

A Zoning Rewrite Team Green Paper

**Initial ideas for discussion and testing
to create a simpler ordinance based
on sustainability and quality of place.**



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VI. Sustainability

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Introduction

A group of planners with diverse backgrounds held weekly meetings over the summer months to formulate comprehensive recommendations for incorporating greater sustainability measures into the future Montgomery County zoning code. The depth of our research and discussions led us to recommendations that not only deal with zoning but also master plans and policy decisions.

We believe our recommendations allow for local level decisions that will, in turn, have global impact when undertaken on a regional and national scale. To arrive at these recommendations, we evaluated problems and barriers in 5 critical areas:

- Food Production
- Energy
- Waste Reduction
- Water Quality
- Transport/Mobility

This paper identifies the current problems in these areas, why they cannot be ignored and opportunities to incorporate sustainable practices through a new zoning code, master plans and policies. Potential solutions are identified in the Sustainability Team Solution section of this paper in an outline format.

Problem Statement

The current Montgomery County zoning code fails to comprehensively address 21st century issues of globalization, climate change and resource scarcity. Montgomery County must tackle these challenges now to enable citizens, businesses and institutions to improve their quality of place and realize

their potential in ways that positively advance both society and the environment. In short, Montgomery County must become a more sustainable place for both residents and visitors to ensure an economic livelihood and high standard of living for future generations-the biggest risk is not taking risks.

For Food Production, Montgomery County contains 93,000-acre Agricultural Reserve with an average farm size of 121 acres, yet the vast majority of food consumed in the county is imported from areas outside the County and State, resulting in unnecessary transport costs and fossil fuel use. The Agricultural Reserve is a vital economic, cultural, and ecological resource that can be supported by local consumers if linkages between the two are made stronger. Citizens could consume fresh, locally grown foods that support a healthier lifestyle, food security, and economic growth. Access to private and community gardens could empower citizens to grow their own food, reconnect people to the outdoors and land, and foster relationships with our Parks Department and Home Owners Associations.

For Energy, fossil fuel extraction, processing, transport, and the ever-increasing demand for energy are impacting local, regional and national air, water, and habitat quality. Rapidly evolving alternative energy technologies can reduce carbon loads and improve the carbon footprint of individuals, businesses

and industry. It is imperative to take action to slow down climate change. Planning agencies must not ignore this reality but embrace it and allow extensive flexibility to influence market demand and behavior.

For Waste Reduction, construction activity, the robust packaged goods industry as well as population growth will continue to jeopardize natural resources and public services if current levels of waste generation are maintained. Waste must not only be reduced to decrease the burden on landfills but must also be viewed as a resource for alternative fuel production and materials reuse.

For Water Quality, Montgomery County practices will continue to greatly influence the quality of the Chesapeake Bay, the largest estuary in the United States. The primary sources of degradation to the Bay continue to be erosion and runoff exacerbated by construction practices, the prevalence of impervious surfaces, untreated stormwater runoff, as well as removal of vegetation. Regulations that increase opportunities for public and personal responsibility and look comprehensively at the impacts of site design must be implemented.

For Transport/Mobility, a lack of connections for pedestrians and bicyclists to commercial centers and transit hubs makes it an easier choice for many residents to use only their personal automobiles to conduct daily activities. Increasing transport and mobility options for residents and visitors will reduce carbon emissions and maintenance/repair costs of roads, while at the same time enhancing social equity.

Background

Montgomery County is located almost entirely in the geologic region called the Piedmont; a low plateau region composed of hard, crystalline igneous and metamorphic rock. The mostly clay to moderately fertile soils along with the County's geographic position between a northern and subtropical zone supports diverse species and ecological niches. This surprising array can sustain some species typical of central Canada as well as species found in the bayou swamps of Louisiana.

The Piedmont topography is characterized by rolling hills and low valleys with abundant streams, wetlands, and groundwater. There are over 1,500 miles of open streams within the county providing vital habitat to aquatic and wildlife. The streams replenish water sources which ultimately provide us with drinking water. Wetlands are present throughout the county and provide essential functions including water quality protection, flood flow attenuation, nutrient removal, groundwater recharge, climate change mitigation, and wildlife habitat.

Average yearly precipitation in Montgomery County is approximately 43 inches. Rainfall is rather evenly distributed throughout the year, but May is typically the wettest month. On average, Montgomery County enjoys 201 sunny days per year. In warmer months, the average temperature is 73.1 degrees and the average temperature is 34.2 degrees during the colder months of the year.

