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Evaluating Strategies to Protect Open Space and Slow Sprawl in the Philadelphia Region

Abstract

This paper uses the Philadelphia metropolitan region of Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties as a case study, examining historical land use and socioeconomic data to demonstrate the negative effects that urban sprawl has on regional quality of life and the natural and built environment. The paper shows that open space conservation initiatives sponsored by governing bodies and land conservation groups may not be able to keep pace with the rate of sprawl or be able to meet the conservation benchmarks set by the Delaware Valley Regional Planning Commission, the regional Metropolitan Planning Organization, and the GreenSpace Alliance, a regional non profit land conservation group. The paper examines the urban redevelopment and revitalization initiative as an underutilized, but effective tool available to slow sprawl, and the need to combine these initiatives with land protection measures. Evidence is presented that counters claims that sprawl is a natural result of the free market economy that should be allowed to correct itself without intervention. Finally, existing growth management strategies are offered that might be incorporated into future efforts to slow the expansion of the built environment and improve quality of life in the region.

Comments

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Paul Lumia

April 2008

Master of Environmental Studies Capstone Project
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This paper uses the Philadelphia metropolitan region of Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties as a case study, examining historical land use and socioeconomic data to demonstrate the negative effects that urban sprawl has on regional quality of life and the natural and built environment. The paper shows that open space conservation initiatives sponsored by governing bodies and land conservation groups may not be able to keep pace with the rate of sprawl or be able to meet the conservation benchmarks set by the Delaware Valley Regional Planning Commission, the regional Metropolitan Planning Organization, and the GreenSpace Alliance, a regional non profit land conservation group. The paper examines the urban redevelopment and revitalization initiative as an underutilized, but effective tool available to slow sprawl, and the need to combine these initiatives with land protection measures. Evidence is presented that counters claims that sprawl is a natural result of the free market economy that should be allowed to correct itself without intervention. Finally, existing growth management strategies are offered that might be incorporated into future efforts to slow the expansion of the built environment and improve quality of life in the region.

Introduction

According to historical demographic data, the population in the Philadelphia region (the region) is increasing at about 3% per decade while open space resources are being consumed by development at a rate ten times this amount (DVRPC, 2006; Brookings Institution, 2003). If this trend continues unchecked open space resources including farmland, recreation land, and natural lands for wildlife habitat and watershed protection will be severely compromised and quality of life in the region will suffer (Brookings Institution, 2003; Clarion Associates, 2000). The City of Philadelphia and many older suburban core areas have been losing population steadily since the 1950's with Philadelphia County realizing a 16.6 % decline between 1980 and 2006. During this same

time period the outlying counties of Bucks, Chester, Delaware, and Montgomery have experienced an average increase in population of 18.2% (Adams *et al.*, 1991; DVRPC, 2007). At this rate development will consume over 65% of all open space lands by 2030 with the majority of this loss coming from the development of high value farmland (DVRPC, 2006).

One common definition of rapid urban expansion is “low density, auto-dependent land development taking place on the edges of urban centers, often leapfrogging away from current denser development nodes, to transform open, undeveloped land, into single-family residential subdivisions and campus-style commercial office parks and diffuse retail uses”(Soule, 2006).¹ This rapid expansion has commonly been called urban sprawl. Some researchers claim that urban expansion or sprawl is a natural phenomenon in support of a healthy free market system that should be allowed to continue with little or no outside influence, as the market will correct negative socioeconomic effects over time (Hayward, 1998; Holcombe, 2008). Others researchers have made the case that sprawl represents unsustainable growth and is a major contributor to socioeconomic and environmental ills plaguing metropolitan regions today (Frumkin *et al.*, 2004; Kahn, 2006; Porter, 1997). In either case data trends in the region show that sprawl supports the abandonment of city centers and older communities, the inefficient utilization of open space and infrastructure resources, the degradation of watersheds and wildlife habitat, and a decline in regional quality of life (Brookings Institution, 2003; Clarion Associates, 2000; DVRPC, 2006).

County and municipal governments, and concerned Non Governmental Organizations (NGOs) in the region have been working to establish strategies to combat sprawl. County and municipal leaders have relied on the ballot referendum to raise funds for the purchase of open space assets, while land trusts have been using conservation easements, direct purchase of land, education, and advocacy strategies to slow the rate of sprawl. Research into regional land use data and land conservation statistics show that these land conservation efforts by government entities and land trusts may not be able to keep pace with the current rate of sprawl, and that additional techniques will need to be employed if regional benchmark land conservation goals are to be met and sprawl slowed². Before examining the strategies currently being used to conserve open space resources, a brief review of historical land use policies, demographics, and socioeconomic trends is offered to gain a general understanding of sprawl in the region and why it persists.

1.0 - A Brief History of Land Use, Demographics, and Socioeconomic Trends

Land use, demographic, and socioeconomic data for the Philadelphia region have revealed some significant events, which appear to have contributed to the spreading out and hollowing out of the regional population over time, and the decline of inner city and older suburban communities. Philadelphia's industrial past together with socioeconomic preferences and national policies governing land use and transportation offer insight into trends still seen today that support the rapid expansion of the regional built environment.

1.1 - Early Urban Expansion and the Exclusionary Nature of Zoning

Philadelphia in the mid-nineteenth century was following a typical pattern of growth outward from the city center (Adams *et al.*, 1991). However, two notable differences in Philadelphia's expansion then, as compared to today, were an increase in population and the consolidation of neighboring municipalities (Frumkin *et al.*, 2004). Why did municipal annexation take place in Philadelphia over fragmentation in the mid-eighteen hundreds? Howard Frumkin in his book *Urban Sprawl and Public Health, Designing, Planning, And Building For Healthy Communities* explains:

“There were several reasons for annexation. One was urban pride and boosterism. Another was the notion, championed by the business community, that large would be more efficient than small. In some cases the city government, or particular constituencies, wanted to extend greater control over outlying areas. And less affluent suburban areas needed access to the infrastructure of the city—the sewers, the schools, the water, the police force—that might have been prohibitively expensive for them.”

The reasons for consolidation detailed in this quote are significant in that they represent some of the very issues counties, municipalities, and NGO's operating in fragmented regional settings find themselves struggling with today. Based on the current geopolitical make up, with 238 governing bodies in the region, it is apparent that the wave of consolidation seen in the mid-1800's did not continue beyond that point (DVRPC, 2006; Frumkin *et al.*, 2004). Historical factors shed some light as to why consolidation stalled. These factors also point toward other socioeconomic trends such as segregation of

population groups based on race, income, and ethnicity that still linger and contribute to issues surrounding urban sprawl.

One can look back at the early days of the industrial expansion in the United States, after the Civil War and up until the advent of the electric powered street car and later wheeled transportation, and see that industrial operations, commercial venues and residential communities in major metropolitan centers in the United States were grouped together in what can be called a mixed use urban environment (Fischel, 2002; Warner, Jr., 1962). A phrase often used by urban planners for this landscape was a “walking around city” or “walking city”, meaning that all occupants of the city regardless of race, color, ethnicity, or income could walk to work, to shops for services, and back to their dwellings all under one urban umbrella (Warner Jr., 1968). This is not to say that these early urban inhabitants were sharing equally in the fruits of their labors, as many at this time of industrialization were making minimal wages and living in squalid conditions, while others lived in modest comfort and a select few in the lap of luxury (Warner Jr., 1968). They did, however, due to the lack of an effective transportation system, live near enough to one another to share the burden of the environmental hazards generated by industrial operations.

With the advent of the streetcar upper and middle class urban dwellers began to move out from the crowded and dirty industrialized city center to less congested, cleaner and quieter surroundings, as they could afford the cost of transportation and land to build on (Adam *et al.*, 1991; Fischel, 2002; Warner, Jr., 1968). This shift of middle and upper

class populations away from the urban center could be viewed as the beginnings of urban sprawl, the forerunner of zoning, and the beginnings of regional fragmentation based on socioeconomic differences, as minority and low income populations were left to settle in the inner industrial areas or in the less desirable areas near congested streetcar routes.

The exclusionary nature of gentrified communities surrounding urban centers became obvious at this time, as middle and upper class suburban communities and developers of these areas lobbied to keep certain socioeconomic groups and industries out of their neighborhoods in the effort to protect property values (Weiss, 1987). These efforts led to formal zoning regulations in many cities in the United States in the early to mid 1900's and finally to the passage by Congress of the Standard State Zoning Enabling Act (SZEA) in 1922 and revised in 1926 that produced a zoning model for municipalities to follow in the creation of zoning regulations that adhere to the following criteria (Weiss, 1987):

“Such [Zoning] regulations shall be made in accordance with a comprehensive plan and designed to lessen congestion in the streets; to secure safety from fire, panic, and other dangers; to promote health and the general welfare; to provide adequate light and air; to prevent the over crowding of land; to avoid undue concentration of population; to facilitate the adequate provision of transportation, water, sewerage, schools, parks, and other public requirements (Department of Commerce, 1926).”

The authors of the act were hoping that noxious activities would be moved out of residential areas, limitations would be placed on the density of building and the over use of land, there would be an improvement in the efficiency of public services, and there would be a protection of property values because of a homogeneous use within districts

(Andrews, 1972; Merck, 1996). Though the government enacted a national zoning policy, municipalities were still free to create and administer their own zoning laws, as long as they did not violate the general principals of the federal act. Municipalities could build flexibility into their regulatory zoning processes through boards of adjustment or zoning appeals boards. These boards of adjustment would prove to exacerbate an already exclusionary zoning system.

Two problems arose from the creation of the zoning appeals and adjustments boards. First, politically appointed zoning boards could override any existing zoning ordinance, allowing, as an example, a noxious facility to set up shop in a residential zone in the name of the public good and second, the ability to grant variances muddled the original intent of zoning to separate land uses in the name of public health and welfare (Andrews, 1972; Fischel, 2002). Zoning and the model outlined in SZEAA were challenged almost immediately in a 1926 landmark Supreme Court case, *The Village of Euclid v. Ambler Realty*, in which the court upheld the constitutionality of zoning (Fischel, 2002).

1.2 - Socioeconomic Segregation and Zoning

Throughout the history of the United States minority and ethnic groups have immigrated into urban areas of the country and established communities there. This was particularly evident during the period of industrial expansion, as many millions of Europeans and Asians moved into major industrial cities such as Philadelphia (Licht, 1995; Licht and Scranton, 1986). There was an informal yet orderly economic pecking order in place with immigrant groups starting at the bottom of the social and economic ladder, taking on the

lowest paying jobs, and living in the least desirable housing, but having the opportunity to move upward in social and economic standing as new waves of immigrants arrived (Adams *et al.*, 1991; Warner, Jr., 1962). This process masked the inequities of zoning and pre-zoning systems that segregated socioeconomic classes, as ethnic and low-income groups had opportunities to move up the socioeconomic ladder and out of poorer neighborhoods (Maantay, 2002; Warner, Jr., 1968). Unfortunately, as industrial expansion slowed and inner city areas began to decay, opportunities to advance began to dry up and the adverse affects of exclusionary zoning became clear (Licht, 1995; Maantay, 2002; Warner, Jr., 1968). To exacerbate the problem of urban sprawl and decay, federal, state, and local politicians and urban planners implemented public housing regimes and urban redevelopment strategies based on the fundamental principles of the SZEA and zonings exclusionary effects (Fischel, 2002; Maantay, 2002). Zoning can also be seen as a contributor to the multi municipal governing structure evident in the Philadelphia region, as suburban communities take advantage of the power to zone, enact their own zoning laws, and plan their districts according to local whims and without any regional coordination (Brookings Institution, 2003; Fischel, 2002).

