

**Testimony Regarding Proposed Amendments to Zoning Regulations –
Sustainability
Zoning Commission Public Hearing for ZC #08-06-9**

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New zoning regulations promoting sustainability have the potential to bring significant changes to the District's built environment. The goal as asserted by the Office of Planning is "reduction of climate change inducing greenhouse gasses." My comments concentrate on the renewable energy section because that is where the pedal meets the metal by fostering responsible building practices and building operations that will have much more profound impacts on greenhouse gas production than all the car related initiatives promoted by other District agencies. I urge the Zoning Commission to adopt many of the proposals in the renewable energy section and to consider more progressive measures because the technology and cost effectiveness is advancing at warp speed and it will be very easy to quickly become retrograde in this area. According to the National Capital Region's 2008 Climate Change Report, "based on current business-as-usual projections of growth in population, housing, employment, and energy use, total emissions from energy consumption (excluding transportation)...in the [Washington metropolitan] region will increase by 35% by 2030 and 43% by 2050." This is not the time to be timid.

Context

The Green Building Act of 2006 is very limited. It doesn't take effect until 2012 and its scope impacts only new non-residential buildings greater than 50,000 sf. It requires LEED silver certification which can be achieved without providing energy efficiency or renewable energy production. As the Office of Planning points out this legislation does not guarantee any incremental improvement in greenhouse gas emissions. The Zoning Commission should not rely on it as a sufficient tool, but rather think of it as targeting the office sector and encouraging some sustainability measures that may or may not reduce greenhouse gas emissions.

The Zoning Commission has authority through the PUD process to require exemplary response to state of the art energy efficiency and renewable energy production measures. No new authority is required. But explicit zoning rules are needed for matter of right development. Many of the needed changes are probably directed to the building code, but if the Zoning Commission has authority to impose MOR energy efficiencies here are my suggestions.

Recommendation 4, Increased Energy Efficiency

This recommendation would make explicit the authority the Zoning Commission already has. Section 2403.9 (h) lists environmental benefits as a public benefit or project amenity that per Section 2403.10 must meet an acceptable standard, but more often should be superior in order to satisfy bonus area requests. Presumably, the Zoning Commission

would apply current rather than retrograde standards when assessing environmental benefits. Unfortunately, the proposed recommendation only asks the Zoning Commission to “consider requiring cutting-edge energy efficiency standards” for PUDs. The Zoning Commission should adopt the Architecture 2030 standard which aims to reduce building energy consumption by 50% by 2010 and achieve carbon neutrality by 2030. The challenge has been adopted by the U.S. Conference of Mayors, the American Institute of Architects, and the Green Building Council. Alternatively, the Zoning Commission could require PUD applications to incorporate the most progressive standard for energy efficiency. In addition, the Zoning Commission should incorporate EPA’s Energy Star standards for all PUDs. Building operations are a significant contributor to greenhouse gas emissions and this program provides a blueprint for determining a baseline target for building energy performance based on the type of building and the region. Any development seeking bonus densities through inclusionary zoning should be required to meet Energy Star standards, which focus on whole building energy efficient systems as well as individual items like programmable thermostats, energy efficient washing machines, dishwashers, etc. What’s the point of providing affordable housing that isn’t energy efficient and thus, results in higher than necessary energy bills? Buildings that meet Energy Star standards use up to 35% less energy than conventional buildings and generate 35% less carbon dioxide.

Recommendation 5, Outdoor Lighting

Here the Office of Planning is clear that model industry lighting standards should be adopted by the Zoning Commission. Since OP does not limit the application to any particular building type or size, the Zoning Commission should apply the light standards for all multi-family residential and all non-residential development projects, including matter of right and PUDs. In the case of PUDs, the Zoning Commission can impose these standards now. The Office of Planning should include an evaluation of a PUD lighting plan in its report on PUD applications and the Zoning Commission should stipulate the approved lighting plan in its order. Too often PUD applicants expect to control the lighting of projects in order to maximize marketing of their projects. The Zoning Commission should balance this desire with the public’s interest in reducing building energy consumption, reducing light pollution, and preserving quality of life for residents who may not appreciate commercial lighting during the night.

