Northeast Ohio Retail Development Impacts: Policy Implications for a Sustainable Community Future

PDD 611 Planning Studio
Spring 2007

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Introduction

Background

The purpose of this report is to serve as an initial update to the Northeast Ohio Regional Retail Analysis (NORRA). The Cuyahoga County Planning Commission completed the initial study in August of 2000 for NOACA. The original study consisted of three elements: an inventory of retail establishments in the area, an analysis of national retail trends reflected in the area, and finally a discussion of the linkages between retail development, land use, transportation, tax base, and environment.

The original study had several significant findings, worth continued examination. First, NORRA found the region saturated in the retail categories of convenience and shopping goods by more than six million square feet. There was also a spatial mismatch discovered between the location of new development and the areas of the region which were underserved. The study also found that while retail generated more than $345 million dollars annually in property, income and sales tax revenue, the continual movement outward was taxing community resources with demands for new infrastructure and transportation improvements. Finally, in addition to stressing financial resources, the study found negative impacts on natural resources and environmental amenities caused by retail development ever outward from the central core.

Study Area

As with the original study, this update covers the 195 communities in Cuyahoga, Lorain, Medina, Lake, Geauga, and Portage Counties as well as sixteen additional communities in northern Summit County.

Project Goals

Northeast Ohio is not a fast growing region; rather the area's population has remained fairly constant. While the size of the population has not grown dramatically, the land area developed has vastly increased and now covers the majority of most counties covered in the NORRA. Given the findings of the original study, this area faces challenges with its growth pattern. Continual growth outward at the expense of an already developed inner core is not sustainable. Sustainable development was defined by the Brundtland Commission as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The development envisioned by the Brundtland Commission is not the sort of development found in Northeast Ohio at the moment.

There are three cornerstones of sustainability: environment, economy and society. These three elements interact with one another through the concepts of stewardship, efficiency and governance. This update to NORRA was designed to revisit the status of large retail establishments in the area and then turn to a discussion of retail's impacts and alternative choices that are more sustainable. The alternatives incorporate the cornerstones of sustainability and also suggest means of achieving sustainability through stewardship, efficiency and governance.

This update comprised two phases. Phase I consisted of a general update of major retail development and redevelopment projects within the study area since 1999. The study area was broken down into the eight geographic planning areas of Cuyahoga County, Lorain County, Medina County, Lake and Geauga counties, and Portage and northern Summit counties. Each area was examined for new retail development, redevelopment and vacancies of retail properties, over 5,000 square feet, in the convenience and shopping goods categories. Next, a retail trade area analysis was done to determine saturation levels of each region of the study area.

Phase II consisted of planning and policy analyses of several areas related to sustainable retail development. The topics examined were: riparian systems, transportation systems, buildings, government services and tax issues, and economic development. Each topic was examined with regard to sustainable development principles, best practices, and impacts of retail in the Northeast Ohio. In addition to an analysis, each group identified possible policy and planning responses to insure more sustainable retail development going forward.

Section I. Northeast Ohio Retail Analysis 2007

NORTHEAST OHIO TRADE AREA ANALYSIS, 2007

I. Retail Growth in Cuyahoga County by Region

In Cuyahoga County, retail space for convenience goods and services grew by 5% between 2000 and 2007 (***Table 1.1***). Retail space for shopping goods and services grew at a faster pace (29%) (***Table 1.2***). This is an overall retail square foot growth of 20% (***Table 1.3***).

Table 1.1. Change in Retail Square Foot Totals and Rate of Retail Growth for **Convenience Goods and Services** in Cuyahoga County, 2000-07

Cuyahoga County	**Convenience Retail (Square Feet)**			**Proportion of Stores over 5,000 SF (2000)**	**Retail Growth (5,000 SF+)**
	NORRA (2000)	**2000 (5,000 SF+)**	**2007 (5,000 SF+)**		
Chagrin Southeast	2,781,790	1,160,991	1,376,726	42%	16%
Hillcrest	2,521,083	1,062,900	991,281	42%	-7%
Heights	1,795,993	1,021,491	949,121	57%	-8%
Cuyahoga	653,422	293,823	619,247	45%	53%
South-central	2,657,534	1,344,291	1,234,463	51%	-9%
Southwest	2,066,308	1,137,362	1,346,775	55%	16%
Westshore	3,699,883	1,553,644	1,737,547	42%	11%
Cleveland	5,718,892	2,716,293	2,552,827	47%	-6%
Total	**21,894,905**	**10,290,795**	**10,807,987**	**47%**	**5%**

Table 1.2. Change in Retail Square Foot Totals and Rate of Retail Growth for **Shopping Goods and Services** in Cuyahoga County, 2000-07

Cuyahoga County	**Shopping Retail (Square Feet)**			**Proportion of Stores over 5,000 SF (2000)**	**Retail Growth (5,000 SF+)**
	NORRA (2000)	**2000 (5,000 SF+)**	**2007 (5,000 SF+)**		
Chagrin Southeast	4,170,248	914,104	1,914,758	22%	52%
Hillcrest	3,902,402	3,073,698	5,602,351	79%	45%
Heights	980,718	885,342	883,547	90%	0%
Cuyahoga	325,500	142,332	142,332	44%	0%
South-central	3,208,425	2,724,050	2,786,854	85%	2%
Southwest	3,501,810	3,065,739	3,438,292	88%	11%
Westshore	4,029,421	2,337,520	3,735,421	58%	37%
Cleveland	2,912,668	1,421,852	1,871,403	49%	24%
Total	**23,031,192**	**14,564,637**	**20,374,958**	**63%**	**29%**

Table 1.3. Change in Retail Square Foot Totals and Rate of Retail Growth for **Convenience and Shopping Goods and Services Combined** in Cuyahoga County, 2000-07

Cuyahoga County	Retail Totals (Square Feet)			Proportion of Stores over 5,000 SF (2000)	Retail Growth (5,000 SF+)
	NORRA (2000)	2000 (5,000 SF+)	2007 (5,000 SF+)		
Chagrin Southeast	6,952,038	2,075,095	3,291,484	30%	37%
Hillcrest	6,423,485	4,136,598	6,593,632	64%	37%
Heights	2,776,711	1,906,833	1,832,668	69%	-4%
Cuyahoga	978,922	436,155	761,579	45%	43%
South-central	5,865,959	4,068,341	4,021,317	69%	-1%
Southwest	5,568,118	4,203,101	4,785,067	75%	12%
Westshore	7,729,304	3,891,164	5,472,968	50%	29%
Cleveland	8,631,560	4,138,145	4,424,230	48%	6%
Total	**44,926,097**	**24,855,432**	**31,182,945**	**55%**	**20%**

Figure 1.1. Change in Square Footage of Retail for Convenience Goods & Services in Cuyahoga County, 2000-07

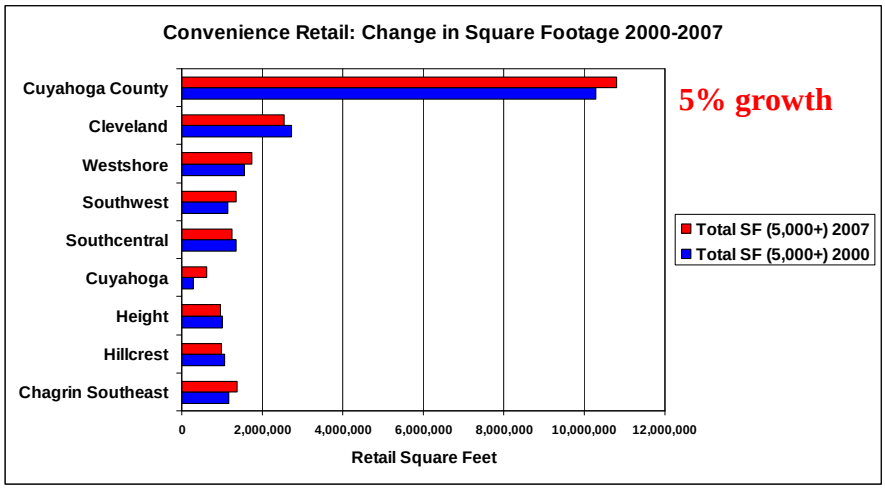
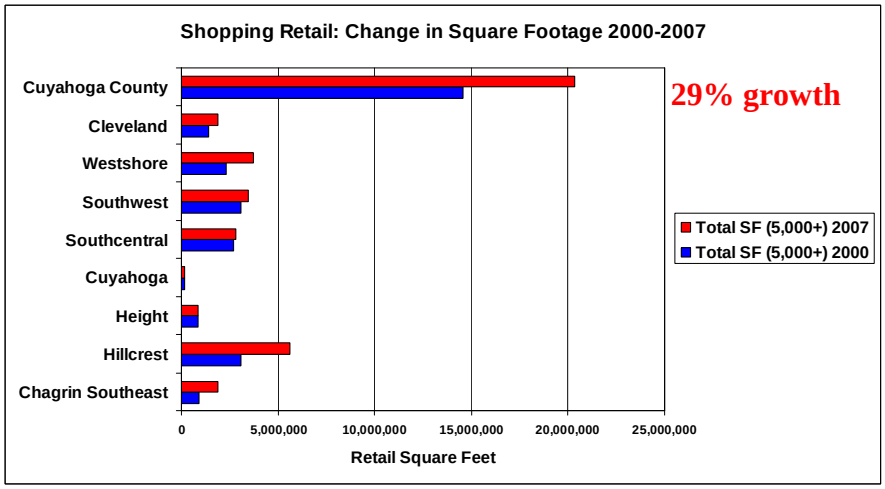