It is this author's opinion based on current research that zoning and the tenets of the SZEA model help contribute to urban sprawl, aid the continuing fragmentation of a desirable mixed-use urban unit, and aid in the segregation of its inhabitants along lines of income, race and ethnicity. The creation of formal zoning laws inadvertently created a segregationist mentality, allowing the more affluent and established population groups to take advantage of innovations in transportation and suburban development, while many

new immigrant groups and low-income population groups could not afford or were blocked from these innovations and had to settle in less desirable areas in inner cities and closer to noxious industrial facilities. SZEAs and traditional zoning might represent the catalyst for urban decline and sprawl. Though there are other factors beyond the scope of this paper that contribute to the flight of the mainly white and affluent to the suburbs such as failed urban renewal policies (Slayton, 1969), out dated inner city zoning ordinances that persist today (Next Great City, 2007)³, the adoption of an ever expanding and costly transportation network (Economist, 2006), and the deindustrialization of the region (Licht and Scranton, 1986), current Philadelphia regional socioeconomic and demographic data support the claim that traditional zoning policies have played a leading role (Figure 1) and (Tables 1, 2 & 3).

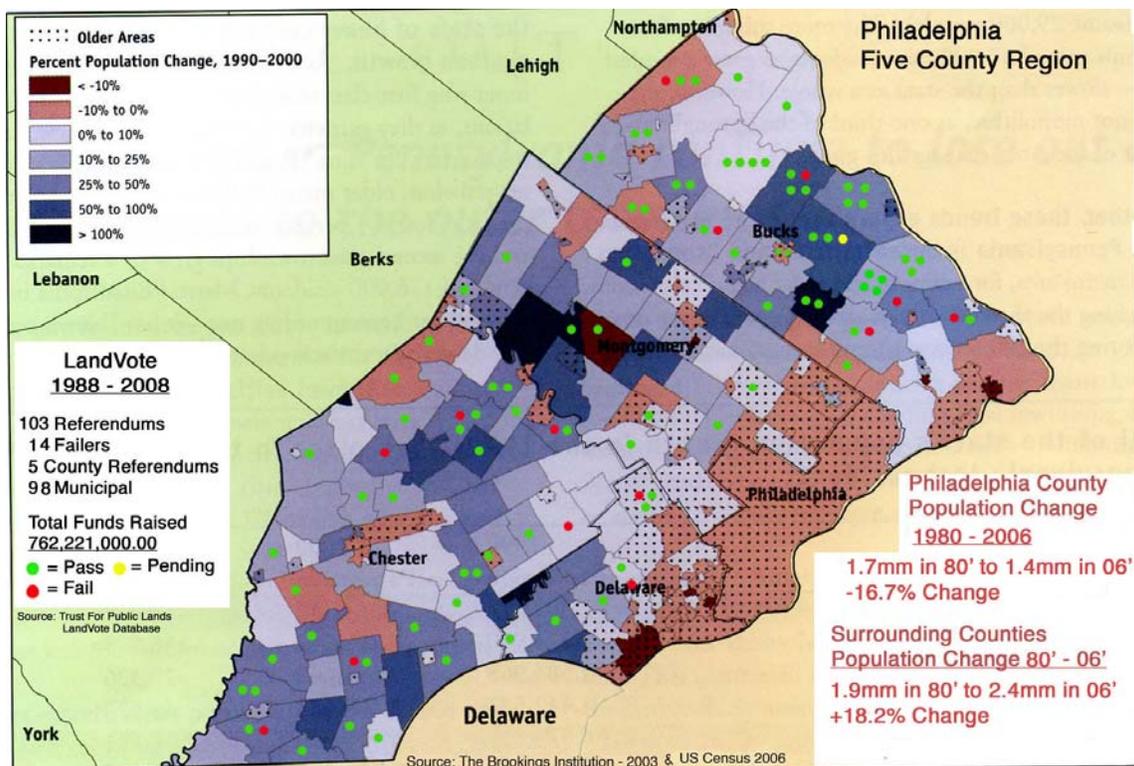


Figure 1. The spreading and hollowing out of the Philadelphia region & ballot referendum data

**Table 1 - Population Trends for The Philadelphia Region:
1980-2006**

<u>County</u>	<u>1980 Pop</u>	<u>1990 Pop</u>	<u>2000 Pop</u>	<u>2006 Est. Pop</u>	<u>% Chg 80'- 06'</u>
Bucks	479,180	541,174	597,635	623,205	4.10%
Chester	316,660	376,396	433,501	482,112	10.08%
Delaware	555,023	547,651	550,864	555,996	0.92%
Montgomery	643,337	678,193	750,097	775,688	3.30%
Philadelphia	1,688,210	1,585,577	1,517,550	1,448,394	-16.56%
Total Region	3,682,410	3,728,991	3,849,647	3,885,395	5.22%
Outlying Counties	1,994,200	2,143,414	2,332,097	2,437,001	18.17%

Source: U.S. Census Bureau State & County Quick Facts and Delaware Valley Regional Planning Commission (2007) Data Bulletin #67: 1980-2000 Census Population by MCD (28-County Area)

**Table 2 - Nonwhite Population as a % of the whole in the 5 County
Philadelphia Region 1960-2006**

<u>County</u>	<u>1960</u>	<u>1980</u>	<u>1990</u>	<u>2000</u>	<u>2006 Est.</u>
Bucks	1.9	3.6	4.9	7.5	8
Chester	8.4	9	8.4	10.8	14.7
Delaware	7.1	10	13.5	21.7	24.4
Montgomery	3.8	6.1	8.6	13.5	17.4
<u>Philadelphia</u>	<u>26.7</u>	<u>41.5</u>	<u>46.5</u>	<u>54.9</u>	<u>61</u>

Source: DVRPC Data Bulletins 41 & 69, U.S. Census Bureau State & County Quick Facts and Adams, C.

**Table 3 – Per capita Income In the Philadelphia 5 County
Region 1960- 2006**

<u>County</u>	<u>1960 (1967 \$)</u>	<u>1980 (1967 \$)</u>	<u>1990</u>	<u>2000</u>	<u>2005</u>
Bucks	\$2,267	\$3,319	\$18,292	\$27,430	N/A
Chester	2,398	3,614	20,601	31,627	N/A
Delaware	2,617	3,317	17,210	25,040	N/A
Montgomery	3,181	3,943	21,990	30,898	N/A
<u>Philadelphia</u>	<u>2,121</u>	<u>2,496</u>	<u>12,091</u>	<u>16,509</u>	<u>-22.1%</u>

Source: DVRPC Data Bulletin 44, U.S. Census Bureau State & County Quick Facts and Adams, C.

The data reveal that over a significant number of years the regional population has been spreading out and abandoning the inner city and older suburban centers. The data also show that the majority of the population in motion has been white with income levels that have outpaced their center city neighbors by a substantial margin. These trends add weight to the claim that traditional zoning policy is exclusionary, supports the segregation of socioeconomic population groups, hinders mixed use communities, and promotes the inefficient use of open space resources, as middle and upper class, mainly white, population groups migrate to the desirable open space areas once older communities begin to fail. Some researchers suggest that these older communities fail because zoning policy often does not support mixed socioeconomic communities that thriving areas have (Jacobs, 1992; Congress for the New Urbanism, 2008). The inefficiencies in land use come as socioeconomic groups leapfrog over older less desirable living areas into undeveloped open space areas. The built environments of newly developed areas are generally more spread out and automobile dependent, using more open space resources than older urban communities (Soule, 2006; Jacobs, 1992). This spreading out is due to many socioeconomic factors including preferences of individuals wanting larger building lots on the urban/suburban fringe and municipal officials supporting this trend with sympathetic zoning and the appropriate infrastructure (Porter, 1997). These and other factors including inefficient utilization of public transportation dollars and strong lobby from the building trades pushing for new roads, sewers, water, and other utilities needed to support their industry are beyond the scope of this paper but add weight to the momentum of urban sprawl (Jacobs, 1997; Weiss, 1987). Given current and historical data supporting inefficient land use and the decline of older

urban centers, what organizations and initiatives in the Philadelphia region are attempting to address these issues? Are concerned organizations linking the issues of urban decay and sprawl, as they appear to be intertwined, or are they dealing with them independently?

2.0 - Land Conservation Organizations and Initiatives

To understand the regional efforts to conserve open space resources and combat urban sprawl, one must again look back at the chain of events leading up to the present structure of governance in the region. After the consolidation of Philadelphia communities in the mid 1880's, 238 autonomous municipalities formed over time, all of them empowered by state zoning statutes, allowing them to establish their own land use codes (Frumkin *et al.*, 2004; Fischel, 2002). With this autonomy and land use power at the local level, a massive regional patchwork of various land use planning policies formed with little or no regional continuity or cooperation (Porter, 1997). Since no initiatives exist to establish regional governance over land use issues, public and private advocates for land conservation must work within the existing patchwork of numerous municipal governing bodies and a mix of different land planning programs.

2.1 - Regional Land Trusts

When the regional population abandons older communities and the city centers in favor of outer ring communities, they rapidly consume open space resources. Land trusts have been attempting to slow this trend by working with and educating municipal leaders and

land owners, buying land outright, acquiring and monitoring conservation easements on private land, and working with developers and municipal officials to establish efficient land development practices while preserving critical natural areas (Brewer, 2003). Four land trusts, Brandywine Conservancy, Heritage Conservancy, Montgomery County Lands Trust, and Natural Lands Trust have preserved more than 45,000 acres of land in the region, have helped other public and private agencies preserve thousands of acres of farm land and other open space assets, have assisted in the creation of the GreenSpace Alliance (GSA) and the Regional Greenspace Priorities Report discussed later in this paper, and have been working to preserve the high value open space resources targeted in the report (DVRPC, 2006; GSA, 2008; Land Trust Alliance, 2008). Though there are other NGOs and government entities working in total or part on open space land preservation in the region, these four land trusts represent a broad constituency of organizations and individuals concerned with preserving open space resources and improving quality of life.⁴

Brandywine Conservancy established in 1967 and based in Chadds Ford PA, operates mainly in the Brandywine River Watershed area of Chester County, has 76 full-time staff and over 4000 supporters, and has conserved more than 34,300 acres of land mainly in Pennsylvania.⁵ Brandywine Conservancy offers land planning for conservation and limited development, natural resource conservation and management plans, creation or revision of municipal ordinances, storm water management, farmland preservation, historic preservation, scenic resource protection, watershed analysis, and landscaping with native plants (Brandywine Conservancy, 2008; Land Trust Alliance, 2008).

Heritage Conservancy based in Doylestown, Bucks County, PA was founded in 1958, has 22 full-time staff and 850 plus supporters, and has conserved more than 5,500 acres of open space. Heritage offers services in the following areas; adaptive reuse and feasibility studies, education and out reach, Geospatial Information Management, greenway and trail planning, historic preservation, master site planning, natural resource protection, open space planning, property stewardship, river conservation planning, strategic planning technical assistance, and watershed restoration. Heritage has established the Lasting Landscapes initiative that works to preserve open space and historic areas comprehensively at the landscape level such as a whole watershed area or a scenic valley area (Heritage Conservancy, 2008; Land Trust Alliance, 2008).

