Sustaining the Built Environment
Lessons Learned, Continued Opportunities and Useful Planning Tools

9 MAY 2014: 1:45 PM – 3:15 PM
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MODERATED BY:
James Cohen, Director of Urban Studies and Planning Program, University of Maryland

WHAT IS A GREEN NEIGHBORHOOD: LEED ND & STAR FRAMEWORKS
Trey Akers, Green Building Certification Institute

FROM DENMARK TO DC: SUSTAINABLE URBANISM FOR THE 21ST CENTURY
Mark Strauss, FXFOWLE Architects

GREEN NEIGHBORHOODS: REDEFINING THE I-270 TECHNOLOGY CORRIDOR
John Carter, Montgomery County Planning Department
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Trajectory Not Trend

- Boomers & Millenials Increasingly Value Walkable Places
- Coordinated Land Use & Transportation Investments
- Benchmarking Existing Conditions/Tracking Policy Goals
Neighborhoods = Key
What is a Neighborhood?

Sources: Clarence Perry, Regional Plan of NY 1921; Farr Associates, 2007
LEED for Neighborhood Development

- Nationally-compiled standards and metrics
- Primarily devised for private developers seeking approvals
- Readily-available set of land development standards

Smart Location & Linkage (SLL)  
Where to Build . . .

Neighborhood Pattern & Design (NPD)  
What to Build . . .

Green Buildings & Infrastructure (GIB)  
How to Build . . .

Source: A Citizen’s Guide to LEED-ND
LEED for Neighborhood Development

- **NPD**
  - 3 prerequisites
  - 44 points

- **GIB**
  - 4 prerequisites
  - 29 points

- **SLL**
  - 5 prerequisites
  - 27 points

- **RPC**
  - 4 points

- **IDP**
  - 6 points
Smart Location & Linkage

Policy – Site Selection

- Smart Location
- Ecological Conservation
- Wetlands Conservation
- Prime Farmland
- Floodplain Avoidance

Practice

- Map Eligible Parcels: Constrained/Unconstrained

Source: A Methodology for Inventorying LEED-ND Location-Eligible Parcels in a Local Jurisdiction
Neighborhood Pattern & Design

Policy – Walkable Streets
- Principal Functional Entry
- Spatial Enclosure
- Continuous Sidewalks
- Limited curb-cuts

Practice
- Identify & Map Gaps
- Codify Changes

Sources
SALT District LEED-ND Recommendations Study; Downtown Berkeley Design Guidelines
Neighborhood Pattern & Design

Policy – Housing Variety
- Encourage Many Types
- Accessory Dwelling Units
- Big-House Design
- Dedicated Affordable Units

Practice
- Permit Greater Flexibility
- Make the Case to All Audiences
Green Buildings & Infrastructure

Policy – Site & Block Design

▪ Solar Orientation
▪ District Heating & Cooling
▪ Recycled Content/Infrastr.
▪ Solid Waste Mgt./Infrastr.

Practice

▪ Cleveland GDO
▪ W. Sacramento Bridge Dist.
▪ Loring Park, MN

Source LEED-ND Reference Guide
## STAR Community Rating System

### Goal Areas & Objectives

<table>
<thead>
<tr>
<th>Built Environment</th>
<th>Climate &amp; Energy</th>
<th>Economy &amp; Jobs</th>
<th>Education, Arts &amp; Community</th>
<th>Equity &amp; Empowerment</th>
<th>Health &amp; Safety</th>
<th>Natural Systems</th>
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</thead>
<tbody>
<tr>
<td>Ambient Noise &amp; Light</td>
<td>Climate Adaptation</td>
<td>Business Retention &amp; Development</td>
<td>Arts &amp; Culture</td>
<td>Civic Engagement</td>
<td>Active Living</td>
<td>Green Infrastructure</td>
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<td>Community Water Systems</td>
<td>Greenhouse Gas Mitigation</td>
<td>Green Market Development</td>
<td>Community Cohesion</td>
<td>Civil &amp; Human Rights</td>
<td>Community Health &amp; Health System</td>
<td>Invasive Species</td>
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<tr>
<td>Compact &amp; Complete Communities</td>
<td>Greening the Energy Supply</td>
<td>Local Economy</td>
<td>Educational Opportunity &amp; Attainment</td>
<td>Environmental Justice</td>
<td>Emergency Prevention &amp; Response</td>
<td>Natural Resource Protection</td>
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<td>Housing Affordability</td>
<td>Industrial Sector Resource Efficiency</td>
<td>Quality Jobs &amp; Living Wages</td>
<td>Historic Preservation</td>
<td>Equitable Services &amp; Access</td>
<td>Food Access &amp; Nutrition</td>
<td>Outdoor Air Quality</td>
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<tr>
<td>Public Spaces</td>
<td>Resource Efficient Public Infrastructure</td>
<td>Workforce Readiness</td>
<td>Poverty Prevention &amp; Alleviation</td>
<td>Natural &amp; Human Hazards</td>
<td>Working Lands</td>
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<tr>
<td>Transportation Choices</td>
<td>Waste Minimization</td>
<td></td>
<td></td>
<td></td>
<td>Safe Communities</td>
<td></td>
</tr>
</tbody>
</table>
STAR: Compact & Complete Communities