Figure 1.2. Change in Square Footage of Retail for Shopping Goods & Services in Cuyahoga County, 2000-07



II. Retail Growth in Northeast Ohio

Table 2.1 shows that retail space for convenience goods and services grew by 11% in the region between 2000 and 2007. Retail space for convenience goods grew faster in the region than it did in Cuyahoga County alone. During the same time period, retail space for shopping goods and services grew by 30% (***Table 2.2***). The growth rate for the region as a whole for shopping compares to the growth rate for Cuyahoga County (30% vs. 29%): (1) Geauga, Medina, and N. Summit counties have grown by more than 50%; (2) Lake and Portage counties did not experience comparable growth; (3) Cuyahoga and Lorain have grown at the same rate.

Table 2.1. Change in Retail Square Foot Totals and Rate of Retail Growth for **Convenience Goods and Services** in Northeast Ohio, 2000-07

Region	**Convenience Retail (Square Feet)**			**Proportion of Stores over 5,000 SF (2000)**	**Retail Growth (5,000 SF+)**
	NORRA (2000)	**2000 (5,000 SF+)**	**2007 (5,000 SF+)**		
Cuyahoga County	21,894,905	10,290,795	10,807,987	47%	5%
Geauga County	1,801,390	848,072	1,169,147	47%	27%
Lake County	5,104,494	2,958,492	3,558,545	58%	17%
Lorain County	5,415,200	5,415,200	5,997,487	100%	10%
Medina County	2,880,111	1,677,334	1,970,755	58%	15%
Portage County	2,055,884	989,078	1,079,682	48%	8%
Summit County	2,154,112	1,248,462	1,682,251	58%	26%
Total	**41,306,096**	**23,427,433**	**26,265,854**	**57%**	**11%**

Table 2.2. Change in Retail Square Foot Totals and Rate of Retail Growth for **Shopping Goods and Services** in Northeast Ohio, 2000-07

Region	**Shopping Retail (Square Feet)**			**Proportion of Stores over 5,000 SF (2000)**	**Retail Growth (5,000 SF+)**
	NORRA (2000)	**2000 (5,000 SF+)**	**2007 (5,000 SF+)**		
Cuyahoga County	23,031,192	14,564,637	20,374,958	63%	29%
Geauga County	532,596	241,668	587,996	45%	59%
Lake County	4,518,983	3,767,344	4,010,276	83%	6%
Lorain County	3,845,344	3,845,344	5,650,324	100%	32%
Medina County	1,589,570	1,030,527	2,098,176	65%	51%
Portage County	1,334,699	971,781	1,011,281	73%	4%
Summit County	3,043,988	2,148,060	4,298,635	71%	50%
Total	**37,896,372**	**26,569,361**	**38,031,646**	**70%**	**30%**

Figures 2.1 & 2.2 further compare retail square foot totals for the region:

Figure 2.1. Change in Square Footage of Retail for Convenience Goods & Services in Northeast Ohio, 2000-07

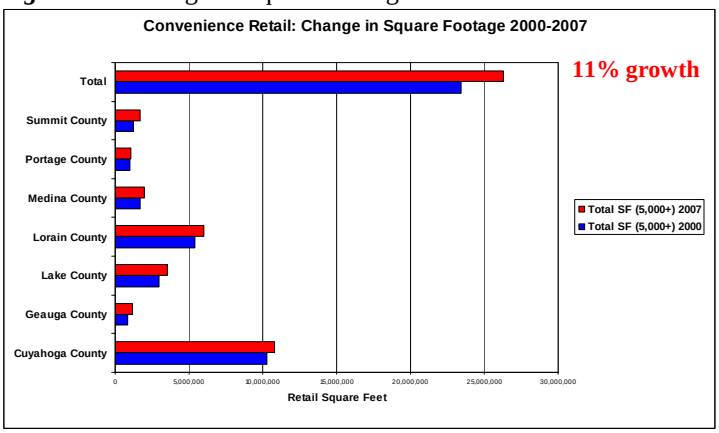
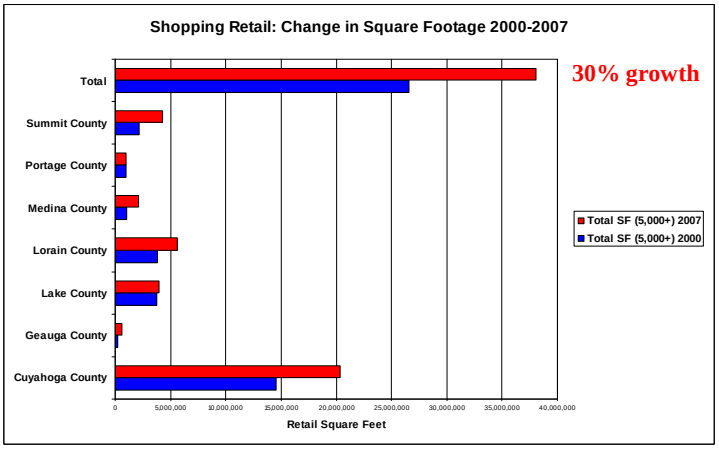


Figure 2.2. Change in Square Footage of Retail for Shopping Goods & Services in Northeast Ohio, 2000-07



Overall, retail space in Northeast Ohio grew by 22% between 2000 and 2007 (***Table 2.3***).

Table 2.3. Change in Retail Square Foot Totals and Rate of Retail Growth for **Convenience and Shopping Goods and Services Combined** in Northeast Ohio, 2000-07

Region	**Retail Totals (Square Feet)**			**Proportion of Stores over 5,000 SF (2000)**	**Retail Growth (5,000 SF+)**
	NORRA (2000)	**2000 (5,000 SF+)**	**2007 (5,000 SF+)**		
Cuyahoga County	44,926,097	24,855,432	31,182,945	55%	20%
Geauga County	2,333,986	1,089,740	1,757,143	47%	38%
Lake County	9,623,477	6,725,836	7,568,821	70%	11%
Lorain County	9,260,544	9,260,544	11,647,811	100%	20%
Medina County	4,469,681	2,707,861	4,068,931	61%	33%
Portage County	3,390,583	1,960,859	2,090,963	58%	6%
Summit County	5,198,100	3,396,522	5,980,886	65%	43%
Total	**79,202,468**	**49,996,794**	**64,297,500**	**63%**	**22%**

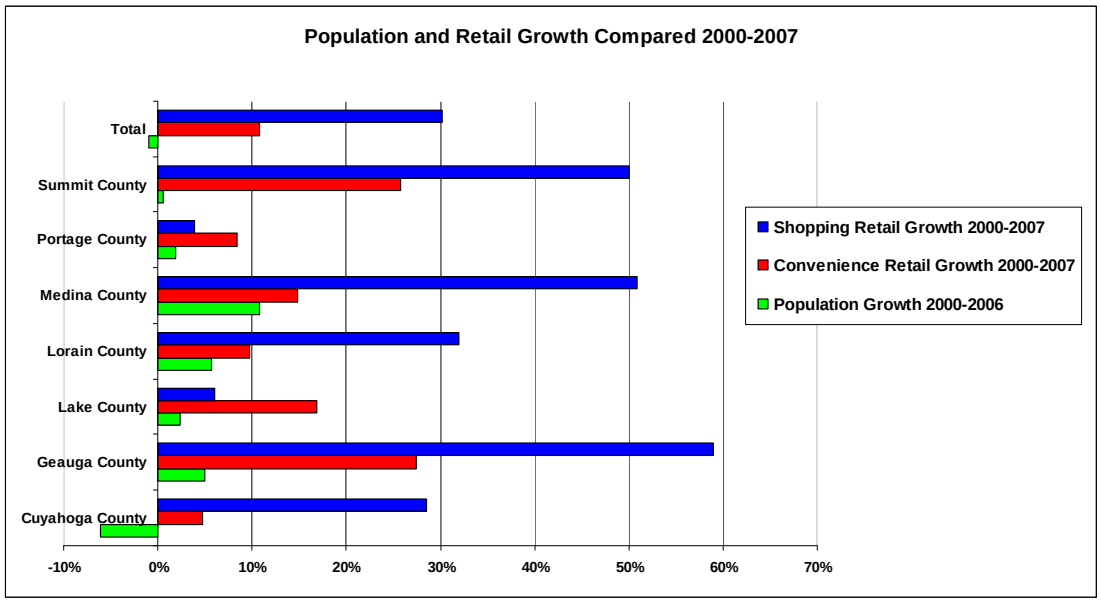
By comparison, the population in the region declined by 1%, with Medina County growing the fastest at 10.8% and Cuyahoga County declining by 6.1% (***Table 2.4***). Population stagnation in the region did not keep retailers for convenience and particularly shopping goods and services from building new retail establishments. Of all counties, Geauga County experienced the highest increase in retail space for shopping goods and services (59%). This tremendous growth is somewhat tempered by the fact that Geauga still has small retail square foot totals compared to all other counties. Nonetheless, for all six and a half counties, there is a strong disproportion between population growth and retail growth (***Figure 2.3***).