Montgomery County Land Trust (MCLT) headquartered in Lederach, PA, and founded in 1993, has 4 full-time staff members and over 325 supporters, and has conserved 3659 acres of land in the region. MCLT formed at the same time that county commissioners adopted the county's first open space program. (MCLT; Land Trust Alliance). The commissioners felt that an NGO was needed to complement county efforts to preserve open space resources. MCLT's creation is therefore unique in that it represents the only region land trust formed as a result of governmental land preservation efforts, and MCLT maintains a close relationship with community leaders and elected officials (MCLT). MCLT works to preserve county open space resources, foster smart growth strategies, educate county citizens, and help implement the county's Green Fields/Green Towns open space planning program. MCLT also established the Partners for Land Preservation program in 1997 to improve communication among concerned stakeholders committed to open space resource protection in the county.

Natural Lands Trust (NLT) based in Media, Delaware County PA is the largest of the regional land trusts and was founded in 1953. It has 48 full-time staff members and 2800 supporters, has protected over 85,000 acres of open space resources in twelve states, and owns and manages over 20,000 acres of nature preserves (NLT, 2008; Land Trust Alliance, 2008). NLT offers a number of conservation planning tools including; Smart Conservation - a web based application that helps identify areas of high ecological value, landscape conservation planning, watershed planning, and resource mapping. One unique statewide program that NLT spearheads is Growing Greener: Conservation by Design, which helps municipalities and developers build new homes and businesses while protecting critical open space resources. This program is a collaborative effort between the Pennsylvania Department of Conservation and Natural Resources (DCNR), the Governor's Center for Local Government Services, and NLT.

By interviewing land trust members and reviewing current and historical data available on these land trusts, it appears that they have the knowledge, expertise, and base constituency to lead the region toward cooperative efforts in open space preservation and land use planning. Their representation in the GSA, a regional advocacy group for land use policy and initiatives discussed later in the paper, suggests a codification and synthesis of information and resources into one oversight organization that can act as a coordinating body and regional clearing-house for land conservation initiatives, policies, and programs. The regional land trusts might be best suited for coordinating and leading efforts to improve land use and planning policy given the fragmented nature of regional governance and the apparent lack of support from state and federal programs. The public

decision-makers on land use issues, transient municipal officials elected to short terms in office, have not completely integrated land conservation and ecological balance into their planning doctrine and have generally been stuck in a post World War II expansionist mentality, often bowing to the pressures of land developers and the new tax dollars generated from development (Fischel, 2002; Soule, 2006; Weiss, 1987). Adrian Phillips (2003) makes a good point in his article, *Turning Ideas on Their Head – The New Paradigm for Protected Areas* when he states that many governments are too stressed financially and overwhelmed with the protected lands they already possess to offer additional support for community and regional land protection initiatives. The concept of government disengagement from land conservation efforts is supported by the sheer number and rate of land trusts forming from the 1970's through the mid 90's (Brewer, 2003). Land trusts generally formed to fill the voids created by government inefficiencies and therefore might be the best advocates for initiatives and programs that work to correct the imbalances inherent in current land use planning policy.

Each of the four regional land trusts mentioned in this paper have unique assets and skills that they bring to the regional land use planning and conservation table. They offer a number of planning tools available to private landowners and public officials that help prioritize open space resources and plan for future growth. Each has unique qualities and expertise in specific areas of land preservation in the Philadelphia region. Some have generalized territorial boundaries of operation dictated by watersheds and political bounds, while others are willing to operate beyond the bounds of the five county region, using their resources and skills to take advantage of distant land preservation

opportunities. What is important to realize for purposes of this research paper is that each land trust is a member of the GSA and each provides guidance and input into the initiatives and recommendations that form the backbone of the GSA mission. Each of these land trusts, with the exception of MCLT, originally formed to meet the land preservation needs of the private sector and other organizations.

Based on interviews with some land trust members and Delaware Valley Regional Planning Commission (DVRPC) representatives, complete disclosure of land preservation information among land trusts and between land trusts and other public and private entities working on regional land conservation issues appears to be tenuous, with some land trusts keeping tight reigns on land conservation information. The reasons they give for this is to protect the location of private lands preserved through conservation easements and therefore slowing developers efforts to purchase desirable lands adjacent to these preserved lands. Though this might be a valid argument for not sharing information, land trusts and other concerned stakeholders should work out ways of exchanging pertinent conservation information in an effort to build a more robust regional conservation plan. It would appear that the GSA could act as a conduit between stakeholders, and act as the clearing-house for shared information. Land trusts represent the major NGOs working on the front lines of regional land planning and conservation efforts. All of them work closely in various capacities with county and municipal governments to affect changes in land use police that helps slow inefficient urban expansion and conserve open space resources. By sharing information, technical resources, and preservation strategies and techniques these land trusts have the potential

to become regional leaders in advocating for cooperative and coordinated efforts in open space conservation and land use planning. The creation of the GSA appears to represent the first attempt to consolidate resources, as the four land trusts discussed make up the backbone of the GSA board of directors.

2.2 - The GreenSpace Alliance

The GreenSpace Alliance of Southeastern Pennsylvania formed by the Pennsylvania Environmental Council in 1992 and representing a coalition of organizations and individuals concerned with the loss of regional open space resources, published the *Regional Open Space Priorities Report* in 2003, which was subsequently updated and renamed the *Regional Greenspace Priorities Report* in 2007. Alliance members and supporters include the major regional land trusts – Brandywine Conservancy, Heritage Conservancy, Montgomery County Land Trust, and Natural Lands Trust - the Pennsylvania Horticultural Society, and the Delaware Valley Regional Planning Commission, the regional Metropolitan Planning Organization (MPO) acting in an advisory capacity, providing technical data collection and mapping assistance. Funding has come from the William Penn Foundation, a major regional charity, with a matching grant from the Pennsylvania State Community Conservation Partnership Program, administered by the Bureau of Recreation and Conservation and the Pennsylvania DCNR.

The report highlights priority areas in the region that should be preserved based on agricultural, natural resource, and recreational significance. Two areas are delineated, high priority preservation areas in the urban/suburban sectors or that area that has already

been heavily developed, and high priority preservation areas outside the urban/suburban sectors in less developed rural areas. A distinction is made between these two areas because preservation tactics will differ between the two sectors. The urban/suburban sector area offers the opportunity to protect smaller high priority parcels such as natural and agricultural lands, stream corridors, greenway corridors, and recreational lands. The open space resources outside the urban/suburban sector afford greater opportunities to preserve larger tracts of high priority lands. These high priority lands totaling 469,700 acres or 33% of the total regional area, have been consolidated onto one map to show all the significant areas that should be targeted for preservation and kept out of the path of development (Figure 2).

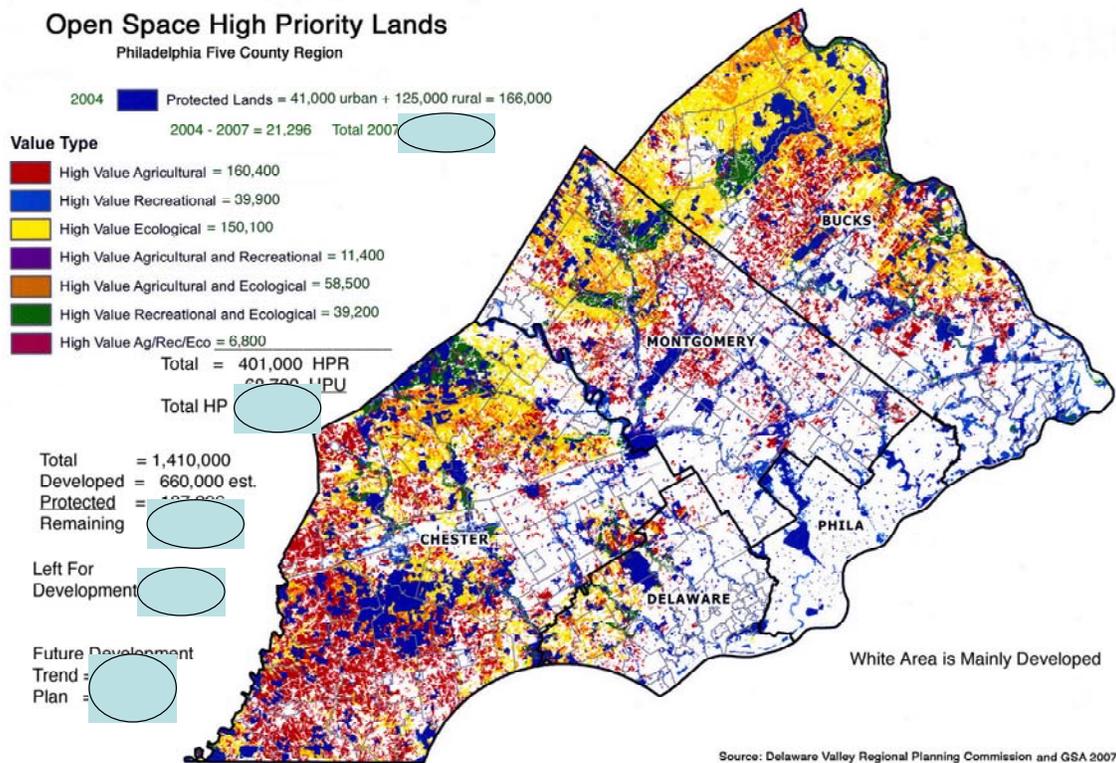


Figure 2 – Open Space High Priority Lands

After mapping these priority areas GSA members compiled a list of five strategic initiatives and eight land preservation recommendations based on the *Regional Greenspace Priorities Report* findings. Using these initiatives and recommendations as a guide, this author interviewed GSA staff, land trusts, and the regional MPO in an effort to determine the progress made since 2003 in achieving these initiatives and meeting the report recommendations. All interviewee organizations are represented on the GSA board of directors. The following information is a synopsis of these interviews and represents a general opinion on the progress made to date on the GSA initiatives and recommendations.

2.21 GSA Initiatives (GSA)

Promote preservation of strategic, prioritized open space, and consistency among open space plans at local, county, regional, and statewide levels.

Respondents said that the report in general is being promoted and accepted, but that consistency among open space plans at all levels is a concern due to the number of municipalities and governing bodies involved, and that this fragmented governance could have an adverse effect on efforts to protect prioritized open space areas.

Provide leadership for the implementation of the Regional Green Plan.

Most stated that the GSA is a relatively new organization in the regional land protection and planning arena and because there are so many regional players, developing a

leadership role may take time. Continued efforts should be made to strengthen the leadership role of the GSA between NGOs and governing bodies.

Advocate for legislative changes in land use decisions and policies.

GSA members said that GSA could become a major regional advocate for legislative changes in land use decisions and policies, but that this takes time to develop in a highly political arena. GSA has already had a positive influence on funding decisions for state sponsored land preservation programs. More work could be done to advocate for legislative changes to land use policy, but with many municipal governments holding land use decision-making power, they may be reluctant to change and there could be legal challenges.

Advocate for increased public and private funding for preservation.

