



Presentation Overview

- **Relationship between Planning and Sustainability**
- **LEED for Neighborhood Development**
- **Form-Based Codes**



Planning & Sustainability

- **Land use and neighborhood design compel behaviors; which affect...**
 - Environment
 - Economy
 - Health
- **Compare: Low Density Residential, Separated from Commercial Centers v. Higher Density Mixed-Use Community**



Environment

- **Greenhouse Gas (GHG) emissions: Transportation Sector: >20%**
 - Vehicle Miles Traveled (VMT): 3x Increase between 1970 and 2006
 - VMT increase offsets any benefit of increases fuel efficiency
 - Denser communities have smaller per capita carbon footprint
- **Loss of habitat, forestland, agricultural opportunities**



Economy

- **Mixture of uses near housing increases traffic to local businesses**
- **Areas served by transit have higher property values, more stability during economic downturns**
- **Decrease the cars/household ratio**
- **Walkability raises home values**



Health

- **Increasing “steps per day” has significant health benefits**
- **Health concerns have renewed demand for locally grown food**
- **Consideration for accessible spaces for aging population**
- **Injuries related to vehicle and non-motor vehicle collisions**

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Role of Planning

- Opportunity to use comprehensive plans and zoning to shape future growth
- Opportunity to promote desired behaviors, affect environment, economy, health



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Role of Planning (cont.)

- How can we better enable smart growth and discourage sprawl?
- How to address public and NIMBY concerns over density?
- What tools are available?



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LEED for Neighborhood Development



- Newest of LEED Rating Systems
- Partnerships (USGBC, CNU, NRDC)
- National standard for neighborhood design
- Recognizes projects that protect and enhance overall health, natural environment, and QOL
- Smart growth & new urbanist best practices



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Evolution of LEED ND



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The Pilot

- 239 projects registered
- 68 projects certified



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Post Pilot Version

- Aligned with LEED 2009
- New prerequisites added
 - Energy Use
 - Water Use
 - Green Buildings

LEED [®] for Neighborhood Development	
Total Possible Points**	110*
Accessibility & Usage	27
Neighborhood Public & Design	48
Green Infrastructure & Building	28
Materials & Design Process	0
Regional Priority Goals	7

* Score of 40 or greater: LEED Certified; 47 or greater: LEED Silver Certified; 54 or greater: LEED Gold Certified; 61 or greater: LEED Platinum Certified.



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Certification Process



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LEED 2009 FOR NEIGHBORHOOD DEVELOPMENT PROJECT CHECKLIST

Smart Location and Linkage		27 possible points
<input type="checkbox"/>	Prerequisite 1: Smart Location	Required
<input type="checkbox"/>	Prerequisite 2: Department Goals and Conceptual Commitment	Required
<input type="checkbox"/>	Prerequisite 3: Walkable and Intermodal Connectivity	Required
<input type="checkbox"/>	Prerequisite 4: Agriculture Land Conservation	Required
<input type="checkbox"/>	Prerequisite 5: Floodplain Avoidance	Required
<input type="checkbox"/>	Credit 1: Preferred Locations	10
<input type="checkbox"/>	Credit 2: Brownfields Redevelopment	2
<input type="checkbox"/>	Credit 3: Location with Enhanced Automobile Dependence	7
<input type="checkbox"/>	Credit 4: Bicycle Network and Storage	1
<input type="checkbox"/>	Credit 5: Working and Job Proximity	3
<input type="checkbox"/>	Credit 6: Mass Shape Pedestrians	1
<input type="checkbox"/>	Credit 7: Site Design for Habitat or Wetlands and Water Only Conservation	1
<input type="checkbox"/>	Credit 8: Restoration of Habitat or Wetlands and Water Bodies	1
<input type="checkbox"/>	Credit 9: Long-Term Conservation Management of Habitat or Wetlands and Water Bodies	1

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Smart Location & Linkage

Measure Location

- Proximity to existing development
- Proximity to goods and services
- Proximity to existing infrastructure

Enhance Location

- Preserve sensitive lands
- Locate jobs near housing
- Provide bicycle amenities

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SLL PR 1 – Smart Location

Requirements

FOR ALL PROJECTS:

Site either (a) served by existing water and wastewater infrastructure or (b) located within a legally adopted, publicly owned, planned water and wastewater service area, and provide new water and wastewater infrastructure for the project.