Table 2.4. Population Growth in Northeast Ohio, 2000-06

Region	**Population**		**Population Change 2000-06**
	2000	**2006**	
Cuyahoga County	1,393,978	1,314,241	-6.1%
Geauga County	90,895	95,676	5%
Lake County	227,511	232,892	2.3%
Lorain County	284,664	301,993	5.7%
Medina County	151,095	169,353	10.8%
Portage County	152,061	155,012	1.9%
Summit County	542,899	545,931	0.6%
Total	**2,843,103**	**2,815,098**	**-1%**

Source: US Bureau of Census, American Fact Finder, 2006

Figure 2.3. Comparing Population and Retail Growth in Northeast Ohio, 2000-07

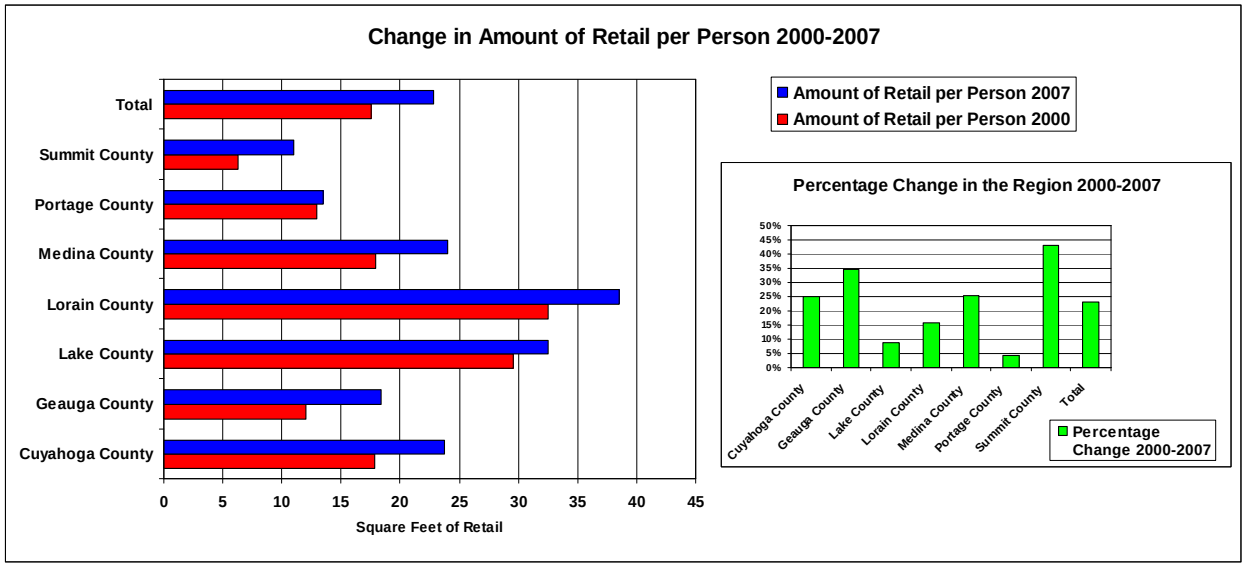


The amount of retail space per person increased as well (***Figure 2.4***). This is a direct result of the disproportion ***Figure 2.3*** reports between population growth and retail growth.

"Between 1990 and 2005 the amount of retail space per space per person in the United States doubled…. Because most of this development was auto-oriented

in nature, for every square foot of new store space, another three or four square feet was paved for cars."[1]

Figure 2.4. Change in Amount of Retail Space per Person in Square Feet, 2000-07



III. Retail Supply in Northeast Ohio: Surplus or Deficit?

A. A Look back at the Northeast Ohio Regional Retail Analysis, 2000

Table 3.1. Floor Space Surplus or Deficit for Convenience and Shopping Combined, 2000

Region Totals	Convenience/Shopping		Total
West Shore	673,369	1,058,987	1,732,356
Cuyahoga	-409,318	-888,811	-1,298,129
Heights	-300,194	-1,076,627	-1,376,821
Hillcrest	-147,974	1,282,801	1,134,827
Southwest	322,174	1,789,994	2,112,168
Southcentral	204,639	800,981	1,005,620
Chagrin Southeast	574,612	2,003,968	2,578,580
Cleveland	-611,265	-2,692,242	-3,303,507
Total	**306,043**	**2,279,051**	**2,585,094**

County Totals	Convenience/Shopping		Total
Cuyahoga	306,044	2,279,051	2,585,095
Geauga	87,742	-1,425,458	-1,337,716
Lake	1,511,512	992,577	2,504,089
Lorain	1,691,955	316,430	2,008,385
Medina	731,380	-519,346	212,034
Portage	97,544	-623,833	-526,289
Summit	105,122	702,764	807,886
Total	**4,531,299**	**1,722,185**	**6,253,484**

Table 6.2. *Retail Surplus/Deficit Totals*

SOURCE: Northeast Ohio Regional Retail Analysis

[1] Stacy Mitchell. *Big-Box Swindle* (Boston, MA: Beacon Press 2006).

To assess the amount of retail supply, the 2000 study conducted a series of trade area analyses. First, a *trade area analysis* compares the amount of potential sales to the amount of total sales per household. The amount of potential sales is a function of household spending on retail whereas the amount of total sales is a function of actual retail square footage. The difference between the two is known as sales capture or leakage: if the amount of potential sales is greater than the amount of total sales, then there is leakage in that particular region. In other words, households spend their money outside of the region in which they live. If the amount of potential sales is less than the amount of total sales, then there is capture since that particular region captures sales from the outside.

Finally, the leakage or capture is transcribed in square foot deficit or surplus. Simply put, if there is leakage, there is a retail deficit. The region could support more retail to capture the sales made outside. This is the very argument First Interstate used to justify Steelyard Commons when First Interstate assessed the viability of a one-million square foot shopping center in Cleveland. This is also the argument the company used to attract tenants to the project. If there is capture, there is a retail surplus. Retailers must reach out to meet sales expectations.
Note that the analysis is based on average figures.

This is not a science and the fact that the region as a whole shows a surplus does not necessarily indicate that stores are irremediably struggling. What the trade area analysis indicates, however, is that competition for retail sales in Northeast Ohio is fierce. In other words, this is a tight market. The region showed a surplus of over 6 million square feet of retail space in 2000. The following section compares retail surplus or deficit in 2000 with retail surplus or deficit in 2007.

B. Current Retail Supply for Retail Space over 5,000 Square Feet

As the original study did, we conducted a trade area analysis for each region within Cuyahoga County and for each county within the region (***Table 3.2 & 3.3***). ***Table 3.4*** summarizes the findings. ***Table 3.4*** is directly modeled after ***Table 3.1***. It shows that the floor space surplus increased by 16 million square feet between 2000 and 2007. This is a tremendous increase. The fact that the 2007 survey does not include retail stores under 5,000 square feet may influence the result. There are grounds to believe that bigger retailers tend to either swallow or choke smaller ones. If there are more big retailers and more shopping centers, smaller retailers, especially in the shopping category, may have been struggling and the vacancy rate for stores less than 5,000 square feet could have increased.