GSA is doing this effectively in that the Regional Green Plan is forming the basis for state, county, and foundation funding of open space resources. However, GSA members said that funds for protection of open space are limited, are being sought by many different organizations, and are probably not adequate to meet the requirements of the Regional Green Plan. This points to the need to adopt different strategies to slow sprawl and protect open space assets.

Develop and pursue an urban agenda as an integral element of a regional open space preservation, restoration, and enhancement strategy to advance the livability of communities.

Those interviewed stated that more work could be done with regard to the urban agenda and that the GSA could be the major conduit between urban/suburban renewal and livable communities initiatives, and the efforts to preserve open space resources. The GSA could become a regional model and the lead organization in building collaborative efforts that combine open space conservation efforts with urban renewal/revitalization efforts. Researchers have shown that there is a direct link between urban decay and sprawl, and that to combat the negative effects of sprawl, initiatives must be developed that deal with the decay of inner cities and older outer ring communities (Jacobs, 1997; Rees, 1999; Porter, 1997; Soule, 2006). GSA has the urban agenda as a key initiative in its mission but has yet to act on this initiative. While the open space conservation mission seems to be the main focus of GSA at this point, the urban agenda may present opportunities to address some root issues of sprawl (zoning inequities and the lack of mixed-use, walkable communities). GSA might look to link with NGOs currently addressing the urban renewal and revitalization agenda.

2.22 - GSA Recommendations for Stakeholders (GSA)

Preserve open space in both rural and urban/suburban lands and tailor preservation approach accordingly.

There are projects and initiatives currently underway that have an influence on the Regional Green Plan and land preservation efforts in both the urban/suburban lands and the rural lands. These projects and initiatives include the following and are being coordinated by GSA member organizations:

The Pennypack Watershed Partnership headed by representatives of Montgomery County Land Trust and the Pennypack Ecological Trust (not a GSA member), and working to maintain open space resources located in Bucks, Montgomery, and Philadelphia Counties that feed water runoff into the various creeks of the Pennypack watershed. Pennypack watershed drains to the Delaware River and contributes potable water resources for the Philadelphia population.

The Hopewell Big Woods Project is headed by the Natural Lands Trust and is working to preserve open space resources in this 70,000 plus acre, relatively unfragmented and ecologically diverse, woodland habitat in Chester and Berks Counties that provides watershed protection to French and Hay Creeks and offers recreational amenities to the entire region.

The Bucks and Montgomery County Highlands Project headed by the Heritage Conservancy is working to preserve open space resources in the Highlands areas of Bucks and Montgomery Counties. The Highlands are 1.4 million acres of relatively unencumbered lands stretching from Connecticut to south-central Pennsylvania that has received a federal mandate for protection via the Highlands Conservation Act. Representation for the Pennsylvania portion of the highlands is through The Highlands Coalition that has the Natural Lands Trust and The Pennsylvania Environmental Council as member organizations.

The Southwest Chester County Agricultural initiative is working to preserve high value agricultural lands and is headed by the Brandywine Conservancy.

The Tidal Delaware Initiative started by the Pennsylvania Environmental Council (PEC), the genesis organization for the GSA and a statewide environmental advocate, is working to revitalize the tidal Delaware River area south of center city Philadelphia. Much of this area is marked as low income, postindustrial communities in need of redevelopment.

Realizing that the river and communities near it are tied to one another, PEC is working to improve river access while facilitating ecological and community restoration projects.

A key element to these projects is that they link urban/suburban population groups to rural population groups, as all the projects influence all regional inhabitants in some way. As an example, Protection of Chester County agricultural lands provides jobs and food for the local population, habitat for wildlife, and a scenic landscape while also providing locally grown food products for urban/suburban populations, as well as providing recreational opportunities. Hopewell Big Woods offers an opportunity to maintain regional biodiversity through the protection of ecosystem-size land tracts while also offering significant recreational amenities to urban/suburban populations. All of these projects demonstrate the importance of establishing region wide coordination to achieve positive outcomes. These projects and initiatives are represented by GSA member organizations, and according to members that responded to the interview questions, GSA should be the lead organization in collating and disseminating information and efforts generated by these projects and initiatives.

As a guideline, ensure that at least one acre of undeveloped land is protected for every acre that is developed. In the rural conservation lands, permanently protect no less than 50% of remaining undeveloped and unprotected lands.

According to GSA members interviewed, these guidelines represent lofty goals that probably will not be attained due to the capital and political resources available to developers of open space resources, a fragmented regional open space landscape, multiple municipal governing bodies with different land use agendas and differing regulations, and shortfalls in funding available for open space protection. Though these goals might not be met, some GSA members said that they are important because they begin to bring all stakeholders together under one common open space conservation plan. This commonality has the potential to create a critical mass that can vastly improve protection efforts.

Recognize that streams and river corridors integrate rural lands with urban/suburban lands, and are therefore a critical resource for the region. Dedicate planning and funding resources to the permanent protection of these corridors.

Stream corridors and watershed protection initiatives and projects have become significant in the region for a number of reasons according to GSA member respondents. As the built environment expands, runoff increases and the potential for flash flooding increases. As more water resources are tapped to meet the demands of new development the quality and quantity of these resources decrease. Protecting watersheds in out lying areas has a direct effect on water quality and quantity available to down stream users. Therefore these protection efforts link urban/suburban populations with rural populations, creating a commonality with regard to open space conservation efforts. This commonalty is

important in that it demonstrates to all regional population groups the importance of cooperation and coordination of land protection efforts.

In the urban/suburban lands concentrate on protecting high-resource-value lands for recreation purposes and, where possible, for ecological resource and specialty agricultural uses.

Only a few respondents had comments regarding the land preservation efforts in the urban/suburban areas. These comments revolved mainly around the need to maintain and establish community agricultural production as a means to reduce the dependence on imported foods and to build a sense of community.

Enact comprehensive plans and land use ordinances and promote multi-municipal cooperation to protect open space.

Many of the regional land trusts and GSA members including the Brandywine Conservancy, Heritage Conservancy, and the Natural Lands Trust offer services to municipalities to evaluate and help craft land use ordinances and comprehensive plans that promote multi-municipal cooperation and consider the short and long-range open space needs of the region. GSA, as a stand-alone organization, does not offer these kinds of services.

Develop funding strategies combining federal, state, county, municipal, and private sources for financing preservation.

Most GSA members who responded to this recommendation stated that the funding of conservation projects on the scale needed to achieve meaningful results would be a

significant challenge over the coming years, as there are fewer funds available and more organizations competing for those funds. They also stated that the GSA might act as a clearing-house for funds that are acquired for open space protection. One example of this might be the GSA acting as the regional distributor of federal and state funds flowing down to the region for the protection of agricultural lands and other open space lands. Respondents stressed the significance of the GSA operation as a coordinating body for regional open space protection programs and initiatives.

Focus on attracting new revenue sources to protect open space.

Again respondents stated that funding issues would continue to plague open space conservation plans in the region. Though the formation of the GSA represents an effort to coordinate regional open space conservation efforts among a vast number of groups, individual organizations working under this umbrella are still competing among themselves for specific project funding. This demonstrates the need for the GSA to push for continued coordination and cooperation among open space stakeholder organizations. One of the major regional funders of open space preservation projects, The William Penn Foundation, has shifted its approach to funding land conservation projects. The Foundation is pushing for funding requests that delineate regional projects as opposed to specific pet projects of individual organizations (Harper, 2007). This approach might help facilitate fewer turf wars over limited funding and help move individual organizations to work together rather than independently.

The GSA with technical assistance from DVRPC and member land trusts has generated a comprehensive report on high priority regional open space assets that should be protected over time. The Regional Green Plan could represent a road map for regional stakeholders to follow with respect to open space conservation and planning efforts. With five counties, 238 municipalities, four major land trusts, and a myriad of other concerned stakeholders involved in land preservation and planning in some form, it would seem appropriate to have a regional coordinator for all of these efforts. Though this would be a major undertaking, GSA has already established the groundwork with the creation of the Regional Green Plan and has brought the four major land trusts, the regional MPO, and major funders together in this effort. A logical next step might be to begin educating county and municipal land conservation and planning authorities on the merits of the Regional Green Plan and the need to coordinate conservation and planning efforts region wide. GSA might also begin to collate land preservation and planning information from the counties and municipal bodies and assess its commonality with the Regional Green Plan. This assessment could form the backbone of an updated Regional Green Plan that incorporates and includes conservation and planning strategies down to the municipal level.

3.0 - The County and Municipal Ballot Referendum

Researching regional land conservation initiatives and programs, it appears that the public vote to raise funds for open space protection has been one of the major tools used by counties and municipal governments, as four counties and 98 of the 238 municipalities have utilized the ballot referendum (bond issues and property tax increases) to raise funds

for the protection of high value natural areas, recreation lands, agricultural lands, and watershed lands (Trust For Public Land, 2008). From 1988 through 2007 the region has raised \$762 million for the protection of open space assets with over \$500 million being raised by 98 municipalities within Bucks, Chester, Delaware, and Montgomery Counties and the remainder being raised by the county governments (Table 4) (Figure 1), (Trust For Public Lands, 2008). Fourteen referendums failed, one at the county level worth \$100 million, and thirteen at the municipal level worth \$83 million. Bucks and Chester Counties and their municipalities have had the most referendums with 48 and 36 respectively between 1988 and 2008. Bucks best year for referendums was 2002 with eight passed while Chester realized its best year in 2003 with seven passed (Table 5).

	<u>Bucks</u>	<u>Chester</u>	<u>Delaware</u>	<u>Montgomery</u>
County	\$90,500,000.00	\$50,000,000.00	\$0.00	\$112,500,000.00
Municipal	\$217,643,000.00	\$155,903,000.00	\$53,000,000.00	\$82,675,000.00
County Failed	\$0.00	\$0.00	\$100,000,000.00	\$0.00
<u>Municipal Failed</u>	<u>\$28,100,000.00</u>	<u>\$44,500,000.00</u>	<u>\$10,500,000.00</u>	<u>\$0.00</u>
Total Funds Raised	\$308,143,000.00	\$205,903,000.00	\$53,000,000.00	\$195,175,000.00
Total Failed to Pass	\$28,100,000.00	\$44,500,000.00	\$110,500,000.00	\$0.00
Total Raised	<u>\$762,221,000.00</u>	Source: The Trust for Public Lands - LandVote Data Base 2008		

3.1 – Statistics and the Limits of the Ballot Referendum

Even with this substantial amount of money being raised over the last two and a half decades, regional governing bodies seem to be losing the open space conservation battle

to urban sprawl type development (Howell-Moroney; DVRPC 2006, Brookings Institution, 2003). The data reveals that during the period of data collection on population trends and open space conservation referendums (1988 – 2007), the Philadelphia County population has decreased by 16%, while the outlying county population has increased by 18%. This development has mainly taken the form of new, single-family detached dwellings (SFDs) in low-density subdivisions on agricultural and other open space lands (DVRPC, 2006; DVRPC, 2004). It should be noted that many older, outlying suburban areas also lost population (Brookings Institution, 2003), (Figure 1). DVRPC land use data on SFDs between 1990 – 2000 show that the fastest growing counties (Bucks, Chester, and Montgomery) had the largest increases in the amount of land dedicated to SFDs, had the largest losses in agricultural and other open space resources, and generated the most income dedicated for land conservation in some form (DVRPC, 2004; Howell-Moroney, 2005). This further demonstrates that dollars raised through ballot referendums for open space protection may be helpful but might not be able to slow the adverse effects of sprawl enough to achieve the desired land protection results.