AND

- OPTION 1 – In-fill Site
- OPTION 2 – Adjacent Site with Connectivity
- OPTION 3 - Transit Corridor or Route with Adequate Transit Service
- OPTION 4 - Sites with Nearby Neighborhood Assets

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SLL CR 1 – Preferred Locations

Up to 10 Points

OPTION 1 – Location Type

Infill, Adjacent, Previously Developed

AND/OR

Information per square mile	Points
a 1001 and a 2102	5
a 2101 and a 3010	2
a 3001 and a 3010	3
a 3010 and c 1110	6
a 4021	5

OPTION 2 – Connectivity

AND/OR

OPTION 3 – Designated High-Priority Locations

Achieve 2 pts on NPD c4 & be located in EPA/HUD lists

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SLL CR 3 – Locations with Reduced Automobile Dependence

Up to 7 Points

OPTION 1 – Transit-Served Location

Minimum daily service: 1 pt for 40/60 weekday/weekend trips; 7 for 320/200 weekday/weekend trips

OR

OPTION 2 – Metropolitan Planning Organization Location with Low VMT

Locate within a zone in which VMT is less than average of region: 1 pt for 81-90%; 7 pts for ≤30%

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Neighborhood Pattern and Design 44 possible points

Prerequisite 1	Walkable Streets	Required
Prerequisite 2	Compact Development	Required
Prerequisite 3	Covered and Open Community	Required
CR001	Walkable Streets	12
CR002	Compact Development	6
CR003	Mixed-Use Neighborhood Centers	6
CR004	Mixed-Use Transit Corridors	7
CR005	Reduced Parking Footprint	1
CR006	Street Furniture	2
CR007	Transit Facilities	1
CR008	Transportation Demand Management	2
CR009	Access to Land and Public Spaces	1
CR010	Access to Recreational Facilities	1
CR011	Visibility and Usability Design	1
CR012	Greenery Outreach and Treatment	2
CR013	Local Food Production	1
CR014	Real-Use and Shared Spaces	2
CR015	Neighborhood Schools	1

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Neighborhood Pattern & Design

Compact, Complete, Connected

- People connected to place and to each other
- Shared public spaces
- Nearby goods and services



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NPD PR 1 and NPD CR 1 – Walkable Streets

Prerequisite, plus up to 12 Points

PR – 4 requirements relating to frontage, sidewalks & entries

CR – 16 options, with points allocated by achieving certain number of items (1 pt for 2, 12 pts for 15)

- 16 items include:
- Buildings close to sidewalks (25'/18'/1')
 - Clear glass on ground level retail
 - On-street parking
 - Continuous sidewalks on both sides of street
 - Min building height to street width ratio of 1:3
 - Low street design speeds (20-25 mph)

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NPD PR 2 & NPD CR 2 – Compact Development

Prerequisite, plus up to 6 Points

PR – Minimum Project Density
Residential: 7 du/ac; Non-Residential: 0.50 FAR (Higher requirements for areas within walk distance to transit)

CR – Increased Project Density

Table 1. Points for density per acre of building foot

Residential density (du/ac)	Non-residential density (FAR)	Points
< 7 du/ac or 0.50	< 0.50 FAR or 0.50	0
7.01 du/ac or 0.51	0.51 FAR or 0.51	1
14.01 du/ac or 1.01	1.01 FAR or 1.01	2
21.01 du/ac or 1.51	1.51 FAR or 1.51	3
28.01 du/ac or 2.01	2.01 FAR or 2.01	4
35.01 du/ac or 2.51	2.51 FAR or 2.51	5
42.01 du/ac or 3.01	3.01 FAR or 3.01	6