Table 3.2. Trade Area Analysis for Cuyahoga County, 2007

Cuyahoga County	Retail Category	1 2007 Floor Space*	2 Total Households	3 Sales/ Household/ Year	4 Total Sales Potential	5 National Median Sales/Sq Ft	6 Total Sales	7 Sales Capture/ (Leakage)	8 Surplus/ (Deficit) (Sq Ft)
Chagrin Southeast									
	Convenience	1,376,726	46,612	$ 6,679	$ 311,321,548	$ 269	$ 369,742,713	$ 58,421,165	217,529
	Shopping	1,914,752	46,612	$ 3,555	$ 165,705,660	$ 213	$ 407,933,127	$ 242,227,467	1,136,965
	TOTAL	3,291,478	46,612	$ 10,234	$ 477,027,208		$ 777,675,839	$ 300,648,631	**1,354,494**
Hillcrest									
	Convenience	991,281	67,039	$ 6,679	$ 447,753,481	$ 269	$ 266,225,034	$ (181,528,447)	(675,916)
	Shopping	5,602,351	67,039	$ 3,555	$ 238,323,645	$ 213	$ 1,193,566,875	$ 955,243,230	4,483,710
	TOTAL	6,593,632	67,039	$ 10,234	$ 686,077,126		$ 1,459,791,909	$ 773,714,783	**3,807,794**
Heights									
	Convenience	949,121	48,217	$ 8,258	$ 398,179,097	$ 269	$ 254,902,263	$ (143,276,834)	(533,487)
	Shopping	883,547	48,217	$ 4,415	$ 212,876,500	$ 213	$ 188,237,479	$ (24,639,020)	(115,650)
	TOTAL	1,832,668	48,217	$ 12,673	$ 611,055,596		$ 443,139,743	$ (167,915,854)	**(649,137)**
Cuyahoga									
	Convenience	619,247	19,697	$ 8,258	$ 162,657,826	$ 269	$ 166,309,103	$ 3,651,277	13,595
	Shopping	142,332	19,697	$ 4,415	$ 86,962,255	$ 213	$ 30,323,477	$ (56,638,778)	(265,850)
	TOTAL	761,579	19,697	$ 12,673	$ 249,620,081		$ 196,632,579	$ (52,987,502)	**(252,255)**
South-central									
	Convenience	1,234,463	62,185	$ 8,258	$ 513,523,730	$ 269	$ 331,535,613	$ (181,988,117)	(677,627)
	Shopping	2,786,854	62,185	$ 4,415	$ 274,546,775	$ 213	$ 593,732,278	$ 319,185,503	1,498,189
	TOTAL	4,021,317	62,185	$ 12,673	$ 788,070,505		$ 925,267,891	$ 137,197,386	**820,562**
Southwest									
	Convenience	1,346,775	43,623	$ 8,258	$ 360,241,548	$ 269	$ 361,698,873	$ 1,457,324	5,426
	Shopping	3,438,292	43,623	$ 4,415	$ 192,594,138	$ 213	$ 732,519,515	$ 539,925,377	2,534,296
	TOTAL	4,785,067	43,623	$ 12,673	$ 552,835,686		$ 1,094,218,387	$ 541,382,701	**2,539,722**
Westshore									
	Convenience	1,737,547	76,885	$ 8,258	$ 634,916,330	$ 269	$ 466,647,206	$ (168,269,124)	(626,545)
	Shopping	3,735,421	76,885	$ 4,415	$ 339,447,275	$ 213	$ 795,822,105	$ 456,374,830	2,142,127
	TOTAL	5,472,968	76,885	$ 51,854	$ 3,986,794,790		$ 1,262,469,311	$ (2,724,325,479)	**1,515,582**
Cleveland City									
	Convenience	2,552,827	190,638	$ 5,073	$ 967,014,330	$ 269	$ 685,604,238	$ (281,410,092)	(1,047,822)
	Shopping	1,871,403	190,638	$ 2,095	$ 399,478,854	$ 213	$ 398,697,731	$ (781,124)	(3,666)
	TOTAL	4,424,230	190,638	$ 7,168	$ 1,366,493,184		$ 1,084,301,969	$ (282,191,215)	**(1,051,489)**

Note: ***Table 3.3*** shows the overall retail surplus for Cuyahoga County (sum of all the above regions) (in blue).

Table 3.3. Trade Area Analysis for Northeast Ohio, 2007

County	Retail Category	1 2007 Floor Space*	2 Total Households	3 Sales/ Household/ Year	4 Total Sales Potential	5 National Median Sales/Sq Ft	6 Total Sales	7 Sales Capture/ (Leakage)	8 Surplus/ (Deficit) (Sq Ft)
Cuyahoga County									
	Convenience	10,807,987	N/A	N/A	$ 3,795,607,890	$ 269	$ 2,902,665,042	$ (892,942,848)	(3,324,846)
	Shopping	20,374,952	N/A	N/A	$ 1,909,935,102	$ 213	$ 4,340,832,586	$ 2,430,897,485	11,410,120
	TOTAL	31,182,939	N/A	N/A	$ 5,705,542,992		$ 7,243,497,628	$ 1,537,954,637	**8,085,274**
Geauga County									
	Convenience	1,169,147	24,088	$ 8,258	$ 198,920,258	$ 269	$ 313,993,913	$ 115,073,655	428,473
	Shopping	587,996	24,088	$ 4,415	$ 106,347,743	$ 213	$ 125,271,078	$ 18,923,335	88,822
	TOTAL	1,757,143	24,088	$ 12,673	$ 305,268,001		$ 439,264,990	$ 133,996,989	**517,295**
Lake County									
	Convenience	3,558,545	72,478	$ 8,258	$ 598,528,000	$ 269	$ 955,706,569	$ 357,178,569	1,329,944
	Shopping	4,010,276	72,478	$ 4,415	$ 319,988,032	$ 213	$ 854,379,276	$ 534,391,244	2,508,320
	TOTAL	7,568,821	72,478	$ 12,673	$ 918,516,032		$ 1,810,085,845	$ 891,569,813	**3,838,263**
Lorain County									
	Convenience	5,997,487	105875	$ 8,258	$ 874,322,581	$ 269	$ 1,610,725,130	$ 736,402,549	2,741,973
	Shopping	5,650,324	105875	$ 4,415	$ 467,434,710	$ 213	$ 1,203,787,402	$ 736,352,693	3,456,284
	TOTAL	11,647,811	105875	$ 12,673	$ 1,341,757,290		$ 2,814,512,532	$ 1,472,755,242	**6,198,257**
Medina County									
	Convenience	1,970,755	54,538	$ 8,258	$ 450,378,323	$ 269	$ 529,279,101	$ 78,900,779	293,785
	Shopping	2,098,176	54,538	$ 4,415	$ 240,783,511	$ 213	$ 447,011,151	$ 206,227,641	967,989
	TOTAL	4,068,931	54,538	$ 12,673	$ 691,161,833		$ 976,290,253	$ 285,128,419	**1,261,774**
Portage County									
	Convenience	1,079,682	56,415	$ 6,679	$ 376,795,785	$ 269	$ 289,966,596	$ (86,829,189)	(323,306)
	Shopping	1,011,281	56,415	$ 3,555	$ 200,555,325	$ 213	$ 215,450,889	$ 14,895,564	69,917
	TOTAL	2,090,963	56,415	$ 10,234	$ 577,351,110		$ 505,417,485	$ (71,933,625)	**(253,389)**
Summit County									
	Convenience	1,682,251	39,483	$ 11,619	$ 458,752,977	$ 269	$ 451,796,544	$ (6,956,433)	(25,902)
	Shopping	4,298,635	39,483	$ 7,805	$ 308,164,815	$ 213	$ 915,813,440	$ 607,648,625	2,852,174
	TOTAL	5,980,886	39,483	$ 19,424	$ 766,917,792		$ 1,367,609,984	$ 600,692,192	**2,826,272**
REGION TOTALS									
	Convenience	26,265,854	N/A	N/A	$ 6,753,305,813	$ 269	$ 7,054,132,894	$ 300,827,080	**1,120,121**
	Shopping	38,031,640	N/A	N/A	$ 3,553,209,237	$ 213	$ 8,102,545,823	$ 4,549,336,586	**21,353,626**
	TOTAL	64,297,494	N/A	N/A	$ 10,306,515,050		$ 15,156,678,716	$ 4,850,163,666	**22,473,746**

The methodology we followed for the analysis is as follows:

This is the calculation for each numbered column:

1 Based on retail square foot total for shopping and convenience only
2 U.S. Census Bureau, 2000
3 U.S. Department of Labor, Bureau of Labor Statistics, Consumer Expenditure Survey, 2005 (adjusted to 2006 dollars using CPI)
4 Column 2 * Column 3
5 Dollars & Cents of U.S. Shopping Centers, ULI-Washington, 2006
6 Column 1 * Column 5
7 Column 6 - Column 4 (determining whether or not the retail supply serves the needs of residents)
8 Column 7 / Column 5 (sales capture/leakage translated into floor space)