Research into state, county and municipal governments that use the ballot referendum to raise funds for land conservation shows some significant constraints with this method. Dr. Jeffery Kline a research forester for the United States Department of Agriculture published an article in the journal, *Society & Natural Resources*, which shows that the motivation for preserving open space resources is positively correlated to increasing population growth and development, income, and education, but that this motivation has a diminishing return as more open space land is consumed and voters become resigned to

the fact that additional efforts will not improve their quality of life further. Kline (2006) also presents a dilemma plaguing ballot referendums targeting land conservation efforts. As interest in an area grows for land conservation and voters begin to approve ballot referendums for open space protection, wildlife habitat and watershed areas may already have been compromised by over development. This suggests that land planners and open space advocates interested in conserving larger tracts of open space on the urban/suburban fringe might be better served if they work to educate rural population groups in advance of development or spend conservation dollars raised from outside resources on protecting key rural lands ahead of development.

Other research into land conservation ballot referendums suggests that counties and municipalities will not be able to raise enough funds to protect the open space resources targeted by DVRPC for conservation in their long range planning (Howell-Moroney). Howell-Moroney's research (2005) shows that, as areas grow with an influx of higher income individuals, the price of land increases, which hampers county and municipal buying power. His statistics show that in order to meet the land conservation targets suggested by the DVRPC long-range plan, Bucks, Chester, Delaware, and Montgomery Counties and their respective municipalities would have to generate an additional \$13.8 million annually.

Given the amount of funds already raised through ballot referendums and the intensity and type of development (middle to high income subdivisions) having taken place in the region, perhaps the saturation point has been reached, with regional inhabitants being

satisfied with the level of open space protection or resigned to the fact that open space resources can not be further protected. The passage or failure of future ballot referendums will reveal whether public interest persists. Table 5 shows balloting statistics to raise funds for open space protection between 2002 and 2007 and suggests that a plateau may have been reached in 2006 with 141.4 million dollars raised through 17 referendums with an average 68.8% voter approval rating.

Table 5 - Referendum Data (2002 - 2007)

<u>Dollars Raised</u> <u>mm</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>Total</u>
Bucks	32.7	0	8.8	48.7	16.5	92.0	198.7
Chester	30.4	19.8	10.8	24.0	44.2	11.0	140.2
Delaware	0	6	6.0	11.0	20.0	0.0	43.0
Montgomery	0	112.5	4.5	0.0	60.7	0.0	177.7
Philadelphia	<u>0</u>	<u>0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	0.0
Annual Total	63.1	138.3	30.1	83.7	141.4	103.0	559.6
<u>No. of Votes</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>Total</u>
Bucks	8	0	3	5	4	2	22
Chester	5	9	2	4	7	1	28
Delaware	0	1	1	2	1	0	5
Montgomery	0	1	1	0	5	0	7
Philadelphia	<u>0</u>						
Total	13	11	7	11	17	3	62
<u>Avg. Vote Spread</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>Total</u>
Bucks	12.7%	0.0%	4.7%	23.0%	18.6%	18.0%	16.1%
Chester	22.8%	4.3%	6.0%	0.3%	12.0%	12.0%	7.6%
Delaware	0.0%	15.0%	21.0%	25.5%	29.0%	0.0%	18.9%
Montgomery	0.0%	28.0%	19.0%	0.0%	15.5%	0.0%	8.6%
Philadelphia	<u>0.0%</u>						
Tot. Avg. Spread	8.9%	11.8%	12.7%	12.2%	18.8%	7.5%	12.8%

Source: Trust for Public Land, LandVote Database

4.0 – Inadequacies of Land Protection Efforts

The research done by Kline and Howell-Moroney, and the data collected from interviews with land trusts, GSA members, and MPO representatives suggests that efforts to conserve open space resources at the rate suggested by the regional MPO and the GSA may not be met. The socioeconomic data presented in Tables 1 through 3 and Figure 1 show that while overall population growth is minimal, urban sprawl continues with the population spreading out and inner city areas and older suburban communities hollowing out. This spreading out appears to be supported by the inefficient use of open space resources including the construction of large lot low density SFDs in automobile-dependent communities that consume large swaths of key agricultural and watershed lands and other natural land resources. The hollowing out of the inner city and some older inner ring suburbs and towns is causing those areas to fall into decay. Based on analysis of the population data and the research conducted by others, this spreading out and hollowing out seems to be a self-perpetuating cycle influenced by zoning policies supporting the segregation of land use types and socioeconomic classes, and a changing economic structure including the deindustrialization of the region (Adams *et al.* 1991; Licht and Scranton, 1986; Fischel, 2002).

Interviews with land trust representatives, urban planning NGOs, and studies by the Brookings Institution (2003) and the regional MPO suggest that the fragmented nature of regional governance has hindered efforts to build an efficient, vertically integrated plan to curb sprawl and preserve open space resources. Based on these results and the assumption that the current governing structure (many municipalities acting

independently) is not going to be altered in the near term to allow for regional control of land planning and conservation initiatives, other strategies will need to be employed if land trusts and the GSA, county and municipal governments, and other concerned stakeholders are going to be effective in slowing sprawl and its negative effects on the natural and built environment.

Protected open space data for the region reveal some interesting results and raise additional questions. As of 2004 the region had protected 176,155 acres of land through public and private means and had increased this number by 21,296 acres by the end of 2007 (Table 6).

Table 6 - Protected Open Space Acres Comparison, 2004 - 2007				
County	2004 Public	2007 Public	04'-07' Chg.	% Chg.
Bucks	31,565	32,778	1,213	3.80%
Chester	21,901	23,249	1,348	6.20%
Delaware	9,450	9,602	152	1.60%
Montgomery	23,310	19,836	-3,474	-14.90%
Philadelphia	<u>10,133</u>	<u>10,349</u>	<u>216</u>	<u>2.10%</u>
Total	96,359	95,814	-545	-0.57%
County	2004 Private	2007 Private	04'-07' Chg.	% Chg.
Bucks	15,631	18,028	2,397	15.30%
Chester	51,348	69,381	18,033	35.10%
Delaware	2,497	3,139	642	25.70%
Montgomery	9,789	10,601	812	8.30%
Philadelphia	<u>531</u>	<u>488</u>	<u>-43</u>	<u>-8.10%</u>
Total	79,796	101,637	21,841	21.49%
County	04' Total	07' Total	04'-07' Chg.	% Chg.
Bucks	47,196	50,806	3,610	7.60%
Chester	73,249	92,630	19,381	26.50%
Delaware	11,947	12,741	794	6.60%
Montgomery	33,099	30,437	-2,662	-8.00%
Philadelphia	<u>10,664</u>	<u>10,837</u>	<u>173</u>	<u>1.60%</u>
Total	176,155	197,451	21,296	10.79%

Source: DVRPC 2008

Given this rate of protection, it would appear that regional conservation efforts could meet the benchmarks set by the MPO and the GSA (The GSA calls for one acre conserved for every acre developed and the MPO predicts the development of 71,828 acres of land under the Plan Scenario and 167,072 under the Trend Scenario between 2000 and 2030) (DVRPC, 2006). However, the data show that private conservation efforts in Chester County between 2003 and 2007 account for 85% of the total land conserved over this period and based on the high number of voter referendums in this and other counties (103 over all and 36 in Chester County), this level of conservation may begin to taper off. Specifically, if private conservation efforts in Chester County do not maintain this level of conservation, but trend back toward an average in line with other counties over this period, then the MPO and GSA benchmarks might not be attainable.

5.0 – Combining Land Conservation Programs With Urban/Suburban Redevelopment and Revitalization Initiatives

The research conducted for this paper points to a linkage between urban decay and urban sprawl (Brookings Institution, 2003; Clarion Associates, 2000; DVRPC, 2006; Frumkin *et al.*, 2004; Porter, 1997). This linkage further points to the need for a cooperative effort between leaders of land conservation and anti-sprawl initiatives, and leaders of urban redevelopment and revitalization initiatives in an attempt to meet the goals of both. Research shows that building or redeveloping mixed-use, walkable communities takes pressure off of open space assets, and uses resources more efficiently, which ultimately keeps municipal costs down and improves quality of life (Kahn, 2006; Porter, 1997; Pinderhughes, 2004). The fifth GeenSpace Alliance initiative (2008) states: “Develop and

pursue an urban agenda as an integral element of a regional open space preservation, restoration, and enhancement strategy to advance the livability of communities.” This initiative positions the GSA as a possible advocate and leader in the implementation of a coordinated regional plan that combines land conservation strategies with redevelopment plans for older suburban communities. GSA representatives stated that this initiative has yet to be properly addressed, but that it is a key component of the over all regional land use and conservation mission.

The Southeastern Pennsylvania Metropolitan Development Network (SPMDN) is a branch organization of 10,000 Friends of Pennsylvania that, according to their mission, is working in the region to improve regional planning cooperation, improve economic vitality in older communities, increase housing choices through the creation of mixed-use neighborhoods, and increase mobility for job choice while decreasing the distance between workers and their jobs (SPMDN, 2008)⁶. In late 2007 SPMDN established a policy goal that states: “Link the development of housing and employment centers to existing transportation infrastructure to spark community revitalization, especially in older cities and boroughs and support efforts for workforce and affordable housing.” A representative of the SPMDN stated in an interview for this paper that cooperative efforts between open space planning and conservation entities with urban revitalization entities such as SPMDN are essential if both are to achieve positive results. Both GSA and SPMDN representatives stated in interviews that linking rural land conservation and urban revitalization efforts could create a powerful tool in the efforts to achieve both the goals of open space conservation and urban revitalization advocates. Given that the

success rate of ballot referendums might be peaking and that private initiatives by themselves to conserve open space resources most likely will not be able to keep pace with the rate of sprawl, perhaps it is time to combine open space conservation tactics and resources with urban revitalization tactics and resources, in an effort to slow the expansion of the built environment and the deterioration of the natural environment.

6.0 - An Urban Revitalization Model

The 36 acre Station Square urban revitalization project located in the older communities of Upper Gwynedd Township and Lansdale Borough, Montgomery County Pennsylvania represents an example of efficient urban reuse that helps build mixed-use, walkable communities while reducing the pressures on regional open space assets. The Station Square site was a community brownfield (an old industrial facility sitting idle with possible environmental contamination) that the developer found to be economically viable for a mixed-use, Transit Oriented Design (TOD). The developer and urban architects created a design with 346 apartment units, 48,800 square feet of commercial space, 9.9 acres of open space, a community house and pool, and 160 parking spaces for community transit users. The development is located next to a commuter rail stop, while the commercial portion offers residents goods and services within walking distance of their homes (Figure 3). This type of urban revitalization project can take a substantial amount of pressure off of open space development (one acre of urban infill or redevelopment can save four acres of open space in undeveloped areas according to Pennsylvania state and EPA brownfields redevelopment research). Land use plans and conservation efforts should include the adoption of efficient urban infill and revitalization

design, as part of the overall strategy to reduce sprawl and protect open space resources. GSA has the urban revitalization agenda as part of its mission and can act as the linking organization between land protection initiatives and urban revitalization programs, educating both on the importance of using both techniques to curb the negative effects of sprawl.