PR = Building with FAR = 0.50 or greater

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NPD CR 3 – Mixed-Use Neighborhood Centers

Up to 4 Points

FOR ALL PROJECTS


Location and design requirements that 25% of the building units or structures be within walk distance of the location of diverse uses (see Appendix B in Table 1) including: front street view from main or other categories for projects within walking distance, or 1/4 mile of the project boundary from the location of a 1/4 mile walk distance of the location of diverse uses specified in Table 1, including a trip use footcandle step-out at least one mixed-use neighborhood center or other category. Establishments may be used to provide the project and may be within the same category.

The specific number of diverse uses must be provided by the time of occupancy according to the percentages indicated in Table 1. A minimum of one footcandle step-out is required.

Table 1. Points for diverse uses within 1/4-mile walk distance, by type of occupancy

Diverse uses	Percentage minimum of sites (per category)	Points
0-10	20%	1
11-20	30%	2
21-30	40%	3
31-40	50%	4

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NPD CR 4 – Mixed-Income Diverse Communities

Up to 7 Points

OPTION 1 – Diversity of Housing Types
Score = $1 - \sum (n/N)^2$, where n = the total number of dwelling units in a single category, and N = the total number of dwelling units in all categories.

AND/OR

OPTION 2 – Affordable Housing
Points allocated based on percentage of units priced relative to AMI (different standards for rental and for-sale)

AND/OR

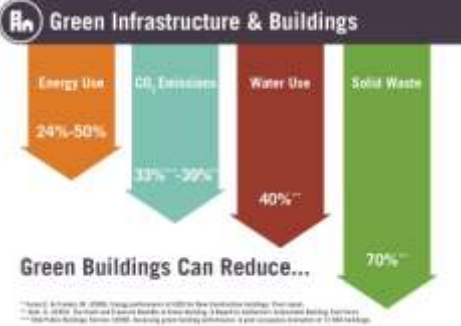
OPTION 3 – Mixed-Income Diverse Communities
Additional point for achieving 2 pts in Op1 and 2 pts in Op2.

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Green Infrastructure and Buildings 29 possible points

Prerequisite	Requirement	Response	Points
Prerequisite 1	Certified Green Building	Required	1
Prerequisite 2	Minimum Building Energy Efficiency	Required	1
Prerequisite 3	Minimum Building Water Efficiency	Required	1
Prerequisite 4	Construction Activity Pollution Prevention	Required	1
Credit 1	Capital Green Building	9	9
Credit 2	Building Energy Efficiency	2	2
Credit 3	Building Water Efficiency	1	1
Credit 4	Water Efficient Landscaping	1	1
Credit 5	Existing Building Renovation	1	1
Credit 6	Water Resource Preservation and Adaptive Use	1	1
Credit 7	Master Plan Disturbance in Design and Construction	1	1
Credit 8	Stormwater Management	4	4
Credit 9	Street Level Activation	1	1
Credit 10	Solar Orientation	1	1
Credit 11	On-Site Renewable Energy System	9	9
Credit 12	Energy Heating and Cooling	2	2
Credit 13	Integrative Energy Efficiency	1	1
Credit 14	Waste Management	2	2
Credit 15	Recycled Content in Infrastructure	1	1
Credit 16	Solid Waste Management Infrastructure	1	1
Credit 17	LEED Points in Buildings	1	1

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GIB PR 2 and PR 3– Minimum Building Efficiencies

Requirements

PR 2 - Minimum Building Energy Efficiency
New buildings must demonstrate an average 10% improvement over ANSI/ASHRAE/IESNA Standard 90.1-2007 (with errata but without addenda). Buildings undergoing major renovations must demonstrate an average 5% improvement over ANSI/ASHRAE/IESNA Standard 90.1-2007.