Table 3.3 shows that Cuyahoga County has a total floor space surplus of over 8 million square feet. Only retail for shopping goods and services, however, shows a surplus. Retail for convenience goods shows a deficit of more than 3 million square feet. The 2000 study shows a surplus for convenience goods and services of 306,000 square feet. This huge drop is explained, at least in part, by the fact that a good portion of convenience retail encompasses stores that are less than 5,000 square feet. Additionally, the closing of Tops Markets in the region certainly had an impact on the results, given that all of the Tops Markets were bigger than 5,000 square feet. Looking at ***Table 3.2*** for a detailed analysis of floor space surpluses and deficits in Cuyahoga County, five regions out of eight show a deficit, two a slight surplus, and only one a substantial surplus. Except for Cleveland or the Heights region, this is somewhat surprising. As for shopping, the analysis is almost exactly reversed, with only three regions out of eight showing a deficit: Cleveland shows a slight deficit while the Heights and Cuyahoga regions show a more substantial deficit. The deficit in the Heights region is compensated in large part by the surplus in the Hillcrest regions while the deficit in the Cuyahoga region is explained in part by the fact that the Cuyahoga region is mainly residential with other regions providing residents in the Cuyahoga region with their shopping needs.

The region as a whole shows an overall surplus of nearly 22.5 million square feet of retail (***Table 3.3***). This is a very significant increase. Compared to 2000, the region now has an additional 16 million square foot surplus, with retail for shopping goods and services leading the trend toward greater market saturation (***Tables 3.1 & 3.3***). The surplus for shopping goods and services alone stands at 21 million square feet. As a whole, the region meets the needs of its population for convenience goods and services. One may argue that with a surplus of over one million square feet for stores over 5,000 square feet, the actual surplus is much higher. Back in 2000, the surplus for convenience goods and services was more than 4 million square feet (***Table 3.1***). The region's population and vacancy did not grow in such a way as to reduce this surplus by 3 million square feet. Once again, the explanation may lay in the fact that many convenience retail establishments are less than 5,000 square feet. In other words, many convenience retail stores were not included in the present study. This is certainly true of small convenience stores and this is true of many restaurants as well. Looking at ***Table 3.3*** more closely, not one county in the region shows a floor space deficit for shopping goods and services. This is a clear indication of the fact that the region has a growing oversupply of retail for shopping goods and services. As stores relocate from one shopping center to a newer one, more stores open. Even with convenience retail, only three counties show a floor space deficit: Cuyahoga with a 3

million square foot deficit, Portage with a deficit of a little over 300,000 square feet, and Northern Summit with a slight deficit of 25,000 square feet (***Table 3.3***).

Overall, the increase in retail space between 2000 and 2007 mainly results in an increase in floor space surplus, especially with respect to shopping goods and services. ***Table 3.4*** accounts for a total retail space of over 38 million square feet for shopping goods and services. In 2000, retail space for the same goods and services was over 37 million square feet. While the increase seems very moderate at first glance, the 2007 study does not include stores under 5,000 square feet.

Table 3.4. Retail Square Foot Totals and Floor Space Surplus/Deficit in Northeast Ohio, 2007

Cuyahoga Totals	**Convenience**	**Shopping**	**Total**
Chagrin Southeast	1,376,726	1,914,758	3,291,484
Hillcrest	991,281	5,602,351	6,593,632
Heights	949,121	883,547	1,832,668
Cuyahoga	619,247	142,332	761,579
South-central	1,234,463	2,786,854	4,021,317
Southwest	1,346,775	3,438,292	4,785,067
Westshore	1,737,547	3,735,421	5,472,968
Cleveland	2,552,827	1,871,403	4,424,230
Total	**10,807,987**	**20,374,958**	**31,182,945**

Cuyahoga Totals	**Convenience**	**Shopping**	**Total**
Chagrin Southeast	217,529	1,136,965	1,354,494
Hillcrest	(675,916)	4,483,710	3,807,794
Heights	(533,487)	(115,650)	(649,137)
Cuyahoga	13,595	(265,850)	(252,255)
South-central	(677,627)	1,498,189	820,562
Southwest	5,426	2,534,296	2,539,722
Westshore	(626,545)	2,142,127	1,515,582
Cleveland	(1,047,822)	(3,666)	(1,051,488)
Total	**(3,324,847)**	**11,410,121**	**8,085,274**

County Totals	**Convenience**	**Shopping**	**Total**
Cuyahoga	10,807,987	20,374,958	31,182,945
Geauga	1,169,147	587,996	1,757,143
Lake	3,558,545	4,010,276	7,568,821
Lorain	5,997,487	5,650,324	11,647,811
Medina	1,970,755	2,098,176	4,068,931
Portage	1,079,682	1,011,281	2,090,963
Northern Summit	1,682,251	4,298,635	5,980,886
Total	**26,265,854**	**38,031,646**	**64,297,500**

Table 3.4(A) *Retail Square Foot Totals by Region*

County Totals	**Convenience**	**Shopping**	**Total**
Cuyahoga	(3,324,847)	11,410,121	8,085,274
Geauga	428,473	88,822	517,295
Lake	1,329,944	2,508,320	3,838,264
Lorain	2,741,973	3,456,284	6,198,257
Medina	293,785	967,989	1,261,774
Portage	(323,306)	69,917	(253,389)
Northern Summit	(25,902)	2,852,174	2,826,272
Total	**1,120,120**	**21,353,627**	**22,473,747**

Table 3.4(B) *Retail Surplus/(Deficit) by Region*

Region Totals	Convenience/Shopping		Total
West Shore	3,699,883	4,029,421	7,729,304
Cuyahoga	653,422	325,500	978,922
Heights	1,795,993	980,718	2,776,711
Hillcrest	2,521,083	3,902,402	6,423,485
Southwest	2,066,308	3,501,810	5,568,118
Southcentral	2,657,534	3,208,425	5,865,959
Chagrin Southeast	2,781,790	4,170,248	6,952,038
Cleveland	5,718,892	2,912,668	8,631,560
Total	**21,894,905**	**23,031,192**	**44,926,097**

County Totals	Convenience/Shopping		Total
Cuyahoga	21,894,905	23,031,192	44,926,097
Geauga	1,801,390	532,596	2,333,986
Lake	5,104,494	4,518,983	9,623,477
Lorain	5,415,200	3,845,344	9,260,544
Medina	2,880,111	1,589,570	4,469,681
Portage	2,055,884	1,334,699	3,390,583
Summit	2,154,112	3,043,988	5,198,100
Total	**41,306,096**	**37,896,372**	**79,202,468**

Table 6.1. Retail Square Foot Totals by Region

SOURCE: Northeast Ohio Regional Retail Analysis

Region Totals	Convenience/Shopping		Total
West Shore	673,369	1,058,987	1,732,356
Cuyahoga	-409,318	-888,811	-1,298,129
Heights	-300,194	-1,076,627	-1,376,821
Hillcrest	-147,974	1,282,801	1,134,827
Southwest	322,174	1,789,994	2,112,168
Southcentral	204,639	800,981	1,005,620
Chagrin Southeast	574,612	2,003,968	2,578,580
Cleveland	-611,265	-2,692,242	-3,303,507
Total	**306,043**	**2,279,051**	**2,585,094**