GOAL
Achieve livability, choice, and access for all where people live, work, and play

OBJECTIVE
Concentrate development in compact, human-scaled centers and neighborhoods

OUTCOME MEASURES
Density, Destinations, & Transit:
12/7 du/ac; 25 jobs/ac; 7 uses; 60 trips

ACTION MEASURES
Identify areas for compact, mixed-use development on official future land use map
STAR: Compact & Complete Communities

Activity Centers
- CCC Area = 0.5 mi. Walk Dist.
- Geographic Diversity
- No Overlap
- Land Use Authority

Outcome Measures
- Density, Dest., & Transit
- Walkability
- Streetscape Design
- Affordable Housing

<table>
<thead>
<tr>
<th>Population</th>
<th>Number of CCCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 1 million</td>
<td>10</td>
</tr>
<tr>
<td>750,000 – 1 million</td>
<td>9</td>
</tr>
<tr>
<td>500,000 – 749,999</td>
<td>8</td>
</tr>
<tr>
<td>250,000 – 499,999</td>
<td>6</td>
</tr>
<tr>
<td>100,000 – 249,999</td>
<td>4</td>
</tr>
<tr>
<td>50,000 – 99,999</td>
<td>2</td>
</tr>
<tr>
<td>&lt; 50,000</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: STAR Technical Guide
**STAR: CCC Outcome 1 - DDT**

**Outcome Measures**
- Residential Density
- Employment Density
- Destinations
- Transit

**Action Measures**
- Comp. Plan Supports Compact, MU Development
- Identify Areas for Compact, MU Development on Official Future Land Use Map

*Source* District Office of the Environment
<table>
<thead>
<tr>
<th>Neighborhood</th>
<th>Jobs/acre</th>
<th>Units/acre</th>
<th>Uses</th>
<th>Wkday</th>
<th>Wknd</th>
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<tr>
<td>Petworth</td>
<td>73</td>
<td>20</td>
<td>21+</td>
<td>466</td>
<td>206</td>
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<tr>
<td>U Street</td>
<td>27</td>
<td>29</td>
<td>21+</td>
<td>466</td>
<td>206</td>
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<tr>
<td>Foggy Bottom</td>
<td>174</td>
<td>58</td>
<td>21+</td>
<td>528</td>
<td>374</td>
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<tr>
<td>Downtown</td>
<td>450</td>
<td>110</td>
<td>21+</td>
<td>344</td>
<td>244</td>
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<tr>
<td>H Street</td>
<td>153</td>
<td>26</td>
<td>21+</td>
<td>406</td>
<td>382</td>
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<tr>
<td>SW Waterfront</td>
<td>481</td>
<td>21</td>
<td>21+</td>
<td>398</td>
<td>256</td>
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<tr>
<td>Eastern Market</td>
<td>60</td>
<td>20</td>
<td>21+</td>
<td>340</td>
<td>246</td>
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<tr>
<td>Anacostia</td>
<td>6</td>
<td>12</td>
<td>21+</td>
<td>652</td>
<td>509</td>
</tr>
</tbody>
</table>
STAR: CCC Outcome 2 - Walkability

Outcome Measures
- Sidewalks & Crosswalks
- Street Trees
- Target Speed
- Intersection Density

Action Measures
- Revise Standards for Sidewalks, Crosswalks, Street Trees, Target Speed, & Block Length
- Require Build-to Lines

Source: City of Davenport, IA
STAR: Outcome 2 Walkability Results (IA)
STAR: CCC Outcome 4 - Housing Afford.

