IMPROVING LIVABILITY & TRANSPORTATION THROUGH FORM-BASED CODES

PRESENTED BY:
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FORM-BASED CODES
• Origins of Code
• Brief Outline and Applicability
• TODs and TNDs

FORM-BASED CODES & TRANSPORTATION
• Congestion Management:
  • Grid System vs. Hierarchical/Conventional
  • TOD/TND vs. Conventional
• Cost Reduction

FORM-BASED CODES & LIVABILITY PRINCIPLES
• Principles from the HUD-DOT-EPA Partnership

Q & A SESSION
Introduction to FBC

- Response to conventional zoning during the 80s
- Principles of Smart Growth and New Urbanism
  - Mix of land uses
  - Walkable, compact urban form
  - Transportation and housing choices
CONVENTIONAL ZONING

• Auto-oriented
• Proscriptive regulations
• Reactive to individual proposals

• Use is primary
• Regulates to create buildings
• Single-use zone organization
FORM-BASED CODES

- Mixed-use, walkable, compact
- Prescriptive regulations
- Proactive community visioning
- Physical form & character
- Regulates to create places
- Spatial organization; transect
TRANSIT-ORIENTED DEVELOPMENT

- Maximize access to transit
- Range of housing options
- Location efficiency

- Mixed-uses
- Value Capture
- Node & place
TRADITIONAL NEIGHBORHOOD DEVELOPMENT

• Complete neighborhood
• Range of land uses
• In walking distance

• Balance of Public & Private
• Community identity
• Greenfield & Infill
Hierarchical/Conventional Street Network

- Designed for automobile traffic
- Inefficient system for transit
- Functional Classification: Local - Collector - Arterial
- Tendency for congestion to build up on arterials
FBC: Grid System/Complete Streets Network

- Form-Based Codes promote Complete Streets
- Thoroughfare assembly through guidelines/prescriptions
- Regulates design and requirements of Right-of-Way
- Accommodates various modes of transportation
GRID SYSTEM/COMPLETE STREETS NETWORK

• Contextual Network: based on Transect Zones (FBC)
• Multiple connections between origins and destinations
• Access to walking, cycling, and transit
# Hierarchical/Conventional vs Grid System

<table>
<thead>
<tr>
<th>Functional Classification</th>
<th>Freeway/Expressway/Parkway</th>
<th>Rural Highway</th>
<th>Boulevard</th>
<th>Avenue</th>
<th>Street</th>
<th>Rural Road</th>
<th>Alley/Rear Lane</th>
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<tbody>
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<td>Principal Arterial</td>
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<td>Collector</td>
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</table>
Effects of Grid System/Complete Streets Network

• Multiple direct routes & access leads to:
  ◇ Reduced travel distances
  ◇ Lower trip generation
  ◇ Lowers congestion

• Complete Streets:
  ◇ Provide access to transit
  ◇ Carry more passengers in less space
  ◇ Lowers congestion
STUDIES ON GRID SYSTEM/COMPLETE STREETS NETWORK

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STUDIES: HIERARCHICAL/CONVENTIONAL VS GRID SYSTEM

- ASCE travel demand Conventional vs TND:
  - 10% volume arterials & collectors TND
  - +80% travel demand on collector: Conventional
  - +75% travel demand on arterial: Conventional
  - Overall TND travel demand 43% lower
  - Grid reduces travel time and speed

- Growing Cooler by Reid Ewing:
  - 20-40% higher VMT in sprawl than TND

STUDIES: HIERARCHICAL/CONVENTIONAL VS GRID SYSTEM

- SMARTRAQ study
  - -23% weekday travel walkable neighborhood
  - -40% weekend travel walkable neighborhood
- Synergistic effect in lowering VMT:
  - Density, land use, transit, connectivity

SMARTRAQ Final Report. Integrating travel behavior and urban form data to address transportation and air quality problems in Atlanta, by Jim Chapman and Lawrence Frank. Georgia Regional Transportation Authority and Georgia Department of Transportation, April 2004.
TOD vs. Conventional Development

- TOD characteristics vs conventional development:
  ◊ TOD residents & workers predisposed to transit
  ◊ Transit and walking more frequent in TOD
  ◊ TOD households 2x likely to not own a car
  ◊ TOD increases ridership by 20-40%
  ◊ TOD transit commute 5-6x more likely
TOD vs. Conventional Development