Recommendation 6, Sustainable Energy Features

Rooftop setbacks and roof coverage limits are among the least enforced zoning requirements. This recommendation provides an opportunity to tighten the purpose of the regulation and redefine a standard for exemption from the rule. The goal should be to extend good design to the rooftop. Having multiple roof structures with multiple enclosures or no enclosure contributes to a cluttered, under-designed finish on buildings. As long as developers know that the roof is an after-thought in regulatory proceedings they will argue that they can’t comply with roof standards. The Zoning Commission should consider allowing exemptions from roof setbacks only for energy conservation and renewable energy production features. Standards should be developed so that these features are designed to result in the least impact on roof standards (and side yard standards if flexibility is allowed). Since this recommendation would apply to matter of

right development it is very important that zoning flexibility is offered as last resort and not as the first option. If there are compliant ways of providing sustainable energy features those should be expected and enforced as part of permit process.

Recommendation 7, Renewable Energy Generation

The consultant's report cautions that wind turbines may not have much benefit in the District. Before changing the historic skyline with these structures the Zoning Commission should require a more refined study of their applicability in terms of size and number required for an effective system, type and size of building most adaptable to this technology, and ranking of effectiveness as an alternative clean energy producer in the District. Similar guidance should be provided for solar although there seems to be consensus that solar technology can be successful in the District used alone or in combination with other clean alternative energy producers.

Recommendation 9, District Energy Systems

The Office of Planning points out that the opportunity to build a district energy system is limited to large tract developments because by definition such systems provide energy to multiple buildings. The Zoning Commission should consider requiring PUDs that involve more than one building, very large buildings, or present opportunities to share this system with existing buildings to provide these systems as a public benefit or amenity. The Zoning Commission should approach density bonuses as inherently contributing to greenhouse gas emissions beyond what would be created by matter of right building. There is a public policy inconsistency when environmental provisions in the Comprehensive Plan and other public policy initiatives aggressively promote energy conservation and efficiency while the Zoning Commission is approving bonus densities without any meaningful offsetting reductions in greenhouse gas emissions. The Zoning Commission can address this issue now with the authority it already has.

Recommendation 14, Vegetated (“Green”) Roofs

I urge the adoption of this recommendation. It should however be accompanied by a definition that excludes roof gardens from the definition. There is a distinct difference between a nearly self-sustaining green roof and a maintained roof garden designed as an entertainment area or amenity for building residents. Currently, PUD applicants try to gain environmental credit for roof gardens by calling them green roofs; the Zoning Commission should put an end to that.

Recommendation 18, Green Area Ratio (GAR)

There isn't enough experience with GAR to warrant requiring it beyond commercial areas. The Office of Planning can cite only a Seattle, Washington pilot as precedent for this scheme. There it was limited to neighborhood commercial areas, and is only now being extended to some downtown areas and high-density residential zones. There is no experience in the United States with requiring GAR in low and moderate-density residential areas. These are the areas where new requirements would have the least impact while imposing cumbersome new regulations. The Office of Planning's assertion that these requirements are easy to implement is not evident from the Seattle score sheet example.

Larger, commercial projects should be re-envisioned as opportunities for less lot coverage in exchange for more sustainable design features, including green site design. It is unclear whether the Office of Planning is suggesting that storm water management requirements remove the need to encourage landscaping, green roofs, water features, and permeable paving. But I hope the Zoning Commission will consider that these requirements complement each other rather than replace one another.

Finally, all of these recommendations should be very carefully considered in historic districts. There are competing interests here and some of these recommendations might degrade or be incompatible with preserving and protecting contributing buildings or landmarks. The large buildings that contribute most to greenhouse gas emissions are outside most historic districts, so the need to balance interests may not be necessary in historic districts. The Zoning Commission should not view these recommendations as sharing the pain, but rather as targeting opportunities to maximize energy efficiency and reductions in greenhouse gas emissions.

ABOUT 40% OF THE AMERICAN PUBLIC CURRENTLY
RECOGNIZES THE ENERGY STAR LABEL.