Sustainability Team Solution

I. Food Production

A. Goal: localization of the food system

B. Purposes

1. Environment: protection of soil resources; retention of rural view sheds; greening of urban areas
2. Health: enhancement of community connections, social interaction
3. Economy: security of agricultural jobs/culture; lower transport costs

C. Objectives & Implementation Strategies

1. Encourage community gardens in private development, parks, public land, and neighborhoods

a. Zoning

- Consider density incentives for inclusion of community gardens in new developments
- Ensure community gardens count towards open space, green area requirements and considered PERMEABLE
- Allow for setback/height waivers for food production facilities on small lots and building rooftops through site plan review
- Allow clustering/smaller lot sizes if community gardens of certain size are provided
- Allow HOAs to lease open space for gardens—forbid HOAs from prohibiting such practices on HOA parcels

b. Master Plans

- Identify unused roadway rights-of-way; park land and open space for community gardens
- Identify areas that should receive density incentives through private development of community gardens
- Identify locations for community farmer's markets (park & ride lots) & other areas that could accommodate farmer's markets
- Provide design guidelines for food production facilities (greenhouses, cold-frames, compost bins, etc) in urban and suburban areas

c. Policy

- Allow community gardens on park land and other public lands (park and ride lots,)

2. Preserve and increase large-scale farming of produce and biofuel crops

a. Zoning

- Permit farmer's markets and most farming activities in most zones

- Allow locally-oriented systems that mirror large-scale food distribution through land use and zoning policies
 - Possible additional restrictions on development in existing agricultural areas and on prime agricultural soils
 - Develop more stringent cluster-development typology for ag areas
 - Expand definition of agricultural uses to allow composting, mulching, etc
 - Enforce child lot requirements: if not occupied by child of the property owner (inspected every 5 years), becomes MPDU for remainder of 20 year period
- b. Master Plans
- Identify areas for preservation and creation of ag land
 - Identify areas that clustering could be used in exchange for protection of farmland
- c. Policy
- Foster identification and connections between local restaurants and food processors and local farmers
 - Foster/Enable use of WIC and Food Stamps at local farmer's markets



Left: community garden plots in Rock Creek Park are permitted just beyond the county line in Washington, DC. Above: The Agricultural Reserve is a valuable resource that can be better connected to local food demands.

II. Energy Conservation

A. Goal: reduce energy demand, reduce fossil fuel consumption and promote the use and production of renewable energy

B. Purposes

1. Environment: decrease carbon footprint of people and buildings, reduce greenhouse gas emissions to combat climate change
2. Health: decrease carbon footprint by promoting active lifestyles, healthier buildings and building footprints
3. Economy: decrease reliance on fossil fuels, increase energy efficiency, foster green jobs

C. Objectives & Implementation Strategies

1. Minimize and mitigate heat island effect of all forms of development

a. Zoning

- Provide incentives for white roofs (min SRI 29); require for buildings of a certain size
- Require percentage of shading of parking areas be shaded (already a 30% requirement in Rural Village Overlay Zone—see page C18-51)
- Require paving alternatives – grasscrete, etc. green roof on top level of parking garages
- Provide incentives for decreased surface parking; incentivize/actively promote shared parking opportunities—have max. parking requirement rather than minimum, perhaps based on average daily use instead of peak use; require excess parking consist of pervious paving
- Provide incentives for using impervious surface cover for energy generation (photovoltaics on carport roof)

b. Master Plans

- Provide design guidelines for roof styles, colors, etc.
- Set priorities regarding green/white roofs
- Identify heat island reduction priority areas and establish baseline and target goals

c. Policy

- Create alternative energy education materials for residents, developers, business and land owners, residents
- Lead by example – retrofit policy for public parking lots and roofs
- Tax incentives/credits?

2. Encourage energy-efficient building design, construction, operation, and maintenance

a. Zoning

- Encourage passive solar design; ensure development standards do not prohibit flexibility for building orientation
 - Provide maximum incentives such as a property tax reduction or rebate for certain time or fasttracking for climate positive development (Instead of sustainably consuming energy, buildings become net producers of energy); offer additional incentives for incorporating contiguous properties
 - Allow waivers of standards with design strategies (awnings, canopies, louvers, etc) that increase energy efficiency at a minimum threshold through site plan review
 - Allow/require electric charging stations in parking facilities
 - Create building typologies/models that allow for streamlined process
 - Allow green industries to be a conditional use in all mixed use zones (necessitates a flexible definition for green industries)
 - Require certain percentage of occupants have individual heating and lighting controls
- b. Master Plans
- Identify passive solar design strategies within all master plans, sector plans, etc.
 - Provide design guidelines for applications that will require a waiver of setbacks and/or height
 - Work electric charging facilities into streetscape standards
- c. Policy
- Establish modeling standards to evaluate energy-efficiency
 - Set minimum standards for public buildings; set standards, targets, test-sites for technologies to lead by example and establish precedents
 - New buildings should have 75% reduction in energy demand from current construction standards—via superior insulation (measured by R factor), orientation and tight bldg technology; remaining energy demand should be met using onsite or local sources
 - Create Montgomery County Green Building Regulations as alternative to LEED
 - Review building code – revise similar to NYC’s Energy Conservation Building Code
 - Create ‘Green MoCo’ map with LEED buildings, farmer’s markets, etc.
3. Promote on-site energy production
- a. Zoning