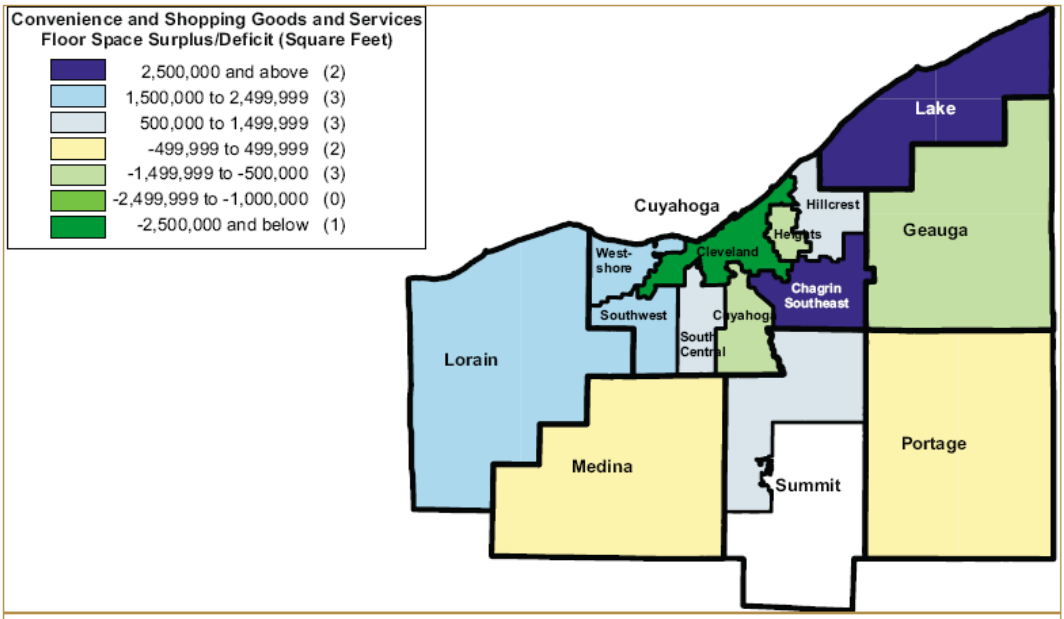
County Totals	Convenience/Shopping		Total
Cuyahoga	306,044	2,279,051	2,585,095
Geauga	87,742	-1,425,458	-1,337,716
Lake	1,511,512	992,577	2,504,089
Lorain	1,691,955	316,430	2,008,385
Medina	731,380	-519,346	212,034
Portage	97,544	-623,833	-526,289
Summit	105,122	702,764	807,886
Total	**4,531,299**	**1,722,185**	**6,253,484**

Table 6.2. Retail Surplus/Deficit Totals

SOURCE: Northeast Ohio Regional Retail Analysis

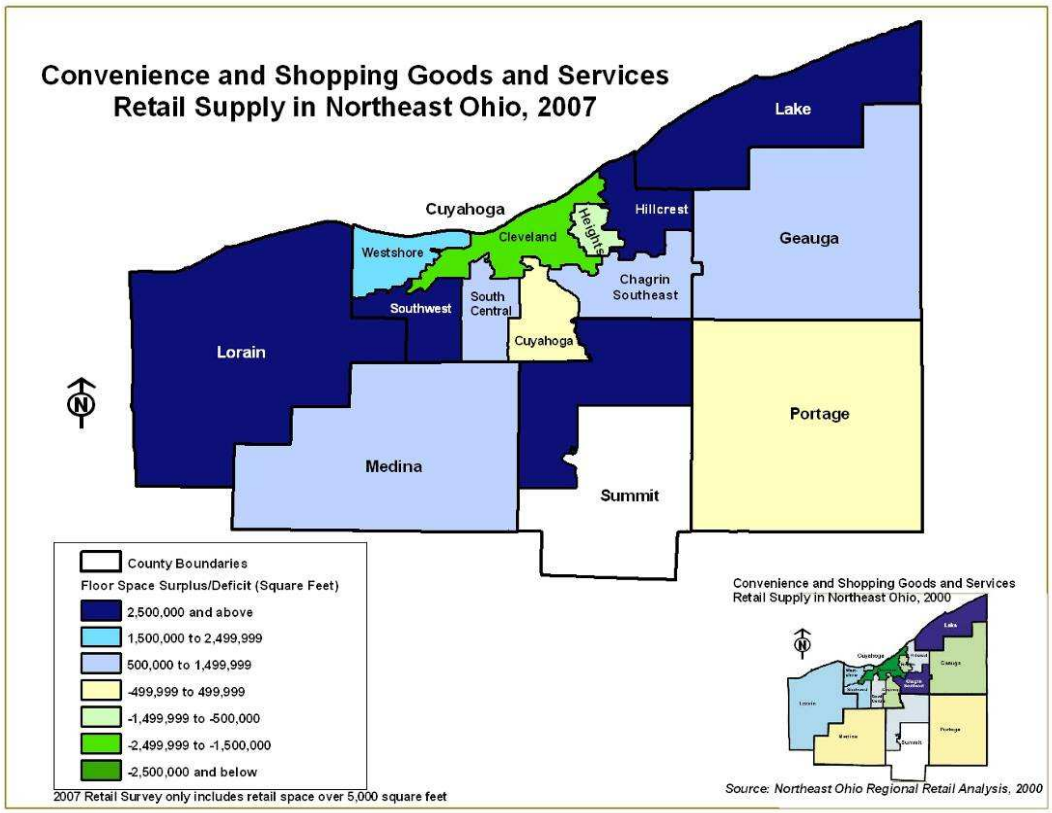
Map 3.1 and ***Map 3.2*** show floor space surpluses/deficits in the region in 2000 and 2007.

Map 3.1. Floor Space Surplus and Deficit for Convenience and Shopping, 2000

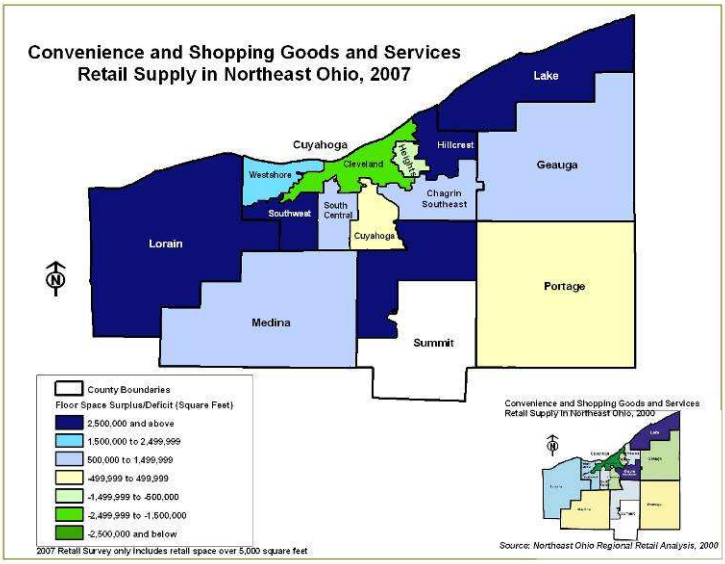


Map 6.3. Convenience and Shopping Goods and Services
SOURCE: Northeast Ohio Regional Retail Analysis

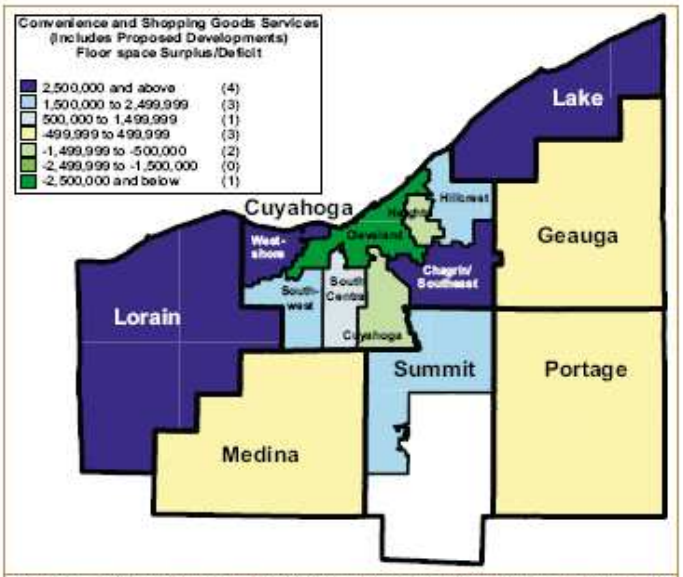
Map 3.2. Floor Space Surplus and Deficit for Convenience and Shopping, 2007



Map 3.2 is now compared to the map the 2000 study created based on proposed retail development at the time (***Map 3.3***):



Map 3.3. Estimated Future Floor Space Surplus and Deficit for Convenience and Shopping, 2000



Map 9.3. Floor Space Surplus/Deficits, Including Existing New and Proposed Developments

SOURCE: Retail Strategies, Inc., Northeast Ohio Regional Retail Analysis

A comparison of ***Map 3.1*** and ***Map 3.2*** shows that all the regions within Cuyahoga County have seen an increase in floor space surplus or, as is the case with Cleveland, a smaller overall deficit. The only two exceptions are Chagrin Southeast and the Heights region.

Likewise, all the counties in the region have seen an increase in floor space surplus; they all fall in a category with a higher range of overall floor space surplus, with the exception of Lake County. This is because Lake County already had a surplus that fell in the highest category in 2000.

A comparison of ***Map 3.2*** and ***Map 3.3*** shows that the anticipated growth in floor space surplus back in 2000 was confirmed. In fact, several regions within Cuyahoga County and several counties within the region outpaced the anticipated increase in floor space surplus: (1) the Southwest and Hillcrest regions in Cuyahoga County; and (2) Geauga, Medina, and Northern Summit counties at the regional level. A few regions within Cuyahoga County did not meet what the 2000 study anticipated. This is true of Cuyahoga, Chagrin Southeast, and Westshore. At the regional level, all the counties met or exceeded what the 2000 study anticipated.