PR 3 - Minimum Building Water Efficiency
Indoor water usage in new buildings and buildings undergoing major renovations as part of the project must be an average 20% less than in baseline buildings.

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Innovation and Design Process 0 possible points

Credit 1	Innovation and Exemplary Performance	1-4
Credit 2	LEED Accredited Professional	1

Regional Priority Credit 1 possible point

Credit 3	Regional Priority	1-4
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LEED 2009 for Neighborhood Development Certification Levels

LEED Gold	40-49 points
LEED Silver	50-59 points
LEED Gold Plus	60-79 points
LEED Platinum	80 points and above

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LEED ND as a Planning Tool

Public Side

- Evaluate Master Plan or Zoning Codes (remove barriers)
- Locally controlled land – evaluation for development potential
- Develop incentive programs



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LEED ND as a Planning Tool

Private Side

- Assist in project planning and development
- Identify local land use barriers and (where applicable) use as justification for relief or challenge
- Capture available incentives and support applications for public funding (HUD, EPA, FHWA/FTA, state programs)

Form-Based Codes and Sustainability



Topics

- Form Follows Regulation
- Limitations of Conventional Zoning
- Form-Based Codes
 - How are they different?
 - How are they documented?
 - How are they administered?
 - Where in the U.S. and in New England are they in place?
- Form-Based Codes and Sustainability

Form Follows Regulation

If this is the sustainable future that we want...



Form Follows Regulation

...how do we make sure not to get more of this instead?



Limitations of Conventional Zoning

How Does Conventional Zoning Work?

- Creates separate "Zones" for grouping similar uses
- Identifies areas of a lot that cannot be built upon (i.e. setbacks)
- Establishes uses or activities allowed and not allowed in a zone
- Often: Establishes project-specific site plan reviews and/or discretionary special or conditional use permits for some uses
- Sometimes: Adds "design guidelines" for review processes (not established as regulatory standards)

Limitations of Conventional Zoning

Key Resulting Limitations

- Primary emphasis on regulation by use
- Density regulations that do not address form or design
- Administration rarely effectively balances certainty and flexibility
- Difficult to build public support for regulatory changes because it is difficult to answer the "what will it look like" question

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Limitations of Conventional Zoning

A sampling of existing conventional zoning measures

- Regulation of uses
- **Setbacks**
- **Open space**
- Parking requirements
- **Density**
- Performance standards
- Site plan review
- Special and Conditional Use Permits
- Design guidelines

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Limitations of Conventional Zoning

Setbacks



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Limitations of Conventional Zoning

Open Space



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Limitations of Conventional Zoning

Density



Cambridge, MA (Visualizing Density Library)



Tampa, FL (Visualizing Density Library)

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Form-Based Codes

How are they different?

One Definition . . .

According to the Form-Based Codes Institute:

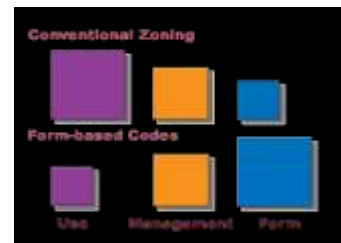
Form-based codes foster predictable built results and a high-quality public realm by using physical form (rather than separation of uses) as the organizing principle for the code. These codes are adopted into city or county law as regulations, not mere guidelines. Form-based codes are an alternative to conventional zoning.

www.formbasedcodes.org

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Form-Based Codes

How are they different?



Ferrel Madden Lewis, LLC

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Form-Based Codes

How are they different?

Conventional v. Form-Based Approaches

From Parolek, et al., *Form Based Codes* (Wiley 2007)

- Use Segregation, Auto Orientation
- Organized by Use
- Use is Primary
- Reactive to Individual Development Proposals
- Generally Proscriptive
- Create Buildings on lots
- Mixed-use, Walkable, Compact
- Organized by Spatial Hierarchy
- Physical Form is Primary
- Proactive Community Visioning
- Generally Prescriptive
- Create Places across multiple parcels

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Form-Based Codes

How are they documented?

