</td>
<td>&gt;0.6</td>
</tr>
<tr>
<td></td>
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<td>&lt;0.6</td>
<td>&lt;0.4</td>
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<td>&gt;0.6</td>
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<tr>
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<td>Bicycle QOS</td>
<td>Bicycle QOS</td>
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<td>B</td>
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<tr>
<td></td>
<td>Urban Village Commercial Streets</td>
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<td>C</td>
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</tr>
<tr>
<td></td>
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<td>A</td>
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<td>Hub/Residential Urban Villages</td>
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<td>A</td>
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<td></td>
<td>Single family residential areas</td>
<td>D</td>
<td>B</td>
<td>A</td>
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<tr>
<td>Pedestrian</td>
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<td>Pedestrian QOS</td>
<td>Pedestrian QOS</td>
</tr>
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<td>A</td>
</tr>
<tr>
<td></td>
<td>Single family residential areas</td>
<td>D</td>
<td>B</td>
<td>A</td>
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</table>
### Application

- **Broadway** $C_{UC}T_2A_2P_1$

<table>
<thead>
<tr>
<th>FUNCTION</th>
<th>CONTEXT ZONE</th>
<th>Minimum</th>
<th>Desirable</th>
<th>Preferred</th>
<th>Measured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>Urban Center Village</td>
<td>$\geq -1$</td>
<td>$\geq -0.5$</td>
<td>$\geq +1$</td>
<td>-0.8</td>
</tr>
<tr>
<td>Auto</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
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<td>$&gt;0.6$</td>
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<td></td>
<td></td>
<td></td>
<td>B</td>
</tr>
<tr>
<td>Primary</td>
<td>Urban Center Village</td>
<td>B</td>
<td>A</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>
Application

- Broadway $C_{UC} T_2 A_2 P_1$

<table>
<thead>
<tr>
<th>FUNCTION</th>
<th>CONTEXT ZONE</th>
<th>Minimum</th>
<th>Desirable</th>
<th>Preferred</th>
<th>Measured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.5</td>
</tr>
<tr>
<td>Secondary</td>
<td>Urban Center Village</td>
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<td>$\geq -0.5$</td>
<td>$\geq +1$</td>
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</tr>
<tr>
<td>Auto</td>
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<td></td>
<td></td>
<td></td>
<td>0.8</td>
</tr>
<tr>
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<td>Urban Center Village</td>
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<td>$&gt;0.6$</td>
<td></td>
</tr>
<tr>
<td>Pedestrian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Primary</td>
<td>Urban Center Village</td>
<td>B</td>
<td>A</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

- Result: OK to slightly degrade auto QOS to improve transit and pedestrian QOS. Signal prioritization OK, but not dedicated transit lane.
- Goal: Bring all measures into balance
11. Impact Fees

- Powerful tool for encouraging good development, discouraging bad development and raising funds for Smart Growth improvements

- Problems with some fees:
  - Raise money only for roadway widening and traffic “improvements”
  - Base impact calculation on square footage, not auto trips. No discount for good location or TDM
11. Impact Fees: Creating a Nexus

New development generates trips

New vehicle trips
- Cost to accommodate new vehicle trips
  - Increased capacity (e.g., intersection improvements)
  - Congestion increases transit running times
  - More vehicle trips has impacts on safety, generates spillover traffic and reduces pedestrian, bicycle and transit level of service
  - Increased cost to maintain transit frequencies
- Traffic calming, bike/ped improvements and transit service enhancements needed to maintain safety and bicycle, pedestrian and transit level of service

New Transit Trips
- Cost to mitigate impact by shifting vehicle trips to other modes
  - Transit service enhancements
  - Citywide Transportation Demand Management programs
  - Bike/ped improvements, including traffic calming
  - Cost of increased transit capacity

New bike/ped trips
- Cost to accommodate new bike/ped trips (minimal)
# 11. Impact Fees: Improvements for all Modes