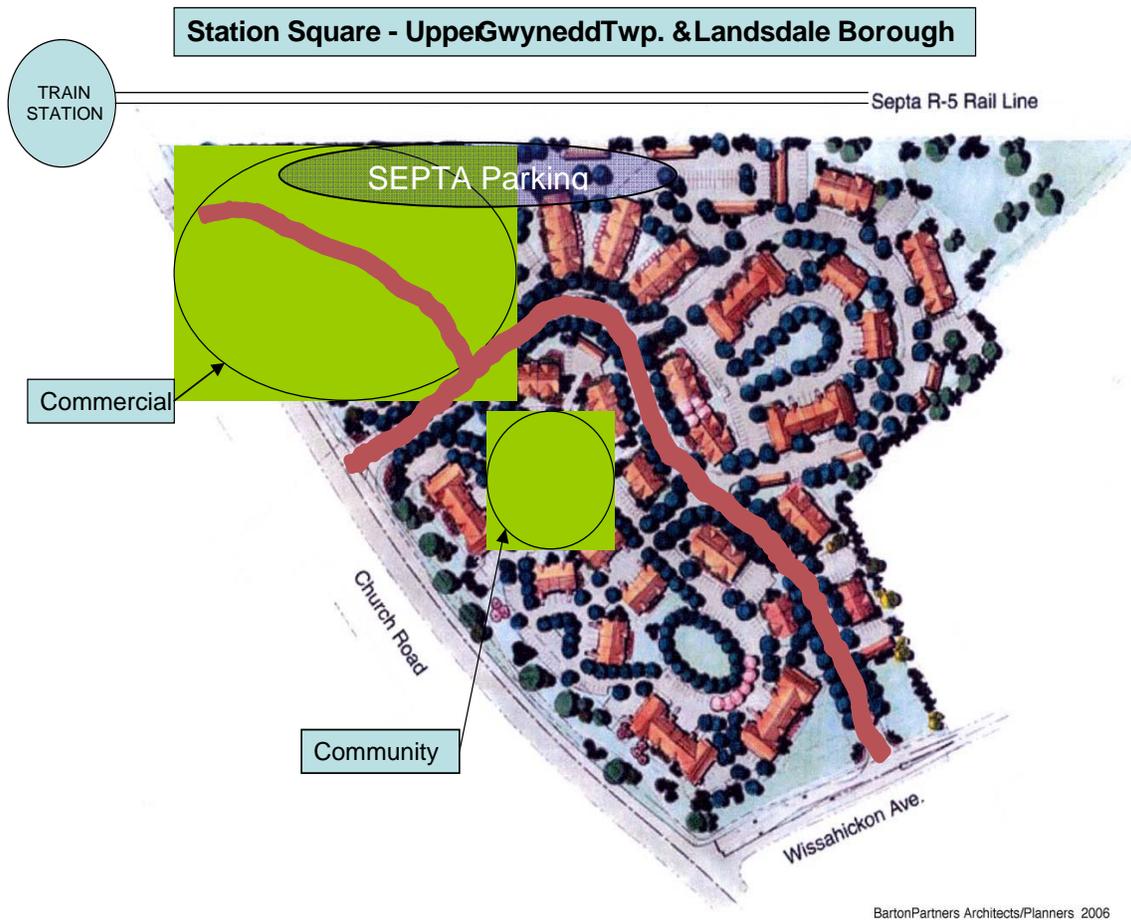


Figure 3. – Station Square complex, a mixed-use, walkable Transit Oriented Design

7.0 – The Free Market, the Urban Ecological Footprint, and the Loss of Regional Resources: The Case to Curb Sprawl

Skeptics of the negative effects of urban sprawl argue that sprawl is a naturally occurring phenomenon of the free market system in action, and that any imbalances realized because of sprawl (urban decay and consumption of open space assets) will balance themselves out over time through natural adjustments in the market (Hayward, 1998; Holcombe, 2008). Others argue against state and regional urban growth management strategies claiming that any effort to control growth on a regional level adversely affects economic activity, drives up housing prices that further alienates socioeconomic classes, and has little effect on curbing sprawl type development (O’Toole, 2007). What both of these arguments fail to take into consideration is the exclusionary nature of zoning policy that precludes a truly free market and the disconnect between economic growth and the natural environment.

7.1 – The Free Market Economy and its Environmental Costs

The traditional land use model in the Philadelphia region and in many other parts of the country is not representative of a true free market system in that all the costs associated with regional economic development are not being adequately represented and paid for by those who utilize the resources (Rees, July 1999). As an example, urban sprawl in the region has been shown to support the construction of low density, auto dependent developments that cater to the desires of medium to high-income individuals, and supports urban decay and the consumption of natural open space assets at a rapid pace.

The costs associated with the natural resources needed to build this regional infrastructure are not adequately represented in the cost developers charge for these goods and services. Research conducted by William E. Rees (1999), a professor at The University of British Columbia School of Community and Regional Planning demonstrates the concept of the built environment being out of sync with the natural environment (costs associated with the consumption of natural resources not being adequately distributed) and the unsustainable nature of this relationship. He demonstrates this phenomenon in his Ecosphere Source and Sink model (Figure 4.).

The model shows that as an economy (city or region) consumes goods and services, the pollution and waste generated by the production of the goods and services is not internalized into the costs charged for the goods and services but is borne by the natural environment through pollution out puts and degradation of ecosystems. If all the environmental costs associated with building and maintaining a new sprawl type community (the environmental costs to mine, manufacture, and transport all the materials needed; the ecological cost of degrading wildlife habitat; the cost of destroying watershed and local agricultural lands; the cost of reduced quality of life; and the future energy and pollution cost associated with automobile-dependent, large lot, SFD communities) were included in the price consumers would have to pay for this development, perhaps they would opt for more efficient means of development such as compact, mixed-use walkable communities near transportation hubs, employment, shops, and services. Rees measures the urban environments overall impact on the natural environment through the size of its urban ecological footprint or that amount of land and resources needed to sustain itself.

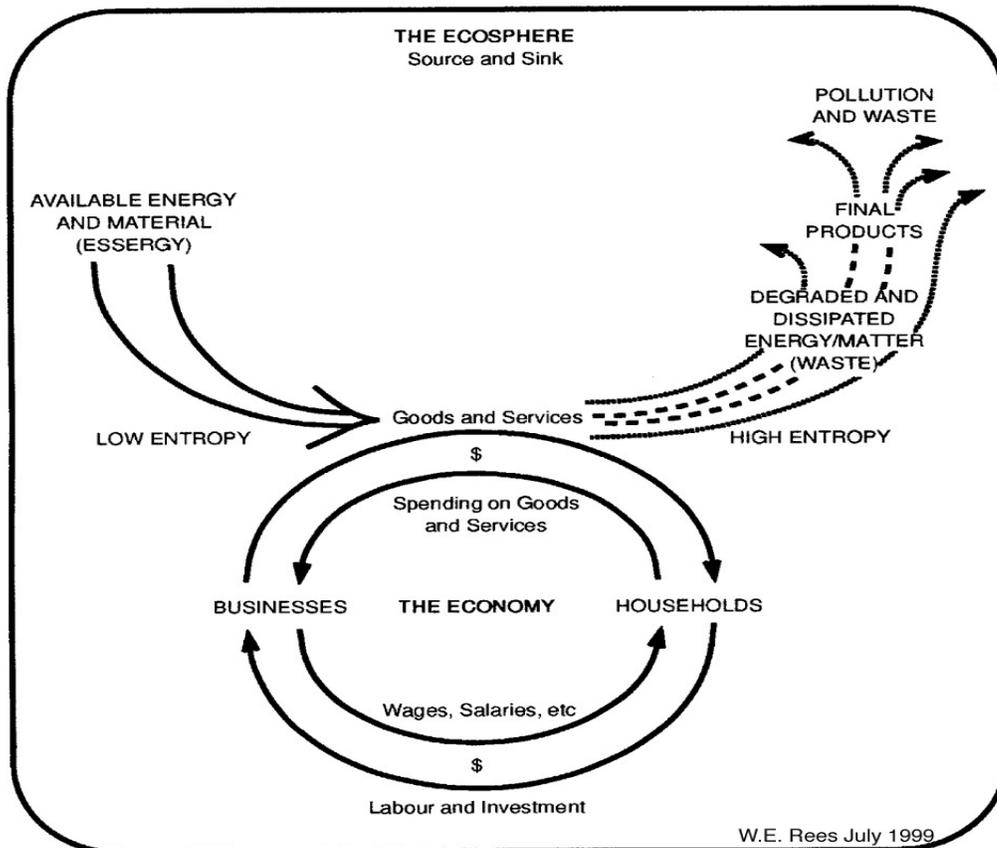


Figure 4 – The western economic model excludes many environmental costs

7.2 – The Urban Ecological Footprint

This urban ecological footprint encompasses not only the physical boundary of the city, but also the physical area outside the city needed to produce all the resources required for that city to sustain itself. This urban ecological footprint for high income, developed cities is about two to three orders of magnitude larger than the physical urban boundary and translates into roughly 11 acres per person in the United States, the highest in the developed world (Bazan *et. al*, 1997). Urban centers are no where near stand alone sustainability (producing for themselves what they need to survive) and are running a

huge ecological deficit that is draining resources from other areas that are not being replenished at the rate they are being consumed. What feeds and husbands this economic engine is the Earth's natural ecological systems that, after a point, can neither keep pace with the demand for its resources nor absorb the engine's wastes. Since American urban centers represent extreme levels of consumption in comparison to non-urban areas and since urban populations are inefficiently spreading out, it would seem prudent for these urban areas to begin looking for strategies to improve the urban ecological imbalance and move to make these environments more sustainable. The Philadelphia region has some of the most productive farmland in the state (American Farmland Trust, 2008). This asset can help reduce the regions urban ecological footprint but unfortunately regional farmland is being rapidly consumed by development.

7.2 – Regional Farmland: A Symbol of Resources Lost

According to the Delaware Valley Regional Planning Commission (2006), between 1990 and 2000 over 10,000 acres of farmland a year was lost to development. Southeastern Pennsylvania has some of the richest farmland in the nation and the state's top three counties ranked by agricultural sales are located in this area with \$193 million in annual agricultural sales generated on 15% of the land area (American Farmland Trust, 2008). Sprawling development in the region threatens to destroy this significant regional asset and draws attention to the need for initiatives and programs that slow sprawl and help reduce the urban ecological footprint (Figure 5).