- Allow windmill, fuel cell, and solar panel exemptions from height and setback restrictions
- Consider density incentives for development with on-site energy production
- Permit district co-operative (see MXP zone for example, we need definition too) for alternative energy generation and neighborhood distribution

b. Master Plans

- Indicate areas where large scale alternative energy facilities
- Provide design guidelines for integration of on-site energy production facilities
- Create Functional Renewable Energy Master Plan with design guidelines, have it updated every 3 years to incorporate evolving technologies

c. Policy

- Set minimum standards of on-site energy production for new public buildings
- Retrofit existing public buildings with renewable energy technologies



Above left and above right: Exemplary green roof projects located in Montgomery County. Green roofs absorb stormwater runoff and can reduce cooling costs. Left: photovoltaic panels and an indoor light shelf in the Sidwell Friends School in Washington, DC reflect natural light further into the building to reduce electricity consumption.

III. Waste Reduction

- A. Goal: minimize waste stream into landfills, maximize materials reuse
- B. Purposes
 - 1. Environment: environmental protection of soil and water quality from leachate
 - 2. Health: reduce burden on landfills
 - 3. Economy: decrease raw material production and consumption
- C. Objectives & Implementation Strategies
 - 1. Encourage reuse of existing facilities
 - a. Zoning
 - Encourage or require reuse of existing infrastructure for redevelopment
 - Allow houses greater than 5,000 sf to be redeveloped as senior housing, duplexes or triplexes
 - Consider recycling facilities a public amenity
 - b. Master Plans
 - Identify buildings, sites and facilities for adaptive reuse
 - Require buildings of certain size to incorporate various recycling bins
 - c. Policy
 - Have a design competition for moco reusable shopping bags, water bottles
 - Consider a tax on plastic bags
 - Create harvest map so developers know where to go for materials reuse
 - 2. Promote innovative recycling businesses
 - a. Zoning
 - Allow salvage and waste warehouses; home improvement and servicing district



Left: Construction demolition debris from a single story dwelling unit.

IV. Water Quality

A. Goal: protect the Chesapeake Bay, maintain and restore the chemical, physical and biological conditions that support aquatic life, recreation and potable water

B. Purposes

1. Environment: protect, maintain and restore aquatic habitat by improving the quality and reducing the quantity of runoff; preserve man-made potable water sources
2. Health: reduce restoration needs, reduce discharge of chemicals and hazardous substances; maintain drinking water resources; improve health of community
3. Economy: reduce demand and expense for treating water; preserve fishing jobs reliant on healthy water bodies

C. Objectives & Implementation Strategies

1. Reduce new and existing development impacts on water resources
 - a. Zoning
 - Lower parking space requirements by as much as possible especially in urban areas where there are transportation options (Boulder model)
 - Limit parking spaces to a maximum rather than a minimum, in lieu of waiver, must pay fee per each additional space constructed
 - Require permeable/porous pavement in parking lots and driveways, particularly for driveways over 400 sq. ft. in size
 - Calculate density based on net usable tract area rather than gross tract area (take stream buffers, forests out of usable area) in larger lot zones, encouraging conservation subdivisions
 - Mowed surfaces should not count toward green area requirements
 - b. Master Plans
 - Expand buffers in headwater areas
 - For new development, identify areas for incentives to minimize site grading reducing soil compaction and allow for stormwater infiltration
 - c. Policy
 - Tax or institute permit fees for cut and fill
 - After snow storms intensify street sweeping to pick up sand/salt/loam
 - Maintenance of surface and groundwater hydrology to existing wetlands
 - Incorporate natural lawns in parks and residential communities
 - No chemical use on public lawns
 - Encourage utilities to allow native forbs (flowers) and grasses, possibly gardens in utility ROWs, mowed annually as meadow

species—good for PR, lowers maintenance costs, improves soil stabilization, groundwater infiltration

2. Encourage water reuse

b. Zoning

- Require certain % use of on-site recycled/harvested water.
- Allow large harvested water cisterns and rain barrels in side and rear setbacks
- Allow grey and/or blackwater treatments for non-potable uses for commercial, single, and multi-family residential development
- Require drought tolerant/native species in Special Protection Areas

b. Master Plans

- Identify existing and projected demand for water treatment systems
Identify areas to reduce imperviousness and irrigation demand
- Establish when and where water reuse is a priority

c. Policy

- Public buildings should lead by example
- Allow for greywater use (flushing/washing) and discharge
- Allow for new faucet and toilet technologies



Clockwise from top left: The Chesapeake Bay is a cultural amenity and major transport corridor for the state of Maryland. A woodland pond. Wetlands are an essential element for water quality protection.