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>% for Alternative Modes</th>
<th>Comment / Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tahoe Regional Planning Agency</td>
<td>100%*</td>
<td>*Used for transit or air quality projects other than development mitigation</td>
</tr>
<tr>
<td>San Francisco</td>
<td>100%</td>
<td>Transit impact fee used for both capital improvements and operating costs</td>
</tr>
<tr>
<td>Santa Cruz County</td>
<td>50%</td>
<td>Allocated among ped amenities (78%), existing bike facilities (10%), new Class II bike facilities (6%), bicycle signage (4%), and bus pullouts (2%)</td>
</tr>
<tr>
<td>Sacramento County</td>
<td>25-30%</td>
<td>Used for buses, P&amp;R lots and LRT station. 7 Districts with fee schedules</td>
</tr>
<tr>
<td>City of Long Beach</td>
<td>27%</td>
<td>Allocated to transit (23%) and a Parking Management Program (4%)</td>
</tr>
<tr>
<td>Redwood City</td>
<td>25%</td>
<td>Used for bicycle paths, shuttle services, TDM coordinator, and other miscellaneous alternative mode improvements</td>
</tr>
<tr>
<td>City of San Luis Obispo</td>
<td>20%</td>
<td>Allocated to bicycle facilities (75%) and transit capital improvements (25%)</td>
</tr>
<tr>
<td>Coachella Valley Association of Governments</td>
<td>10%</td>
<td>Used for bus replacement and additional transit service, commuter buses, carpools/vanpools, and discount senior/disabled fares.</td>
</tr>
<tr>
<td>South Placer Regional Transportation Authority</td>
<td>6%</td>
<td>Used for rail and bus transit</td>
</tr>
<tr>
<td>City of Dublin</td>
<td>6%</td>
<td>Allocated among Class I bikeways (19%), transit (57.5%), P&amp;R (23.5%)</td>
</tr>
<tr>
<td>City of Fillmore (Ventura County)</td>
<td>5%</td>
<td>Used for Class I bikeways</td>
</tr>
<tr>
<td>San Joaquin County</td>
<td>5%</td>
<td>Projects needed accommodate growth at Comprehensive Plan buildout</td>
</tr>
<tr>
<td>City of Bakersfield</td>
<td>4%</td>
<td>Used for transit capital improvements</td>
</tr>
<tr>
<td>City of Petaluma</td>
<td>3%</td>
<td>9 alternative modes projects include Class II bike lanes, Class I trails, pedestrian projects, a P&amp;R lot and a transit center</td>
</tr>
<tr>
<td>City of Vacaville</td>
<td>2%</td>
<td>Used for Class I bike trails along 3 creeks</td>
</tr>
<tr>
<td>City of Woodland (Yolo County)</td>
<td>2%</td>
<td>Used for new bicycle facilities</td>
</tr>
<tr>
<td>Monterey County</td>
<td>1%</td>
<td>Used to maintain Class II bikelanes along arterials</td>
</tr>
<tr>
<td>City of San Diego</td>
<td>N/A</td>
<td>Fees and use vary based on 49 Community Plans. Used for bike and pedestrian facilities and park and ride lots</td>
</tr>
<tr>
<td>City of Irvine</td>
<td>N/A</td>
<td>Uses $3 million of fee revenue for alternative transportation</td>
</tr>
<tr>
<td>Walnut Creek</td>
<td>N/A</td>
<td>A variable percentage is apportioned to alternative modes</td>
</tr>
<tr>
<td>Santa Barbara County Association of Governments</td>
<td>N/A</td>
<td>Detail unavailable at time of writing</td>
</tr>
</tbody>
</table>

Source: Traffic Impact Fee Survey, Santa Barbara County Association of Governments, May 1997, and follow-up interviews
San Francisco’s Transit Impact Development Fee

- Was $5 per s.f. of office
- Enacted 1981
- Withstood legal challenges
- Funds capital and operating – Primarily Transit
SF’s Revised Impact Fee

- From downtown only to citywide
- From office only to all non-residential uses
- From peak-hour service only to anytime
- From service increases only to maintaining or improving service
- From $5/s.f. to $10, indexed to inflation
Charleston-Arastradero Corridor Proposed Impact Fee

- New development along the Palo Alto, CA, Charleston-Arastradero Corridor over the next ten years is expected to significantly increase pedestrian and bicycle use.