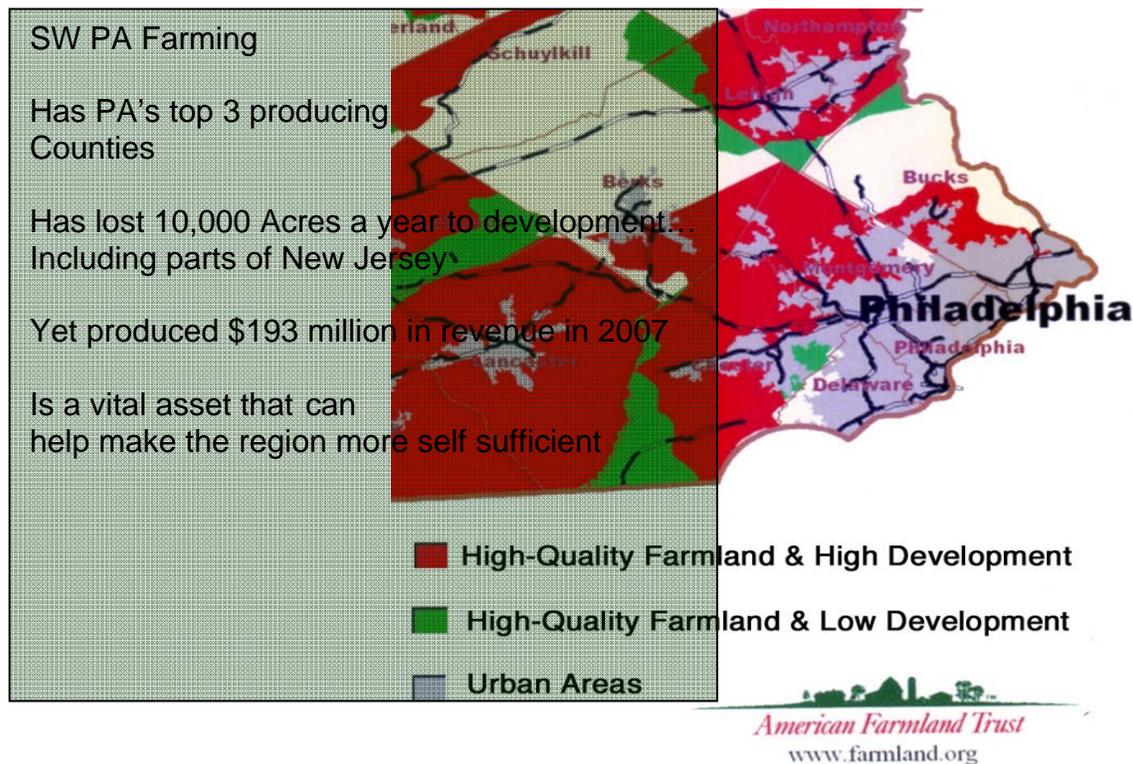


Figure 5. - SE Pennsylvania farmland under threat from sprawl type development

8.0 - Existing Strategies to Curb Sprawl

The twin cities of Minneapolis-St. Paul Minnesota have established a regional tax sharing régime that collects industrial and commercial tax revenues and redistributes them so that there is less of a tax base disparity among municipalities (Wiewel and Schaffer, 2001).

With increased tax revenues flowing into less advantaged municipalities there is greater opportunity for redevelopment and community revitalization and therefore less pressure placed on greenfield resources. Another tax-oriented measure intended to build development equity into urban regions is the split rate or two-tier property tax system.

This system taxes vacant land at a higher rate than developed land thereby discouraging

land speculation and encouraging reuse and redevelopment (Hartzok, 1997). This system has been working in Pittsburgh Pennsylvania, as building permits in the city for infill and redevelopment have increased (Hartzok, 1997; Rusk, 2007).

Oregon State Senate Bill 100, passed in 1973, established a statewide mandate for the development of land-use plans that included the implementation of urban growth boundaries in Oregon cities. In response to this mandate, Portland voters established the regional governing body Metro, which in turn delineated urban growth boundaries (UGB) for the region, which dictate where and what type of development can take place in and outside of the UGB (Harvey and Works, 2002). The main emphasis of the UGB is to preserve regions agricultural and other open space assets while developing the inner areas in the most efficient way possible with respect to housing, industry, and transportation. According to Wiewel and Schaffer (2001) the Portland UGB has been a success but that as the urban region grows concessions and modifications will need to be made to accommodate this growth. Other researchers have show that the Portland Metro is modifying the urban growth plan to accommodate for changes in regional demographics and needs (Harvey and Works, 2002).

The state of Maryland enacted the Smart Growth Initiatives program in 1997 with one component prioritizing funding areas for infrastructure. The theory behind this program is to shift infrastructure dollars away from greenfields and new developments and toward older communities in need of redevelopment and revitalization. Maryland has designated zones where it will not fund the development of infrastructure in an effort to shift growth

away from these areas and toward designated zones. This type of effort redirects development funds to older areas and, areas designated for new development and, helps reduce the rate of sprawl in designated undeveloped areas.

Conclusion

Of the 1,409,210 acres in the Philadelphia region over 45% have been developed and 14% protected from development with the remainder left open for development or protection. If current development trends continue, the region can expect to see an additional 167,000 acres of open space consumed by 2030 with the majority of this development taking place on dwindling agricultural lands. Efforts to protect high value natural land resources including farm land, watershed lands, lands for recreation and biodiversity have made a difference, but the data presented suggest that existing strategies cannot keep pace with the current rate of sprawl and the consumption of high value open space. Historically, land trusts have been concentrating their efforts in specific areas of the region, but are now beginning to coordinate their efforts through the creation of the GreenSpace Alliance and the development of projects that include multiple stakeholders and cover diverse, watershed-sized areas that cross multiple political boundaries. County and municipal governments have been relying on the ballot referendum to raise funds for the purchase of open space lands in their jurisdictions. Research suggests that this approach cannot keep pace with the current rate of sprawl and that with over 103 referendums to date voter “burn out” (voters resigned to the fact that no more can be done to save open space resources) may play a role in future attempts to raise funds in this manner. As development continues to expand onto the regional

greenfields, NGOs and county and municipal governments need to continue in their efforts to conserve open space lands with existing strategies, but also need to exploit new approaches to curb sprawl.

The linking and integration of urban redevelopment and revitalization into regional efforts to slow sprawl and save high value open space resources appears to be in its infancy. NGOs and governing bodies should recognize the potential of urban/suburban infill and redevelopment as an effective tool to slow the rate of development of high value lands. To effectively revitalize older urban/suburban areas, NGOs and zoning authorities will need to evaluate existing zoning policy that precludes the creation of mixed-use, socioeconomically diverse, walkable communities. Data presented show that traditional zoning is exclusionary and helps contribute to sprawl and its inefficiencies.

The GSA has the urban agenda as one of its key initiatives and could act as a coordinating body in the development of sympathetic zoning policy and act as a liaison between those attempting to slow sprawl and those working to revitalize older urban/suburban areas. The urban/suburban initiative (infill, redevelopment and revitalization of older areas) represents a great opportunity to improve quality of life in the region while slowing sprawl and stabilizing the urban ecological footprint.

Critics of efforts to slow sprawl claim that sprawl is a natural result of the free market economy at work, and the market will correct any negative effects associated with sprawl over time. Critics also claim that only a small percentage of land resources in the United States have been developed and therefore there is no need to worry about the

consumption of land resources in developing areas. The evidence presented in this study demonstrates that this thinking is flawed. First, the market is not free, as exclusionary zoning policies segregate socioeconomic classes and push economic resources toward the expanding middle and upper income areas while allowing the older areas to decline. Second, rapidly expanding urban areas have an ecological footprint that is many times larger than their physical footprint, as they consume and degrade resources far from their physical boundaries. This problem is exacerbated because the economic engine driving this expansion does not adequately internalize the environmental costs associated with the consumption of distant resources. Data suggest that the environment cannot continue to bear these costs. Concerned stakeholders should look at the models already in place around the country that are working to curb sprawl and reduce the urban ecological footprint. Parts of these models might be adapted for regional use in whole or part.

Sprawl in the Philadelphia region persists. If NGOs and governing bodies are going to be effective in curbing sprawl, they will need to do three things. First, coordinate efforts to protect high value open space resources. Second, exploit opportunities to reinvest in urban/suburban infill and redevelopment projects. Third, educate stakeholders on the significance of the region's urban ecological footprint, demonstrating its lack of sustainability and negative impact on ecospheres far from the physical urban boundary. The fragmented nature of regional governance makes it extremely difficult to build a coordinated, vertically integrated plan for the protection of high value open space assets and the revitalization of older urban areas. The GSA and SPMDN represent a broad constituency of stakeholders concerned with sprawl and urban decay, and could act as

coordinating bodies between public and private initiatives in an attempt build a unified regional effort to slow sprawl and revitalize older urban areas. Ultimately, zoning policy needs to be changed and the starting point is to recognize that the exclusionary nature of zoning and the rapid urban expansion it supports are not part of a natural free market society, but part of a protectionist mentality based in a desire for socioeconomic stratification and preservation of property values. Once these socioeconomic barriers are broken down, and zoning policy amended to allow for compact, mixed-use communities, Philadelphia regional inhabitants will begin to realize a better quality of life.

End Notes

¹ Auto dependent developments and communities include large lot residential subdivisions that are generally not located with in walking distance of jobs and goods and services, and are designed with wide roads and few sidewalks for pedestrian traffic. Campus style office parks and commercial strips are usually spread out, not conducive to ingress and egress by pedestrian or bicycle traffic, and are located far from residential housing.

2

The benchmark set by DVRPC in their 2030 report for land conservation in the region is 95,244 acres, which equals the amount of land saved through efficiencies in land use and the redevelopment and infill of older communities between 2000 and 2030. The benchmark set by GSA is one acre preserved for every acre developed in the entire region and in the rural areas protect 50% of the remaining 507,000 acres or 253,500 acres. A one for one conservation effort would mean conserving between 71,828 and 167,072 acres in the region depending on the development growth between 2000 and 2030.

³ The Next Great City Coalition is a broad and diverse group of NGO's with a mission to make Philadelphia a cleaner, safer, and healthier place to live. The Pennsylvania Environmental Council, 10,000 Friends of Pennsylvania, Delaware Valley Green Building Council, Schuylkill Center for Environmental Education, Clean Air Council, and Society for Ecological Restoration are just a few of the coalition members advocating for a change in the traditional urban planning and land use model. The coalition believes change is needed in ten key areas to improve city quality of life and reduce the urban

ecological footprint. Some top priorities are; the adoption of modern zoning practices, use of clean energy and energy efficient buildings, improved public transportation, and improved recycling system. This Coalition is significant in that it recognizes the importance of the urban center as the hub for regional sustainability and health.

⁴ Other organizations helping to conserve open space resources in the Philadelphia region but not discussed in this paper are: American Farmland Trust; The Nature Conservancy; PA Horticultural Society; Chester County 20/20; William Penn Foundation; The Highlands Coalition; The Schuylkill Center; The Conservation Fund; Academy of Natural Sciences; Stroud Water Research Center; Keystone Conservation Trust; other regional foundations and many of the 238 municipal governments.

⁵ Acreage numbers conserved includes land that has been acquired by land trusts whether through direct purchase, donation, conservation easement, or other measures and may include the transfer of conserved lands to a public agency. It also includes lands protected directly by a third party with the technical help from a land trust.

⁶ 10,000 Friends of Pennsylvania is an alliance of organizations and individuals from across the state committed to land use policies and actions that will enable Pennsylvania to strengthen its diverse urban, suburban, and rural communities and reduce sprawl. 10,000 Friends seeks development that will support the social and economic viability of Pennsylvania's cities and towns, protect environmental quality, conserve fiscal resources, and preserve the states exceptional rural and historical resources. 10,000 Friends was established to cultivate a statewide voice on land use issues, ranging from specific legislative initiatives to housing, transportation, infrastructure, and the conservation of rural, heritage, and natural resources, and to develop communication and education programs around the Commonwealth that focus on these issues. 10,000 Friends has one of its three main offices in Philadelphia.

