The SW Ecodistrict in Washington, D.C.
Adding Energy, Water and Waste to the Land Use / Transportation Equation

Otto Condon, Principal
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An Existing “Transitcentric” Area

L’Enfant Metro Station - 23,000 daily boardings*
Smithsonian – 16,000 daily boardings
(*not including rail-to-rail transfers)
Mid Century Modernism

Wilbur Wright Building
Federal Aviation Administration

James Forrestal Building
Department of Energy

Robert Weaver Building
Department of Housing and Urban Development

Reservation 719 - Banneker Park

10th Street SW
Executive Order 13514

Leadership in Environmental, Energy and Economic Performance

• A transformative shift in how the government does business

• Makes the reduction of greenhouse gas emissions a priority for Federal agencies

• It sets targets for energy, water, and waste reduction

October 2009
Lead Agency:
National Capital Planning Commission (NCPC)

in coordination with:
District Office of Planning

Consultant Team:
ZGF Architects, LLP
Principal Consultant, Urban Design and Sustainability

ARUP Sustainability and Engineering
HR+A Advisors Economic Strategy
Kittelson & Associates Transportation

The SW Ecodistrict Task Force
DC Deputy Mayor for Planning & Economic Development
District Department of the Environment
District Department of Transportation
Federal Aviation Administration
National Park Service
Smithsonian Institution
U.S. Commission of Fine Arts
U.S. Congress, Architect of the Capitol
U.S. Department of Agriculture
U.S. Department of Education
U.S. Department of Energy
U.S. Environmental Protection Agency
U.S. Department of Housing and Urban Development
U.S. General Services Administration
U.S. Postal Service
New residential/hotel uses are needed to create activity, support enhanced restaurant/retail uses, and achieve sustainability goals.

The short-term market for residential is limited due to projects already in the pipeline.

A minimum of 1000 units (approximate) are needed to establish viable residential atmosphere.

Creating appealing, ammenitized public space is crucial to supporting residential uses.

There is support for 300 hotel rooms by 2020, and 300 more by 2030.

Office uses are the easiest to develop, and will remain the path of least resistance without public intervention.

There is support for up to 100,000 s.f. of retail (primarily limited service restaurants) before 2015.

What would make this area desirable as a place to live?

- If there were affordable residential options (19%)
- Proximity to National Mall and waterfront (7%)
- Variety of transit options (1%)
- If there were public space improvements (2%)
- If there were neighborhood amenities (25%)
- I would not live in this part of the city (22%)
- Proximity to work (21%)
- Other (3%)
The Path to Sustainability - Today
The Path to Sustainability – Multiple Development Strategies
Sustainability Framework – Neighborhood Development

Public Spaces

Cultural Facilities

Land Use

Transportation

Street Network, Function, and Character
• Dedicate most important sites for cultural institutions.

• Restore L’Enfant street grid.

• Establish a multi-purpose open space network.

• Create distinctive settings for public spaces.

• Enhance symbolic and programmatic linkages among public places.
• Promote a mix of uses and active streets.

• Maximize use of urban land and federal facilities.

• Retain agency headquarters near transit and executive and legislative offices.

• Program and design streets to respect the civic qualities of the National Mall and infuse the vitality of the city.
- Maximize transportation choices.
- Maximize use of the rail corridor and transit network.
- Create an intermodal transit center.
- Provide easy pedestrian connections between types of transit.
- Study tour bus parking locations.
• Restore the L’Enfant Plan street network.

• Design streets for a range of local and federal functions.

• Design streets to establish an identity and a sense of place that reinforces their function.
Environmental Sustainability Framework

Energy

Water

Waste

Green Infrastructure
The District Energy Today

- Coal generated electricity
- Natural Gas
- Central Utility Plant (burns natural gas)
- Renewable Energy

SW Ecodistrict Goal

Strive for a zero net energy district as measured in carbon
Energy – District Scale Strategy

Potential Federal/Mixed Use Microgrid
Potential Private Microgrid
Central Utility Plant
Existing System
Potential Expansion
Sewer Mining – Heat
Energy – Block and Building Scale Strategy

- Solar thermal
- Solar PV
- Ground source heat
- Central utility plant
**Stormwater**
Retain/Reuse the rainfall from a 95th percentile rain event (1.7"")

and

**Potable Water**
Reduce potable water use to half of what we use now (per sf)

- **92.4 million gallons per year**
- **22 → 11 gallons/sf/yr**
Large tanks (under 10th Street) could hold enough stormwater to provide 71% of the total water used in the ecodistrict.
Water – Block and Building Scale

- Roof stormwater collection
- Street stormwater collection
- Flow through planter
- Stormwater / greywater
SW Ecodistrict - Waste Targets

- **Construction Waste**: Recycle 75% of construction material
- **Building Waste**: Reduce solid waste to landfill by 80%
SW Ecodistrict – Green Infrastructure

Achieve a minimum:

- Pervious surface area of 35%
- Tree canopy area target of 40%
- Green Area Ratio of .45
Green Streets

- Native Vegetation
- Healthy Soils
- Shade Trees
- Pervious Areas

Building Strategies

- Green Roofs
- Edible Rooftops
- Green Walls
- Rain Gardens
L’Enfant Intermodal Station – Civilizing Transit
Reservation 113 – A Civic Place Connected to Transit
10th Street, SW – A High Performance Street
The Economics

**Investments**
- Sustainability (Buildings / Utilities)
- Open Space and Streetscapes
- Real Estate and New Development

**Benefits**
- Revenue from sale of excess land for private development
- Cost savings from energy, water and waste efficiencies
- Creation of sustainable, mixed-use neighborhood
- Enhanced opportunities for federal facilities and cultural destinations

Public and Private Investment Yields Sustainable Benefits
• Retains/improves **7.9M** sf of federal office space; accommodate up to **19,000** additional workers.

• Creates **1.0M** sf of offices for **5,000-6,000** private/federal workers;

• Provides **1.8M** sf residential/ hotel for **1,500** residents, **2000** visitors

• Establishes **1.2M** sf of museum space for **4-5** new cultural sites

• Creates **14.3** acres of new/improved parks and plazas, **5** memorial sites.

• Reconnects street grid and creates **17** new intersections for easy accessibility.

• **EXPANDS** rail corridor and L’Enfant Station to **INCREASE** regional commuter transit capacity.
The Metrics – A Comparison of Today and in 2030

- Allows for the capture and reuse of **ALL** the rainwater in the Ecodistrict throughout the year.
- Transforms the federally-owned central utility plant into a **HIGHLY EFFICIENT** and **FINANCIALLY SUCCESSFUL** energy model.
For more information:

www.ncpc.gov/swecodistrict

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