Outcome Measures
- Total Units
- New Units
- Affordability Levels

Action Measures
- Implement Retention Policies
- Increase Households with Transit Access

Paseo Verde, Philadelphia, PA
STAR: Outcome 4 Housing Results (Indy)
- Technical Guidance Manual for Sustainable Neighborhoods
  http://www.usgbc.org/resources/technical-guidance-manual-sustainable-neighborhoods

- A Citizen’s Guide to LEED-ND

- A Methodology for Inventorying LEED-ND Location-Eligible Parcels in a Local Jurisdiction

- STAR Community Rating System (& Technical Guidance)
  https://www.starcommunities.org/rating-system

- Additional:
  - Information concerning the following communities is available in the aforementioned Tech. Guidance Manual: Berkeley, Cleveland, Sacramento, Loring Park, Columbia Point.
  - The LEED-ND Floating Zone as well as the Planners Guide & Model Ordinance are also useful resources.
  - Demographic information is available at RCL Co. Presentation Archives or ULI’s Housing in America: The Next Decade.
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Calculations prepared by Environmental Building News (EBN) show that in some environments, workers commuting to an office by car can account for more energy than an entire building uses.

Urban Living can help households reduce rates of greenhouse gas emissions by 2.5 to 3.7 tons per year.
Learning from Copenhagen

40,000 residents
40,000 jobs
40,000 bicycles

NORDHAVNEN COMPETITION
City Regenerative: Extend Connect Weave

40,000 RESIDENTS
40,000 JOBS
40,000 BICYCLES
Neighborhood: Preserve Insert Transform

DISTRICT SEA WATER HEATING/COOLING PLANT
Components: Integrate Fabricate Evolve
Beyond Copenhagen

“*The density of cities and the interdependencies that they provide point to the best sustainable solutions, rather than designs for individual buildings.*”

David Owen “Green Metropolis”

2010 MIPIM Architecture Review Regenerative and Master Planning Award
2009 Boston Society of Architects (BSA) Unbuilt Project Award
2009 World Architecture News (WAN) Urban Design Award
Driving MMPT in Atlanta
Greensboro Metro/SAIC Redevelopment Site, Tysons Corner
1. Transit and Pedestrian Orientated Development.
2. Storm Water Management.
3. Public Green Spaces.
5. New Buildings LEED Certified or Silver.
6. Potential for Energy District.
7. Public Transportation.
Carlyle Plaza Two, Alexandria VA
1/ Holland lane pedestrian ramp and cycleway
2/ Public space along urban cascade
3/ Urban cascade with biofiltration and lookout deck
4/ Section through urban cascade and biofiltration
5/ Exploded axonometric
6/ Concept diagram
CONCEPTUAL SECTION DIAGRAM

ELEVATED PARK

PARKING

SPORTS FIELD

WATER TREATMENT FACILITY

CONTAMINATED GROUND

URBAN CASCADE AND BIOFILTRATION

SECTION, URBAN CASCADE SCREENS PARKING
1. Transit and Pedestrian Orientated Development.
2. Storm Water Management.
3. Public Green Spaces.
5. New Buildings LEED Certified or Silver.
6. Potential for Greywater Reuse (tree / water droplet) District.
7. Public Transportation.
8. Educational Facility (human well being / water droplet)
7900 Wisconsin Avenue, Bethesda MD
1️⃣ High performance exterior wall.
2️⃣ Optimized daylight.
3️⃣ Low VOC finishes.
4️⃣ Recycling chutes.
5️⃣ Low flow fixture.
6️⃣ Green roof.
7️⃣ Local materials.
8️⃣ Bicycle parking.
9️⃣ Active design.
🔟 Micro-biofilter storm water management system.
Use of Public Transit in U.S. Reaches Highest Level Since 1956
Published March 10, 2014

The New York Times

DOWNTOWNS GET A FRESH LEASE
SUBURBS LOSE OFFICE WORKERS TO BUSINESS DISTRICTS, REVERSING A POST-WAR TREND

Published: Dec 13, 2008

"Young people don’t want to be out on the fringe...and as people figure that out, it’s beginning to get factored into office relocations.”
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Creating Green Neighborhoods:

Continuing the Transformation of the I-270 Technology Corridor:

- Placemaking
- Connections
- Energy
- Environment

M-NCPPC:
John A. Carter
Sandra Pereira
Molline Smith
Neighborhood Planning

Introduction
- Sustainability - Goal for the 21st Century
- Goal for the I-270 Corridor
- Principles of Sustainability

Collaboration

Public Actions
- Legislation
- Neighborhood Planning
- Public Buildings

Case Studies
- Cabin Branch
- Crystal Rock
- Park Potomac
- Rock Spring Centre
Sustainability - Goal for the 21st Century
Vision - Augment and enhance the I-270 Technology Corridor in a manner that can be sustained over time. The Corridor has evolved from a rural area into a workplace for 360,000 workers and a community of choice for 425,000 residents.
I-270 Technology Corridor
As a center for research and development, Montgomery County is positioned to address the following:

- **Competition**
  The transfer of advanced technology is beginning to challenge this nation’s previous dominant position in research and development.