V. Transport and Mobility

A. Goal: substantially reduce carbon emissions and provide people with viable options to conduct daily activities

B. Purposes

1. Environment: actively slow and reverse detrimental effects of climate change
2. Health: improve air quality; encourage physical activity
3. Economy: decrease maintenance and repair cost of roads; decrease dependency on fossil fuels

C. Objectives and Implementation Strategies

1. Expand transit-oriented development opportunities; retrofit transit served low density residential development; allow daily services to locate within neighborhoods underserved by transit

a. Zoning

- Up-zone properties along transit corridors with frequent bus service; the properties on the major road would be a receiving area for the density from the adjacent single-family residential area via a well-written density transfer provision (see growth policy for map showing routes with transit headway of 15 min. or less)
- Decrease parking requirements
- Prohibit drive-thrus in metro station policy areas
- Allow developers the option to pay into transit fund rather than constructing parking spaces to meet a minimum requirement
- Require a certain # of mobility connections be made in residential zones (see LEED-ND)
- allow community-oriented commercial uses at intersections of primary, minor arterial and arterial roads to encourage walking for short trips
- Incentives for consolidating curb cuts on major highways and arterials

b. Master Plans

- Develop a participatory process to identify in various parts of the county potential "Auto Free Zones"
- Identify target retrofit areas (in need of sidewalks, safe crossing opportunities on wide roads, parks, community retail) that have limited connections and mobility options
- Design guidelines for walkable parking lots

c. Policy

- Increase the share of the capital budget spent on transit and pedestrian and bicycle accommodation

- Allow Woonerf districts- (limited cars and pedestrian/bike friendly zones)
2. Decrease VMT and carbon emissions by providing a wide variety of mobility and transportation options
- a. Zoning
 - Mandate new residential developments (i.e. condominiums) provide charging stations for electric vehicles in parking garage
 - b. Master Plans
 - Increase sidewalk and bike path network
 - Establish target transit ridership
 - Educate on the effects of transportation choices on global warming
 - c. Policy
 - More frequent street sweeping of roads with bike lanes
 - Creation of bike boulevards to restrict movement of cars and promote frequent bicycle use
 - Annual tax surcharge on parking spaces (if no minimum is required) or impervious cover
 - Corporate car sharing club membership (the replacement of a number of fleet vehicles with car share vehicles)
 - Public charging stations for electric vehicles
 - free bicycle lending program for residents and visitors
 - Mandatory bicycle safety classes for kids
 - Free week night and weekend parking for hybrid vehicles
 - Allow flexibility for shared parking and consider incentives for it
 - Have a commission award for "eco" or "car-free" communities
 - Make night bike riding safer with more lighted bike lanes and paths

Below: Brookville Road in Chevy Chase. Community-oriented retail adds convenience and character. Right: Clearly demarcated bike lanes in Brooklyn, NYC where cyclists are given a fair share of the roadway.



Selected Resources

Websites:

Providence, RI Department of
Planning and Zoning:
www.providenceplanning.org

CABE-The Commission for
Architecture and the Built
Environment: www.cabe.org.uk

Sturm College of Law Sustainable
Community Development Code:
<http://www.law.du.edu/index.php/rmlui/sustainable-community-development-code>

Transportation Alternatives,
Middletown, CT:
www.transaltmiddletown.org

Sweden's national strategy for
sustainable development:
<http://www.regeringen.se/content/1/c4/28/86/46c330fd.pdf>

European Union Strategy for
Sustainable Development
(2006):
<http://register.consilium.europa.eu/pdf/en/06/st10/st10117.en06.pdf>
(2009 update):
http://ec.europa.eu/sustainable/welcome/index_en.htm

Liveable Streets Initiative:
<http://www.livablestreets.com/streets/wiki/woonerf>

PR Web: "McDonald's and NovaCharge
Deploy ChargePoint Network EV
Charging Stations" July 5, 2009:
<http://www.prweb.com/releases/2009/07/prweb2605524.htm>

Climate Positive Ltd:
www.climatepositive.org

Sustainable Pittsburgh:
www.sustainablepittsburgh.org

Oregon Farmers Markets Association:
<http://www.oregonfarmersmarkets.org/mktman/wic.html>

Promoting Energy Efficiency in Europe:
http://www.energie-cites.eu/IMG/pdf/eew_promoting_energy_efficiency_in_europe_en.pdf

Jurisdictions Researched:

San Francisco, CA
San Mateo County, CA
Oakland, CA
Boulder, CO
Denver, CO
Washington, DC
Chicago, IL
Greensburg, KS
Baltimore, MD
New York City, NY