Components of a Form-Based Code

- Regulating Plan
- Urban/Building Form Standards
- Public Space Standards
- Administration
- Definitions



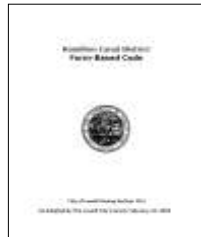
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Form-Based Codes

How are they documented?

Context-Specific Components

- Block Standards
- Building Type Standards
- Landscape Standards
- Architectural Standards [OPTIONAL]
- Not Exclusive to FBCs
 - Signs
 - Sustainability



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Form-Based Codes

How are they documented?

Land Use Plan



Conceptual Plan

Regulating Plan

Station Area FBC, Farmers Branch, TX
Fennell Modem Lewis, LLC

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Form-Based Codes

How are they documented?

Transect-Based Regulating Plans
Montgomery, AL



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Form-Based Codes

How are they documented?

Parcel-Based Regulating Plans
Lowell, MA



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Form-Based Codes

How are they documented?

Street Type-Based Regulating Plans
Hercules, CA



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Form-Based Codes

How are they documented?

Frontage-Based Regulating Plans
Peoria, IL



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Form-Based Codes

How are they documented?

Urban/Building Form Standards

- Height
- Siting
- Access elements
- Parking location
- Uses



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Form-Based Codes

How are they documented?

Public Space
Standards

- Parks & Squares
- Streets
- Sidewalks & Tree Yards
- On-street Parking
- Block standards
- Landscaping



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Form-Based Codes

How are they administered?

Implementation Techniques

- Most Common
 - Special Districts and Overlays
 - Permissive ("Parallel" v. Floating)
 - Mandatory (Mapped)
- Others
 - Wholesale Rewrite of Regulations
 - Strategic "Intervention" to Rewrite Only Certain Districts/Provisions

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Form-Based Codes

How are they administered?

Administrative Process – Careful Bargain

- Major public review of project objectives occurs at the regulatory code development level, with less of a need for scrutinizing individual project applications later
- Streets require subdivision review before the start of a project or on a case by case basis
- Individual site development projects require only simplified review for a "certificate of consistency" with the code
- Special permits and even site plan review should be eliminated from the process if appropriate
- Ultimate goal: Certainty of outcome

Form Based Codes

Where in New England are they in place?

Selected US Examples

- California: Benicia, Petaluma, Hercules, Ventura
- Columbia Pike, Arlington, VA
- Heart of Peoria, IL
- Fort Worth, TX (Near south side district)
- Farmers Branch, TX (Station Area, West Side Plan)
- Woodford, Kentucky
- Mississippi gulf coast communities
- St. Lucie County, Florida
- Miami 21, Miami, FL
- In Development: Denver, CO

Adopted New England Codes

- Southfield (South Weymouth Naval Air Station), MA
- Hamilton Canal District, Lowell, MA
- Town of Hamden, CT
- Jamestown Village Area, RI
- Downtown Dover, NH
- In Development: Lowell Junction, MA & City of Newport, VT

Form-Based Codes and Sustainability
Meant for each other (no, seriously...)

As LEED-ND demonstrates, a sustainable built environment requires attention to performance at multiple local levels:

- Building
- Block
- Neighborhood

Form-Based Codes and Sustainability
Meant for each other (no, seriously...)

Form-Based Codes deliver 5 key components for creating sustainable built environments:

- Intentional proximity and mixing of compatible uses
- Strong connectivity – uses, streets, buildings, pedestrians to all
- Close interrelationship of public and private realms
- Enabling more compact, land-conserving development
- Regulatory consistency and efficiency (keep the vision intact)

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