- **Energy and the Environment**
  The industrialization of China, India, and other nations places increasing pressure on scarce global resources.
Importance of Clusters and Linkages:

High-technology and knowledge based companies are spatially concentrated:

- Innovative industries require connections and linkages among firms, specialized suppliers, customers, and workers.
- Innovation requires a sharing of information between firms and workers in the high technology industry.
Companies (Headquarters, Offices, Laboratories, Light Manufacturing)
- Aeras Global Foundation
- Avalon Pharmaceuticals
- Nextone
- Tetracore
- Visual Networks
- GeneDX
- Rexahn Pharmaceuticals
- Ariadne Genomics

- Venter Institute
- BioSolutions
- GlaxoSmithKline
- Qiagen
- X-Gene
- NeoReliance
- MacroGenics
- Origene Technologies
- Cytimmune Sciences
- Emergent Biosolutions
- Celera Genomics

Schools and Universities:
- Universities of Maryland
- Johns Hopkins University
- Montgomery College

Institutions and Federal Government:
- Two Hospitals
- NIH/National Cancer Institute
- NIH
- NIST
# Neighborhood Planning

## Introduction

**To Remain Competitive: Sustainability - Goal for the I-270 Corridor**

<table>
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<tr>
<th>Neighborhoods and Place Making</th>
<th>Linkage/Pedestrian Orientation</th>
<th>Energy Conservation</th>
<th>Environmental Protection</th>
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<tr>
<td>Employment Uses</td>
<td>Pedestrian Access</td>
<td>Site Orientation</td>
<td>Forest Conservation</td>
</tr>
<tr>
<td>- Retail</td>
<td>- Links to adjacent area</td>
<td>- Solar Access</td>
<td>- Stormwater</td>
</tr>
<tr>
<td>- Public Use Space</td>
<td>- Streetscape</td>
<td>- Green Neighborhood</td>
<td>- Tree Canopy</td>
</tr>
<tr>
<td>- Housing Variety</td>
<td>- Bicycle Network</td>
<td>- Green Buildings</td>
<td>- Coverage</td>
</tr>
<tr>
<td>- Public Art</td>
<td>- Dedication of ROW</td>
<td>- Conservation</td>
<td>- Habitat Protection</td>
</tr>
</tbody>
</table>

M-NCPPC
<table>
<thead>
<tr>
<th>2012 Rank</th>
<th>Metro Area</th>
<th>Energy Star Certified Buildings</th>
<th>Floor Area (Millions)</th>
<th>Annual Savings (millions)</th>
<th>Emissions Prevented (Equal to ___ homes Annual Electric Use)</th>
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<tr>
<td>1</td>
<td>Los Angeles</td>
<td>528</td>
<td>112.5</td>
<td>$134.8</td>
<td>52,300</td>
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<tr>
<td>2</td>
<td>Washington, D.C.</td>
<td>462</td>
<td>116.1</td>
<td>$127.4</td>
<td>83,100</td>
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<tr>
<td>3</td>
<td>Chicago</td>
<td>353</td>
<td>130.4</td>
<td>$92.3</td>
<td>118,400</td>
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<tr>
<td>4</td>
<td>New York</td>
<td>325</td>
<td>111.5</td>
<td>$144.6</td>
<td>63,600</td>
</tr>
<tr>
<td>5</td>
<td>Atlanta</td>
<td>304</td>
<td>63.6</td>
<td>$52.3</td>
<td>55,500</td>
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</table>
Bills to Promote Sustainability and Energy Conservation

- 2-14 Environmental Sustainability
- 3-14 Buildings: Energy Efficiency - Energy Standards
- 4-14 Streets and Roads: County Street Lights
- 5-14 Environmental Sustainability : Social Cost of Carbon Assessments
- 6-14 Environmental Sustainability : Office of Sustainability - Established
- 7-14 Contracts and Procurement: Certified Green Business Program
- 8-14 Buildings: County Buildings - Clean Energy Renewable Technology
- 9-14 Environmental Sustainability: Renewable Energy - County Purchase
- 10-14 Buildings: Solar Permits - Expedited Review
- 11-14 Buildings: Electric Vehicle Charging Station Permits - Expedited Review
- 12-14 personnel: Telecommuting - Amendments
Placemaking:

- **Types**
  - Corridor Cities - Rockville, Gaithersburg, Germantown and Clarksburg
  - Neighborhoods - King Farm, Shady Grove Metro, Science City, Germantown Town Center, Clarksburg Town Center

- **Implementation**
  - Wedges and Corridors
  - Master Plan Program
  - TDR Program and Food Production

Connections:

- Transit - Metro Rail and Bus System, Corridor Cities Transitway (CCT), Bus Rapid Transit System
- Roads - I-270, MD 355, Great Seneca Highway
- Streets
- Bikeways and Trails
- Sidewalks
Energy:
- Emphasis on Walkable Neighborhoods
- Design of Public Buildings:
  - Solar Cells
  - Wind Turbines
  - Geothermal Systems
  - LED Street Lighting
  - Minimum LEED Silver Certification
- Legislation and Zoning Text Amendments

Environment:
- Buffer Between Corridor Cities
- Tree Canopy Requirements
- Forest Conservation Requirements
- Stream Protection Standards
- Environmental Guidelines Special Protection Areas
Montgomery College Germantown
- Solar Panels
- Wind Turbines
- Green Roof Area
- Emphasis on Water Infiltration
- Forest Conservation

WSSC Water Treatment Plant, Germantown
- Solar Panel Farm
- Forest Conservation
- Reduced Imperviousness

Solid Waste Transfer Station, Shady Grove
- Solar Panels
- Tree Canopy
- Recycling
Public Actions - Buildings

Public Schools
- Geothermal Systems
- Daylighting
- Reduced Imperviousness
- Forest Conservation
- Tree Canopy
- Solar Access
- Minimum LEED Silver Buildings
- Emphasis on Walking
- Joint Development
- Collaborative Planning

Neighborhood Planning
Sustainable Neighborhoods or Clusters in the I-270 Technology Corridor:

Approved Projects:
1. Cabin Branch, Clarksburg
2. Crystal Rock, Germantown
3. Park Potomac, Potomac
4. Rock Spring Centre, North Bethesda

Future Projects:
5. Century Technology Campus, Germantown
6. Milestone North, Germantown
7. Great Seneca Science Corridor, Gaithersburg
Neighborhood Location and Place Making:
- Mixed-use neighborhood area with retail, office, hotel, research and technology, and light industrial
- Variety of housing types for all (12.5 to 15% Moderately Priced Units)
- Balance of Jobs and Housing (Ratio of 1.6/1)
- Public use space/places
- Recreation facilities
- Outstanding architecture

Linkages and Pedestrian Orientation:
- Links to the regional transit system (Metro/CCT/BRT)
- Walkable neighborhoods
- Bicycle network
- Access to public spaces
- Access to recreation
- Tree lined and shaded streets
- Links to adjacent areas
- Energy Conservation, Solar orientation, and Green Buildings:
  - Site planning for solar orientation
  - Street orientation
  - Orientation of blocks
  - Building orientation for daylighting
  - Building height and shading
  - Green and cool roof areas
  - Green neighborhoods and buildings

- Environmental Protection and Preservation:
  - Habitat protection (30 - 40 % of site area)
  - Tree canopy (40 - 60 %) heat island reduction
  - Wetland and stream protection
  - Forest conservation
  - Street trees
  - Stormwater management/infiltration (ESD+)
Neighborhood Planning

Case Studies

Cabin Branch Neighborhood, Clarksburg

Placemaking

Connections

Energy

Natural Environment

M-NCPPC
Crystal Rock, Germantown
Case Studies

Neighborhood Planning

M-NCPPC

Park Potomac
Case Studies

Rock Spring Centre, North Bethesda
“You got to be careful if you don’t know where you are going because you may not get there.”
Yogi Berra, Baseball Manager / Urban Theorist
The Land Use Challenge:
How to define a land use strategy that…

• Capitalizes on Context
• Creates Destination Opportunities
• Remains sensitive to Community Interests

The Technical Challenge:
How to enhance environment to…

• Improve transit, vehicular and pedestrian linkages
• Allow convenient and safe access through area
• Reduce Burden on Infrastructure
• Embrace sustainability
The Urban Design Challenge:
How to capitalize on investments so that...

• Development becomes more than a series of isolated projects
• Projects become destinations that are integrated with the Community

The Political Challenge:
How to define a plan which...

• Builds upon past development efforts, public policies, and political realities
• Finds common ground among diverse groups and interests
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Q&A
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