TABLE 1.
OVERVIEW OF PRODUCTS IN THE ENERGY STAR PROGRAM

Product Groupings (# of product categories)	Lead Agency	Energy Savings Above Standard New Products	Market Penetration of ENERGY STAR Qualifying Products Sold in 2000	Other Highlights
Office Equipment (8)				
Computer/Monitor at Home	EPA	27%	95%/97%	
Computer/Monitor at Work	EPA	52%	95%/97%	
Copier	EPA	42%	90%	
Fax	EPA	40%	99%	
Other	EPA	26-49%	range	<ul style="list-style-type: none"> Specifications for monitors and imaging equipment are under revision in 2003.
Home Electronics (8)				
Televisions	EPA	24%	46%	
VCRs	EPA	29%	94%	
TV/VCRs	EPA	30%	76%	
Audio	EPA	69%	31%	
Other	EPA	4-17%	range	<ul style="list-style-type: none"> Audio equipment needs to use less than 1 watt in standby to earn the ENERGY STAR effective January 2003. Products in other categories (e.g., TVs, VCRs) are expected to meet 1 watt levels by 2005.
Heating/Cooling (7)				
Central Air Conditioners	EPA	24%	20%	
Furnaces (Gas)	EPA	15%	27%	
Programmable Thermostats	EPA	20%	36%	
Other	EPA	7-30%	range	<ul style="list-style-type: none"> Specifications for programmable thermostats are being examined to help improve usability for the consumer.
Appliances (6)				
Clothes Washers	DOE	38%	10%	
Dishwashers	DOE	25%	20%	
Refrigerators	DOE	10%	17%	
Room Air Conditioners	DOE	10%	13%	
Other	EPA	10-43%	range	
Lighting (3)				
Fixtures	EPA	66%	3-5%	
Bulbs	DOE	66%	3%	
Exit Signs	EPA	75%	73%	<ul style="list-style-type: none"> Specifications are being revised as additional testing methods are developed to address performance criteria.
Building Envelope (3)				
Windows	DOE	range	range	
Other	EPA	range	range	<ul style="list-style-type: none"> Specifications for windows were recently revised.
Other (5)	EPA	range	range	

EPA'S PROVEN ENERGY MANAGEMENT STRATEGY

Guidelines for Superior Energy Management

EPA offers a superior energy management strategy based on the success of thousands of ENERGY STAR partners. Partnership with EPA turns energy management plans into actions:

- Top-level attention and a public commitment to secure resources for sustained improvements.
- A credible, objective energy performance rating system to assess the performance of buildings, validate savings, and recognize top performance.
- 5-stage building upgrade approach based on building science and designed to take advantage of building system interactions for greater savings and comfort.
- Visibility of an organization's achievements in the public and financial markets.
- Access to a network of partners, bringing creative approaches to problem solving.

Building the Financial Case

To engage top-level managers, they must see the link between effective energy management and their core objectives. EPA is working to demonstrate this connection and to provide organizations with new financial indices that help management understand how their energy costs affect their profitability relative to others in their sector.

- EPA has collaborated with Innovest, a financial analysis firm, whose studies have determined that companies with effective energy management plans in place tend to be strong environmental performers and strong performers on Wall Street. Innovest research shows that leaders in corporate energy management outperform their competitors by 20 to 30 percent on Wall Street.^{XII}
- EPA has also succeeded in describing energy savings in terms of core business objectives for a wide range of business sectors. For example, EPA has demonstrated that:
 - A commercial building owner can generate \$2 to \$3 of incremental asset value for every \$1 invested in energy performance improvements.
 - A retail grocery can reap the equivalent of increasing sales by \$85 when it reduces annual energy costs by \$1, given this sector's low profit margins and relatively high energy expenses.
 - A full service hotel can realize the equivalent of increasing its average daily rate by \$1.35 (about 1.6 percent) from a 10-percent improvement in energy performance.
- EPA will continue to use a variety of outreach activities to convey the strong financial case for effective energy management.

Offering Guidelines for Superior Energy Management

Through its work with thousands of partners in Green Lights and now ENERGY STAR, EPA has identified the key elements of superior energy management. They are:

- ***Top-level commitment to reduce energy waste.*** Without this commitment, resources are often not allocated to energy projects, and efficiency programs are not sustained.
- ***Routine assessment of organization-wide performance, against competitors and across own portfolio.*** Assessing energy use in all operations and all buildings results in resources being targeted to those facilities with the greatest potential for improvement. Organizations can rank their own properties, learn from the high performers, and upgrade the poor performers.
- ***Use of a systems-integrated approach to upgrade buildings.*** Sizing heating and cooling equipment, integrating individual technical components, and controlling, operating, and maintaining equipment play a big role in the energy performance of a building.

Organizations using these guidelines have realized twice the energy savings for a given investment as alternative approaches. The case for these guidelines is clear given the findings from the past decade:

- The efficiency of building components such as windows, chillers, etc., has improved by more than 30 percent over the past 25 years, yet building energy use has not improved by nearly as much.^{XIII}

Food Lion, LLC, Salisbury, North Carolina

Food Lion, LLC, a subsidiary of Brussels-based Delhaize Group, operates more than 1,200 supermarkets in 11 Southeastern and Mid-Atlantic states. Food Lion received the ENERGY STAR Award for Excellence in Energy Management in 2002 and 2003.