IV. Vacancy and Proposed Retail in the Region

Table 4.1 shows the level of vacancy in the region. One immediate observation, even based on partial data, is that the vacancy rate, in Northeast Ohio, remained relatively steady between 2000 and 2007, decreasing by less than 1.5 percent-point. While retail space between

2000 and 2007 grew by 22%, the increase in the number of vacant stores did not follow the same trend. Here again, since the 2007 study only includes stores over 5,000 square feet, it would be interesting to see if more of the smaller stores have closed between 2000 and 2007. This is a likely result given the fact that smaller stores often suffer from the increase in the number of bigger retailers. Cuyahoga County is the county with the highest vacancy rate while Northern Summit County has the lowest.

Table 4.1. Total Vacancy and Vacancy Rate in Northeast Ohio, 2000-2007

County	**Vacancy 2000 (Square Feet)**	**Vacancy 2007 (Square Feet)**	**Vacancy as Proportion of Retail Space 2000**	**Vacancy as Proportion of Retail Space 2007**
Cuyahoga	4,305,779	5,426,235	17.3%	17.4%
Geauga	190,535	N/A	17.5%	N/A
Lake	483,230	N/A	7.2%	N/A
Lorain	N/A	N/A	N/A	N/A
Medina	116,883	132,000	4.3%	3.2%
Portage	34,100	69,000	1.7%	3.3%
Summit (Part)	68,109	36,466	2.0%	0.6%
Total Region	5,198,636	5,663,701	**10.4%**	**8.8%**

Table 4.2 gives a partial indication of the fact that there is more proposed retail in the region. In Cuyahoga County, Cleveland, North Royalton, and Strongsville are the three cities leading the pack. Because the analysis is only partial, other cities may be included in this list. At the regional level, anticipated retail growth is to be expected in Lorain County, Medina County, Portage County, and Northern Summit County.

Table 4.2. Proposed Retail Development in the Region, 2007

County	**Proposed Square Footage**
Cuyahoga	3,215,000*
Geauga	N/A
Lake	N/A
Lorain	650,000
Medina	N/A
Portage	1,545,000
Summit (Part)	
Total Region	**5,410,000**

* This figure is only partial; data for some of the regions in Cuyahoga County is missing.

The following section offers synopses of each team's findings as teams of two students surveyed each region within Cuyahoga County and each county within the region.

V. Analysis of Retail Growth in Northeast Ohio

C. Cleveland City

Retail is the second-largest industry in the U.S. by number of businesses and number of employees. Consumer attitudes, perceptions and behavior continually evolve and form new trends and countertrends.

1. Neighborhoods

There has not been a large change in convenience and shopping space since last survey (in terms of square footage). There is some loss, but it seems to be mostly due to changed uses and progressive demolition over the last two years. The fact that there is no significant change in vacancy may be due to demolition as well as small start-up businesses.

Because only locations over 5,000 sq ft were considered, there are a lot of national chains - mostly grocery store anchored retail centers, national chain drug stores, and small convenience shopping goods aimed at lower-income households that appear in the study.

New and repositioned centers that are anchored by large chain and/or drug chain stores create an environment for convenience and innovative niche products and locations. New strategies are critical for both new and old centers; integrating discount stores to compete on price, and provide a variety of shopping experiences

Many gas stations are becoming gas station/ and convenience store in one. Auto oriented shopping centers like Glenville Town Center continue to see strong occupancy numbers, while other more traditional models like Shaker Square and E. 185th have been able to keep up by active interventions and marketing.

2. Downtown

A number of trends continue to evolve in the downtown area with many innovative restaurants and entertainment and mixed use live, work and retail venues sharing locations.

Many downtown locations have been designed and zoned for mixed use. New strategies are critical to compete on lifestyle, mixing uses to create a new urban environment and to draw the target market to the downtown area.

The enclosed centers, such as Tower City and the Galleria have seen some vacancy but the type of tenant they have focused on has changed to a lower grade and sometimes altogether different class. To name a few examples dollar stores have sprung up in Tower City and art galleries and office space are common in the Galleria. These tenants have replaced national retailers like Banana Republic and the Limited over the past several years.

D. Heights

The Heights region (East Cleveland, University Heights, Shaker Heights, and Cleveland Heights) is unique in comparison to other areas in large part because of its age. These four communities have experienced relatively low amounts of new development. Likewise much of the change since the 2000 retail study has involved the repurposing of existing space or simply a change in businesses or ownership. The retail establishments in the heights region are of the typical early 20th century style-- human scaled and with residences above. All four communities are entirely built out, so the amount of proposed retail is limited as new development would require site preparation, zoning variations, and political issues which are absent in many areas further away from the center city. As the automobile has come to transport most shoppers, the linear style of development found in these areas has become less functional. The physical space itself is also a problem as many businesses find the layouts to be less than ideal. To quote a planner from Shaker Heights "the spaces are too narrow and too deep."

Another unique feature separating the Heights region from the rest of northeast Ohio is its overall retail deficit. All of the communities, with the exception of University Heights were, according to potential spending power, under retailed. This stands in glaring contrast to the overall trend of northeast Ohio as documented in the 2000 retail analysis and supported by the 2007 update in which the region as a whole has a net surplus of retail.

There were some other interesting observations about the individual communities. East Cleveland, in many ways the most struggling community in the Heights region, has seen many of their vacant buildings repurposed for use by RTA. University Heights which as mentioned is the only community in the Heights with a surplus of retail, ironically, has the most additional retail planned. Cleveland Heights has only one project currently underway that would add retail space to the total. Cleveland Heights developed a new zoning classification, known internally as "C-2 on steroids" (C-2 is the general retail/commercial zoning category. This change effectively increases the height limits allowed, but only if the development meets certain criteria and more importantly if it is in one of the established nodes, where increased density is encouraged (Cedar Lee, Cedar Fairmount, and Coventry). Given that Shaker Heights is nearly built out there are no plans to increase the total amount of retail. There is, however, a preliminary proposal to build a lifestyle center that would build three to four hundred thousand square feet of retail, a development of this sort would require nearly the same amount of existing retail to be "scraped" first and would therefore not be a net gain of square footage. Another trend that will be obviated throughout the region is the volatility in ownership of pharmacies and grocery stores which have seen major chains both enter and depart from the market.

E. Hillcrest

This region has seen a large increase in retail. Total retail square footage has increased almost 50% since 2000 or 7.2% per year over a seven year period. There is an 82% increase in shopping retail square footage from 2000-2007. This large increase comes from new construction of "Lifestyle" Centers and medium to large box construction. New projects include: Legacy Village, redevelopment of Eton Collection, Harvard Park, redevelopment of Eastgate Shopping Center, new Super Wal-Mart and Costco in Mayfield. There is a 7% decrease in

convenience retail square footage from 2000-2007. This change is primarily due to consolidation of small shop retail to larger format, "Category Killer" stores. Trends indicate movement toward national and regionally-based tenants such as Cheesecake Factory, Michael's, Wal-Mart, Costco, Brio/Bravo and Mitchell's brands versus local, individually-owned establishments.

The greatest quantity of vacancies is located in Euclid and South Euclid, respectively. New retail development has bypassed the inner ring suburbs as a result of out-migration, change in per capita income, size and quality of existing retail in these cities. New retail growth has located closer to higher income communities such as Beachwood, Pepper Pike, and Mayfield/Gates Mills and in conjunction with existing, strong retail hubs. Legacy Village's close proximity to Beachwood Place and La Place is an example that illustrates this.

There is heavy retail agglomeration and polarization between big box retailers and smaller, individually-owed establishments—Big is getting bigger. Conversely, strong, local retail tenants have diminished and now focus on smaller niche markets. The end result is an erosion of necessary retail in older neighborhoods, necessitating greater travel distances for consumers. The newer communities (Beachwood, Pepper Pike) are perceived as getting "better", whereas older communities (Euclid and South Euclid) are perceived as getting "worse."

F. Chagrin Southeast

The Chagrin/Southeast region contains various municipalities with differing retail situations. While the Solon and Garfield Heights have seen a large increase in retail, Bedford, Oakwood and Maple Heights are seen increasing vacancies and an influx of lower-tier retail tenants. Chagrin Falls, on the other hand, has not seen much change in its retail climate. That is due, however, to the small independent retail nature of its downtown. To an extent, there seems to be a shuffling of big box tenants—as one city opens a new big box center, other cities see big boxes close due to the increased competition.