References

- Academy of Natural Science. (2000) Losing Ground? Part 1: The Dimensions of Urban Sprawl. Know Your Environment. p. 10. *EBSCO Mega File*. Univ. of Pennsylvania, Franklin Lib. 1 Feb. 2008.
- Adams, C., Bartlet, D., Elesh D., Goldstein, I., Kleniewski, N., and Yancey W. (1991) *Philadelphia Neighborhoods, Division, and Conflict in a Postindustrial City*. Philadelphia, Temple University Press.
- Andrews, R.B. (1972). *Urban Land Use Policy: The Central City*. Doebele, Jr., W.A. *Key Issues in Land Use Controls*. New York: The Free Press
- Bazan, G. & Wackernagel & Rees. (1997). Our Ecological Footprint: Reducing Human Impact on the Earth, *Electronic Green Journal*. *Academic Search Premier*. *EBSCO*. Univ. of Pennsylvania, Franklin Lib. 2 Feb 2007.
- Brandywine Conservancy Online. 2007. Brandywine Conservancy. 26 October 2007. <http://www.brandywineconservancy.org/index.html>
- Brewer, R. (2003). *Conservancy, The Land Trust Movement in America*. Hanover: University Press of New England
- Brookings Institution Center on Urban and Metropolitan Policy. (2003). *Back to Prosperity: A Competitive Agenda for Renewing Pennsylvania*. Washington
- Brookings Institution (2006) Two Steps Back: City and Suburban Poverty Trends 1999-2005, http://www.brookings.edu/reports/2006/12poverty_berube.aspx
- Brown, J. and Mitchell B. (2000) The Stewardship Approach and its Relevance for Protected Landscapes, *The George Wright Forum*, 17(1), p. 70-79.
- Congress For The New Urbanism (2008) <http://www.cnu.org/node/936>
- Clarion Associates, Inc., (2000) *The Cost of Sprawl in Pennsylvania: Executive Summary of the Study on the Cost of Sprawl in Pennsylvania Prepared for 10,000 Friends of Pennsylvania and Sponsoring Organizations*. Philadelphia, PA: 10000 Friends of Pennsylvania, www.10000friends.org/
- Congressional Digest: Representative State Laws Presently In Force*. 1973. Congressional Digest. 10 Dec. 2006. *EBSCO*. <http://proxy.library.upenn.edu>
- Daly, H.E. (2005) Economics In A Full World, *Scientific American*, 293(3), p.100-107. *EBSCO Mega File*. Univ. of Pennsylvania, Franklin Lib. 1 Dec. 2007.
- Daniels, T. and Bowers, D. (1997) *Holding Our Ground: Protecting America's Farms and Farmland*. Washington D.C.: Island Press.
- Delaware Valley Regional Planning Commission (DVRPC). (2007) Data Bulletin #67: 1980-2000 Census Population by MCD (28-County Area)
- Delaware Valley Regional Planning Commission (2006) *Destination 2030*, Philadelphia: DVRPC, <http://www.dvrpc.org/LongRange.htm>
- Delaware Valley Regional Planning Commission (2004). 2000 Land Use by Minor Civil Division 9-County DVRPC Region <http://www.dvrpc.org/data/databull/rdb/db78.htm>
- Department of Commerce (1926) *A Standard State Zoning Enabling Act Under Which Municipalities May Adopt Zoning Regulations*. Washington D.C.: Government Printing Office p.iii-12. *EBSCO*. <http://proxy.library.upenn.edu>

-
- Economist. (2006) Roads to Somewhere, 379(8483), p.36-38. *EBSCO*.
<http://proxy.library.upenn.edu>
- Fischel, W. A. (2002) An Economic History of Zoning and a Cure for its Exclusionary Effects. *Urban Studies*. p.317-340. *EBSCO*. <http://proxy.library.upenn.edu>
- Frumkin, H., Frank, L. and Jackson R. (2004) *Urban Sprawl and Public Health: Designing, Planning, And Building For Healthy Communities*. Washington, D.C., Island Press
- GreenSpace Alliance Online (GSA). 2008. GreenSpace Alliance. 1 Nov. 2008.
<http://www.regionalgreenplan.org/index.htm>
- Harper, D. (2007). *Conservation and Land Management*, Lecture, Univ. of Pennsylvania
- Harvey, T. and Works, M.A. (2002) Urban Sprawl and Rural Landscapes: perceptions of landscape as amenity in Portland, Oregon, *Local Environment*, 7(4), p. 381-396. *EBSCO Mega File*. Univ. of Pennsylvania, Franklin Lib. 1 Feb. 2008.
- Hartzok, A. (1997) Pennsylvania's Success With Local Property Tax Reform: The Split Rate Tax, *American Journal of Economics & Sociology*, 56(2), p. 205-213. *EBSCO Mega File*. Univ. of Pennsylvania, Franklin Lib. 30 Nov. 2007.
- Hayward, S. (1998) Legends of the Sprawl, *Policy Review*, 91, p. 26. *EBSCO Mega File*. Univ. of Pennsylvania, Franklin Lib. 1 Feb. 2008.
- Heritage Conservancy Online (2007). The Heritage Conservancy, 6 Oct. 2007
<http://heritageconservancy.org/projects/lasting.php>
- Holcombe, R.G. (2008) In Defense of Urban Sprawl, *Property and Environmental Research Center: PERC Reports*. <http://www.perc.org/perc.php?id=356>
- Howell-Moroney, Michael. (2005) "Economic Implementation Constraints on Preserving Land From Sprawl: The Case of the Delaware Valley." *Public Administration* (29)1, p55-77. *EBSCO Mega File*. Univ. of Pennsylvania, Franklin Lib.
- Jacobs, Jane. (1992) *Death and Life of Great American Cities*, New York: Vintage
- Jacobs, Jane. (1997). *Urban Wisdom*, DVD, Films for the Humanities & Sciences, 16 Screens.
- Kahn. M.E. (2006) *Green Cities: Urban Growth and the Environment*. Washington, D.C.: Brookings Institute Press.
- Kates, R.W. (2005). What is Sustainable Development? *Environment*, 47(3), p. 8-21. *EBSCO Mega File*. Univ. of Pennsylvania, Franklin Lib. 1 Dec. 2007.
- Kline, Jeffrey D. (2006). Public Demand for Preserving Local Open Space, *Society & Natural Resources*, (19):7, *EBSCO Mega File*. Univ. of Pennsylvania, Franklin Lib. 28 Sept. 2007
- Land Trust Alliance Online (2008). Land Trust Alliance, 20, Nov. 2007.
<http://www.lta.org/>
- Licht, Walter. (1995) *Industrializing America: The Nineteenth Century*, Baltimore: John Hopkins University Press
- Licht W., Scranton, P. (1986). *Work Sights: Industrial Philadelphia, 1890-1950*. Philadelphia: Temple University Press
- Maantay, Juiana. (2002) Zoning Law, Health, and Environmental Justice: What's the Connection? ", *Journal of Law and Medical Ethics*, 30(4), p. 572-593 *EBSCO Mega File*. Univ. of Pennsylvania, Franklin Lib. 1 Dec. 2007.

-
- Merck, Stuart. (1996) Enabling It All. *Planning*, 62(11), p.1-13, *EBSCO Mega File*. Univ. of Pennsylvania, Franklin Lib. 2 Feb. 2007
- Montgomery County Land Trust Online (2008). Montgomery County Land Trust, 15 Feb. 2008. <http://www.mclt.org/>
- Natural Lands Trust Online. 2007. Natural Lands Trust. 26 October 2007. <http://www.natlands.org/home/default.asp>
- Next Great City (2007). Next Great City Philadelphia. Karen L Black, May 8 Consulting. <http://www.nextgreatcity.org>
- O'Toole, R. (2007). The Planning Tax: The Case Against Regional Growth Management, *Policy Analysis*, 606, p. 1-20. *EBSCO Mega File*. Univ. of Pennsylvania, Franklin Lib. 1 Dec. 2007.
- Phillips, A. (2003) Turning Ideas on Their Head: The New Paradigm For Protecting Areas, *George Wright Forum*, 20(2), p. 8-32
- Pinderhughes, R. (2004) *Alternative Urban Futures*, New York: Rowman & Littlefield
- Porter, D.R. (1997). *Managing Growth In America's Communities*, Washington D.C.: Island Press
- Powell, J.A. (2007) Race Still Matters: the economic Inequity, *The Philadelphia Inquirer*, 17 November, <http://www.philly.com/inquirer/opinion/>
- Rees, W.E. (1999) Consuming the Earth: The Biophysics of Sustainability, *Ecological Economics*, 29(1), p. 23-27. *EBSCO Mega File*. Univ. of Pennsylvania, Franklin Lib. 1 Dec. 2007.
- Rees, W. E. (2000) The Built Environment and the Ecosphere: A Global Perspective. *Building Research & Information* July 1999: 206-220. *EBSCO Mega File*. Univ. of Pennsylvania, Franklin Lib. 2 Feb. 2007
- Rusk, D. (2007) Sprawl & Fragmentation: Formula For Decline. *A Presentation to the Southeastern Pennsylvania First Suburbs Project Summit Bryn Mawr College*. Philadelphia, PA: 10000 Friends of Pennsylvania, <http://www.10000friends.org/sepa/firstsuburbs>
- Slayton, W.L. (1969) Policies for Urban Renewal in the United States." *Appraisal Journal*. 37(4), p. 587-595. *EBSCO*. <http://proxy.library.upenn.edu>
- Soule, David S. (2006). Urban Sprawl: A Comprehensive Reference Guide, Rusk D. *Social Framework: Sprawl, Race, and Concentrated Poverty-Changing the "Rules of the Game"*, Westport: Greenwood Press
- Soule, David S. (2006). Urban Sprawl: A Comprehensive Reference Guide, Soule, D.S. *Defining and managing Sprawl*, Westport: Greenwood Press
- Southeastern Pennsylvania Metropolitan Development Network (SPMDN). (2008). <http://www.10000friends.org/sepa/>
- Trust For Public Lands (2008). LandVote, http://www.tpl.org/tier2_kad.cfm?folder_id=2386
- United States Census. (2006) State & County QuickFacts <http://quickfacts.census.gov/qfd/states/42000.html>
- United States. Cong. (1926) "A Standard State Zoning Enabling Act" *Department of Commerce*. iii, 1-12. *EBSCO Mega File*. Univ. of Pennsylvania, Franklin Lib. 1 Sept. 20, 2008.

-
- Warner, Jr., S. B. (1962) *Streetcar Suburbs*. Cambridge: Harvard University Press and The M.I.T. Press.
- Warner, Jr. S.B. (1968). *The Private City*. Philadelphia: University of Pennsylvania Press
- Weiss, M. A. (1987) *The Rise of the Community Builders: the American Real Estate Industry and Urban Land Planning*. New York: Columbia University Press,
- Wiewel, W. and Schaffer, K. (2001). Learning to Think as a Region: Connecting Suburban Sprawl and City Poverty. *European Planning Studies*, 9(5), p593-611. *EBSCO Mega File*. Univ. of Pennsylvania, Franklin Lib. 1 Feb. 2008.