Tracking 10 cents of its earnings per share to its energy efficiency accomplishments, Food Lion has successfully integrated energy management into its corporate business objectives. Food Lion benchmarks all of the stores in its portfolio, evaluates the worst performing stores on a monthly basis, and provides quarterly energy bonuses to maintenance staff to encourage improvements. A key partner in developing the EPA benchmark for supermarkets, Food Lion has used the energy ratings to justify recommissioning services.

Food Lion's energy management measures have resulted in impressive energy savings. In 2001, even with a 6-percent increase in store square footage, Food Lion reduced energy consumption by 1.3 percent—equivalent to over \$50 million in sales. In 2002, Food Lion saw energy savings of 5 percent, and annualized cost savings of nearly \$15 million, despite increasing its net square footage by 2 percent. These savings are the equivalent of increasing sales by \$465 million or eliminating the energy use of 55 stores.

- An examination of U.S. buildings shows that the best performing buildings use 75 percent less energy than the worst performing buildings. It also shows that this difference cannot be accounted for by particular technologies, climate, building size, or building age.^{XIV}

EPA offers its proven energy management strategy to each of its 12,000 partners. EPA estimates that to date more than 47.5 billion kWh have been saved through these efforts.^{XV} EPA will continue to promote this approach to its current partners and offer it to more businesses and organizations.

Providing New Standardized Measurement Tools

Fundamental to this whole-building systems approach is EPA's national energy performance rating system for buildings, unveiled in 1999. This rating system measures how well the building systems are integrated and how well the building is operated and maintained. It fills an important measurement gap because no consistent or comparable metric existed prior to this system. Now a building owner or manager has a rating akin to the miles per gallon rating for an automobile. And this rating can be used in key market transactions such as the assessment of a building's asset value or the lease price of building space.

- EPA has developed the online rating system for office buildings, schools (K-12), hotels, grocery stores, and hospitals (see Table 3). Numerous organizations have embraced it and evaluated more than 15,000 buildings through 2002. They represent 16 percent of the nation's office building market, 13 percent of schools, 20 percent of supermarkets, 21 percent of hospitals, and 5 percent of hotels.

- EPA has also seen major organizations adopt the national rating system as part of their energy management efforts. For example, many organizations are using energy performance ratings to help direct their project investments and monitor progress (see sidebars). Two large pension fund managers, TIAA-CREF and Lend Lease, have announced that they are requiring managers of the buildings in their portfolios to rate the energy performance of these buildings and work to improve their performance.^{XVI}
- EPA expects to add court houses, residence halls, fast food establishments, and other retail building spaces to the rating system over the coming year. At that point, the rating system will apply to more than 50 percent of the building space across the country. EPA will also continue to promote the rating system to its partners and other organizations as an effective means of measuring building performance and setting future performance goals.
- EPA is now exploring how to adapt the rating to the industrial sector. A substantial portion of the industrial sector could benefit from improved energy performance measurement tools and enhanced corporate energy management. EPA is investigating industrial energy performance indicators at the facility level with interested sectors, including automobile assembly, malt beverage production, and corn refining. The glass manufacturing and pharmaceutical industries have also expressed interest. EPA will support the development of indicators for three to five sectors per year.

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Starwood Hotels & Resorts Worldwide, Inc., White Plains, New York

Starwood Hotels & Resorts Worldwide, Inc., is a leading U.S. hotel company, owning, operating, and franchising over 700 hotels in 80 countries. Its brands include Four Points, Sheraton, Westin, and W Hotels. Starwood received the ENERGY STAR Award for Excellence in Energy Management in 2002 and 2003. And at the Energy Efficiency Forum at the National Press Club in June 2002, EPA recognized Starwood's Sheraton Boston Hotel as one of the first hotels in the nation to earn the ENERGY STAR.

Starwood's "Energy Management is Good Business" strategy is centered around its commitment to making energy management everyone's responsibility. The company has benchmarked all of its owned and managed hotels using EPA's energy performance rating system and will apply for the ENERGY STAR label for top performing hotels (those scoring 75 or better) to demonstrate its environmental commitment to guests and the public. Starwood based a portion of its 2001 bonuses for its energy team on energy consumption reductions, and its "Watts for Wheels" contest created competition among the company's properties for energy efficiency accomplishments. Starwood also helped EPA test the benchmarking system for hotels by providing energy data for all of its buildings.