• TOD Study TCRP Report 128:
  ◊ 17 cases: DC, San Francisco, Portland, Philly/NJ
  ◊ Weighted avg weekday: -44% trips than ITE
  ◊ Variations across urban to suburban TODs
    ▪ Downtown: -70-90% trips than ITE
    ▪ Low-density suburb: -15-25% trips than ITE
    ▪ Grosvenor Station (DC): 54% work/school trips
  ◊ TOD produced less traffic than conventional

TND vs. CONVENTIONAL DEVELOPMENT

• New Urbanism Best Practices Guide:
  • Density, mix uses, connectivity: -20% driving
  • Chapel Hill: -22% trips TND than conventional
  • Nashville: -25% trips for suburb with better access, connectivity and increase in density
  • Atlantic Station: survey VMT=8; estimate VMT=25.5; region average VMT=34 (per day)

HOW DOES FBC IMPROVE TRANSPORTATION?

• Reduce the transportation capital cost (infrastructure, facilities, bus, train and other public vehicular services).

• Improve Safety
Reducing Transportation Cost

• Reduce “sprawl” and the amount of land required for a development - thus reducing the transportation capital cost required to service that development - by:

◊ Creating compact walkable developments (TODs, TNDs, etc.)
Reducing transportation cost

- Benefits of compact walkable developments:
  - Mix of uses rather than separated uses
  - Greater allowable density
  - More choices when driving
  - Lower maintenance cost
  - Efficient and cost-effective delivery of public services
REDUCING TRANSPORTATION COST

• Examples of how compact developments reduce transportation capital cost:

◊ Sacramento Region Blueprint Transportation-Land Use Study (2004):
  ▪ Sprawl costs $14.7 billion; compact costs $13 billion

◊ Gainesville, Florida (2000):
  ▪ Sprawl costs $184 million; compact costs $88 million

◊ Austin (2003):
  ▪ Sprawl costs $10.6 billion; compact costs $3.04 billion

◊ Salt Lake City (1999):
  ▪ Sprawl costs $37.6 billion; compact costs $21.9 billion

IMPROVING SAFETY

• Improve pedestrian connectivity and reduce the # of disconnected streets:
  ◊ Reducing block lengths
  ◊ Creating connected street networks

• Provide streets that accommodate multiple modes of transportation safely:
  ◊ Providing complete streets
IMPROVING SAFETY

- Benefits of shorter block lengths and connected street networks:
  - Safer for pedestrians, motorists and bicyclists
  - Slower traffic
  - Lower vehicle miles traveled (VMT)
  - Fewer fatalities

IMPROVING SAFETY

FORM-BASED CODES

• Benefits of complete streets:
  ◇ Shorter crossing time for pedestrians
  ◇ Improved safety for bicyclist
  ◇ Lower speeds
  ◇ Lower fatalities

FBC & Livability

HUD-DOT-EPA Partnership Livability Principles

- Provide more transportation choices
  - FBC prescriptions for accommodating multiple transportation modes
    - TOD designed with form-based codes
    - Thoroughfare assembly
    - Public space & ROW standards
HUD-DOT-EPA Partnership Livability Principles

• Promote equitable, affordable housing
  ◊ FBC prescriptions for various lot sizes and building typologies: variety of housing options
    ▪ First Ward Place, Charlotte, NC
    ▪ Glenwood Park, Atlanta, GA
    ▪ New Town, St. Charles, MO
    ▪ Midtown Exchange, Minneapolis, MN
  ◊ Cities must align land use policies w/ smart growth to ensure affordability is developed and preserved
HUD-DOT-EPA Partnership Livability Principles

• Enhance economic competitiveness
• Support existing communities
• Value communities and neighborhoods
  ◊ FBC produces economically sustainable places
  ◊ TODs holds value better than conventional
  ◊ FBC maintains a community’s physical character
  ◊ FBC improves existing infrastructure, enhancing private sector economic opportunities
  ◊ TND/TOD attracts retailers & employers through lower transportation costs
HUD-DOT-EPA Partnership Livability Principles

• Coordinate and leverage federal policies and investment
  ◊ FBC prescriptions on housing ensure proportional funding application to multiple housing types
  ◊ FBC prescriptions on infill, redevelopment, and preservation guide public/private investment into existing communities
Any Questions?

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