- The City of Palo Alto has proposed a set of pedestrian and bicycle safety improvements for the Corridor, and a development fee to appropriately allocate the costs of improvements to new development to the extent that costs will be incurred to mitigate the impacts of that development.

- A fee level $930 per new residential unit and $.27 per square foot of new non-residential development is recommended in the corridor, which is estimated to raise up to $819,000.

- The fee is recommended to be:
  - Restricted to capital improvements associated with the Charleston Arastradero Corridor Plan.
  - Limited to a 1/2-mile radius of the Corridor
  - Refunded if they are not used for their intended purpose
Palo Alto’s Proposed Impact Fee

- In progress
- Devoted solely to alternative transportation
- $6,136 per PM peak hour vehicle trip proposed
- Will raise $27 million over 22 years
- Local match for $135 million in projects
- Indexed to inflation
- Pays for full life-cycle costs
- Funds capital
  - Initial purchase
  - Replacement
- Maintenance of capital
- Operating costs
  - Endows lifetime operating costs
- No refunds given
12. Environmental Compliance

What does a “mitigation measure” for environmental impacts look like?
12. Environmental Compliance

- In NEPA, more parking, wider roads and less density always result in better environmental compliance!

- Why is parking availability considered an “environmental impact” of statewide concern?

- Regional impacts are not considered, so greenfield sprawl easier to do than infill

- Obsessive focus on Auto LOS – seconds of delay for cars – with little interest in other modes or in person delay or person capacity.

- Forces “worst case scenario” analysis, often with same auto trip rates for TOD as for sprawl.

- Induced trips rarely considered – roadway widenings “improve” air quality!

- Minor bike lane projects often require expensive, time-consuming environmental review – costing more than the project itself.
12. Environmental Compliance – California Approach

- California Resources Agency State CEQA Guidelines allow local jurisdictions to set own screening criteria, significance thresholds and impact methodologies.

- All cities can:
  - Set multimodal standards
  - Examine *person* delay rather than *vehicle* delay
  - Say they don’t care about congestion in certain areas (like downtown Livermore) or citywide, or vary significance thresholds
  - Identify overriding considerations for when it’s OK to have poor LOS
12. Environmental Compliance: California Approach

- California Assembly Bill 1387: Allows downtown housing projects without analyzing traffic impacts if they comply with city's zoning and growth plans.

- California State Bill 832: Exempts projects <10 acres, <300 homes in cities with >200,000 residents from CEQA.

- California State Bill 948: Allows home builders to prepare a short-form environmental impact report rather than expensive full-blown report for residential projects.

- Association of Bay Area Governments starting to address: http://www.abag.ca.gov/planning/smartgrowth/sessions.html
12. Environmental Compliance: SF Approach

- Identify all projected land use changes for next 20 years
- Identify transportation improvements necessary to accommodate that growth
- Create impact fee based primarily upon auto trip generation
- Eliminate all transportation analysis from CEQA process
- Exempt “reversible” projects like bike lane striping.
- See http://www.sfcta.org/SARs.htm
12. Environmental Compliance: Oregon Approach

- Each of Oregon's 241 cities is surrounded by an "urban growth boundary" or "UGB."

- Drawing an urban growth boundary is a joint effort. The city, adjoining county, special districts and citizens draw a UGB. The state's Land Conservation and Development Commission (LCDC) reviews it to make sure it is consistent with Goal 14.

- Goal 14 is the statewide planning goal adopted by LCDC on December 27, 1974. It requires each city to adopt a UGB, "in a cooperative process between a city and the county or counties that surround it." The goal lists seven "factors" that must be considered in drawing the UGB.

- Oregon's 15 years of experience have shown urban growth boundaries to be highly effective. UGBs have helped to reduce costs of public services and facilities, saved farmland from urban sprawl and have led to better coordination of city and county land-use planning.

Reference: Department of Land Conservation and Development (DLCD), http://darkwing.uoregon.edu/~pppm/landuse/UGB.html
For More Information

• Contact:

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Nelson\Nygaard
Transportation Planning for Livable Communities

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