Starwood's energy management initiatives are paying off. The company invested \$8.5 million in energy projects completed in 2001, and saved \$3.4 million—equivalent to renting 9,370 additional rooms. In 2002, Starwood invested approximately \$4.6 million in energy projects and saved \$1.3 million, the equivalent to renting 9,800 additional rooms.

Distinguishing the Top Performing Buildings

Based on results from the national energy performance rating system, EPA offers the ENERGY STAR label as a way to distinguish buildings that are top energy performers—those scoring in the top 25 percent of their class which also meet industry standards for indoor air quality.

- Hundreds of organizations have applied for the ENERGY STAR and by the end of 2002, 1,100 top performing buildings nationwide had earned the prestigious label.
- As a group the ENERGY STAR qualifying buildings use 40 percent less energy than the average building in the United States while providing quality space.
- EPA will continue to offer the ENERGY STAR label for top performing buildings and work with organizations to help them highlight the design, operations, and maintenance features that make the buildings qualify.
- EPA is collaborating with leaders in the Green Buildings Industry to ensure that similar approaches are used to recognize top energy performing buildings in the ENERGY STAR program as are used for green building certification.

Identifying Efficient Products for the Workplace

While ENERGY STAR for the commercial and industrial sectors places a large emphasis on whole-building system improvements, there are times when making the efficient choice is as easy as choosing the most efficient product. This is largely the case with products that plug into an outlet—plug loads. Many such products, including office equipment and appliances, already qualify as ENERGY STAR and offer significant energy savings

within these sectors. EPA recommends that organizations specify the following products as part of their bulk procurement practices: office equipment, commercial refrigerators, water coolers, and unitary heating and cooling equipment. EPA may add commercial cooking equipment and vending machines to this list in the coming years.

Providing Recognition for Success

An important aspect of an effective energy management plan is setting goals for continuous improvement and then meeting these goals. Using the national energy rating system and other means, EPA recognizes organizations for reaching key milestones in improved energy performance and the environmental benefits these achievements deliver.

Working with Interested Organizations

In addition to the businesses seeking to improve their energy performance, EPA works with a number of organizations to get clear, accurate information to these energy end-users about opportunities for improved energy performance. These organizations include energy service providers, utilities, state energy groups, and public benefits funds administrators. EPA provides them with training and outreach materials to use in their own energy efficiency programs. This support is particularly useful to groups administering public dollars because it helps them use their own funds to reach businesses in their regions, instead of in the creation of a regional infrastructure for energy efficiency. EPA plans to continue to broaden these partnerships because it is these organizations that have frequent and direct contact with the end-user.



TABLE 3.
OVERVIEW OF BUILDING SECTORS AND POTENTIAL GREENHOUSE GAS REDUCTIONS FROM SUPERIOR ENERGY MANAGEMENT

Market Segment	Potential Carbon Savings (MMTCE)	Extent of Commitment to ENERGY STAR: Total Active Partner Square Footage (% of market)	Availability of Standardized Measurement System	EPA 2012 Carbon Savings Goals (MMTCE)
Office	17.5	3.9 billion (32%)		5.3
General Courthouses			available since 1999	
Banks			available in 2003	
Financial Centers			available in 2003	
Department Stores			available in 2003	
Retail	14.3	1.9 billion (18%)		3.1
Drug Stores			available by 2004	
Discount Stores			available by 2004	
Home Centers			available by 2005	
Department Stores			available by 2005	
Education	7.4	1.0 billion (12%)		2.3
K-12			available since 2000	
Higher Education			residence halls available in 2003	
Healthcare	6.9	350 million (12%)		1.3
Acute Care Hospitals			available since 2001	
Medical Office Buildings			available in 2003	
Clinics			available by 2006	
Lodging	5.9	730 million (16%)	available since 2002	1.4
Food Service	4.9	6 million (1%)		1.2
Fast Food Restaurants			available in 2003	
Food Sales	3.0	377 million (37%)		1.3
Grocery Stores			available since 2001	
Convenience Stores			available by 2006	
Other	15.8	1.1 billion		1.6
Post Offices			available in 2003	
Warehouses			available in 2003	
Telecommunication Centers			available by 2004	
Wastewater Treatment Facilities			available by 2005	
Drinking Water Treatment Facilities			available by 2006	
TOTAL	75.7	9.3 billion		17.5

NOTE: Savings potential based on a 30% savings in total energy being possible.