G. South Central

There are several instances where retail stores have moved out and retail space is left vacant. There are also several instances where retail space has been replaced by other retail types that are within category A or B. Giant Eagle and Marc's have moved into the larger retail spaces while Rite Aid has moved into the smaller retail space.

H. Cuyahoga

This region has added nearly a quarter-million square feet since the last study. This trend looks to continue as there are two lifestyle centers planned.

I. Southwest

In Berea, Brook Park, Olmsted Township, Olmsted Falls and Middleburgh Heights, there has been little retail movement. The larger vacancies are due to Tops pullout. There is some

evidence of the downgrading of retail locations from drugstores to dollar stores, particularly in areas where shopping seems to be struggling: Southgate Shopping Center in Middleburg Heights or Brookgate Plaza in Brook Park, for instance.

Generally speaking, retail vacancies appear to have increased slightly and rezoning has removed some retail space from the market as those uses are changed to industrial. In contrast, Strongsville has seen a large increase in new retail. With even more planned Strongsville meets and exceeds the retail needs of all these communities.

J. West Shore

There have been several major developments in the West Shore study area since 1999. The Westgate Mall in Fairview Park and Rocky River has been demolished and is currently being redeveloped as a power center, with Target and Kohl's as the anchors. The new center will have about 100,000 total square feet fewer than the old mall. The redevelopment will leave the existing Target in Rocky River, on Center Ridge Road, vacant.

In North Olmsted, Great Northern Mall added about 200,000 square feet in an expansion of Dillards in 2003. Little else has changed there. Bay Village has remained practically unchanged since the last study, with no new square footage added to its scant supply of retail and no new vacancies.

In Westlake, Crocker Park has changed the retail landscape of the west side of Cleveland. Opened in 2004, the development added nearly a million square feet of retail. Rocky River is also opening the Beachcliff Market Square development that features several hundred square feet of new retail.

Overall, there is an increase in new retail and a slight decline in vacancies. There are many new national chain drug stores that have located in the study area. In some cases, the older retail spaces are either vacant or are being filled with dollar store-like tenants. Additionally, we found a huge deficit in convenience shopping and a large surplus of shopping goods. Correspondingly, there was a large sales leakage in convenience shopping ($168 million) and a net leakage of $2.7 billion.

Fairview Park is the only city in our study area that provides tax incentives. It provides a seven-year 100% tax abatement on commercial developments.

K. Lake County and Geauga County

In Lake and Geauga counties, the majority of the development is occurring in Mentor, Mentor and Madison. All of the other cities reported that there are no significant retail developments.

L. Portage County and Northern Summit County

1. Portage County

Portage County hasn't experienced much retail growth; there are few new big-box developments such as a Target in Streetsboro, and only a handful of reported discount drug stores like CVS, Walgreens, and Discount Drug. Downtown Kent and Streetsboro have the most of this new retail development. A few strip malls have been added, but again, most of Portage County still remains rural. Besides the larger concentrations (but existing ten years prior) in Aurora at the State Rt. 43 and State Rt. 82 intersection and the Aurora Premium Outlets, not much retail development has been built within the last 10 years, and according to our sources in local governments, there are no proposed large retail centers. On the whole, like many counties, Portage County has also seen an increase in shopping retail surplus from -163,000 square feet to about 70,000 square feet.

2. Northern Summit County

Northern Summit County has exploded with new retail developments of the past ten years. The present total of new and proposed retail square footage in the northern half of the county totaled more than 4.3 million square feet. We found that projects that had were in the development and approval states ten years ago have been finished as expected. From what we unearthed, Summit County still has a deficit of approximately 11,000 square feet of convenience retail and has in excess of 4.4 million square feet of shopping retailers. Overall there has been a negative impact on convenience shopping down from about 105,000 square feet; while experiencing an increase of approximately 2.7 million square feet of shopping retail. This excess is largely due to new big box centers like Wal-Mart, Home Depot or other do-it-yourself mega-stores and projects like First and Main located in Hudson, Ohio. Nodes of new large-scale retail developments can be seen at the Cascades at Brimfield, Montrose/Fairlawn and Macedonia, Ohio.

3. Disclaimer

In Portage County we ran in to trouble contacting the county planning offices. We cannot predict how much this has impacted our retail analysis. Additionally, our trade area analysis data is missing some household figures in Summit County, which could explain some of the drastic new surplus figures. However, this does not mean that we have over compensated in the retail data we gathered. The addition of this information would only affect the potential sales and total sales, in dollars, figures and the household figures. The data team never got us the figures for the bisected municipalities located in Summit County.

M. Medina

Medina County has experienced significant growth in retail development since the initial study. Through our research we successfully documented growth of those establishments over 5,000 square feet in the City of Medina and Medina Township for the entire period, the City of Wadsworth and all other townships and villages from 2001 through 2006. The County Building Department agreed to share data dating back to 2001, suggesting that the compiling of additional permit data was too time consuming. Further, we were unable to collect data on the City of Brunswick as city officials were not forthcoming in sharing data.

Although the data was incomplete, growth trends in the County are evident. In the subdivisions listed above, the county gained over 1.3 million square feet in new retail over 5,000 square feet. Growth occurred throughout the county and has provided residents with numerous retail alternatives. New retail in the form of big box occurred in Wadsworth with the additions of: Wal-Mart, Home Depot, Lowe's, Target, and Kohl's. Further the City of Wadsworth gained those retail establishments that typically follow power center developments: Bed, Bath, and Beyond, Marshall's, and Office Max. Finally, the City also gained smaller strip retail. Throughout the rest of the county, growth in retail occurred mainly as small to medium sized strip centers were constructed. Establishments ranging from Old Navy to neighborhood retail were constructed since 2001.

Despite incomplete data, our retail trade area analysis demonstrated a surplus in both the convenience and shopping retail categories. In the category of convenience retail, the county demonstrated a surplus of over 290,000 square feet of retail space. In the category of shopping retail, the county demonstrated a surplus of over 960,000 square feet of retail. Given the prevalence of big box retail that occurred over the past seven years, the surplus in shopping retail is predictable. Again, it is important to note that these surplus figures were generated using incomplete data, suggesting that we underestimated the true impact of new retail development in the county.

N. Lorain

The trends in Lorain County mirror much of what is going on throughout the rest of Northeast Ohio with regards to retail. More and more retail is being added to an already over-saturated market. Power strip retail is dominating as older retail centers such as the historic downtowns of cities in Lorain County continue to suffer.

The southwest region of Lorain County continues to be mostly rural with little retail activity. Most retail activity is clustered along the eastern border of the county in the fast growing exurban communities of Avon and North Ridgeville that are very near built out high income Cuyahoga County municipalities. The historic downtowns of Lorain and Elyria continue to suffer with vacancies and low end retail. The Midway Mall located in Elyria is struggling and has lost Dillard's, a major anchor, which in the past has signaled the beginning of the end for other malls. Elyria continues to have strong retail around the mall area due to the construction of big box. The city of Lorain, although struggling, has added big box retail in the wealthier area of the city that straddles the border of the higher income community of Amherst.

Section II. Policy Implications and Recommendations

Chapter I: The Built Environment

Introduction

Corporations and planners have in common the fact that they are both charged with projecting the impacts of their actions 5, 10 and 20 years into the future. A retailer's investors count on the decisions that are made today adding up to profits at some future point in time. A city planner's investors - the residents and businesses of the neighborhoods and cities that they are planning for - expect that the overall health of the community, and their individual well-being, will grow with time. Competition is ripe in both of these markets. If the corporation or planners fail, they will lose their investors to other, more successful offerings.

One of the challenges planners face in this regard is in shaping the design of buildings, neighborhoods and cities. Planners must strive to ensure that what is built today will not become prematurely obsolete and thus lead to a loss of residents and businesses. At the same time, they may seek to limit the amount of development, managing a sustainable level of growth that is appropriate to the community at hand. For examples, planners need look no further than some of the physically segregated, auto-oriented retail environments that have been built over the last several decades. While they may be retail formats that many shoppers demand today, these typologies have been over built and signs of transition are already evident.

Inherent to this dilemma is the fact that many of these retailers are building structures in stark contrast to those that benefited from the long-term foresight of builders from a century ago. A big box made of corrugated metal and cinder block, set hundreds of feet back from the nearest road, with embellishment only suitable to a specific brand or corporation does not smack of permanence or of a life span beyond its first tenant's lifetime. Many of our nation's most treasured buildings, on the other hand, were built more than 100 years ago and will likely remain standing for another 100.

The enduring quality of these buildings is evidenced by their ability to be reused dozens of times over. Turn-of-the-century warehouses have become offices, artists' lofts and residential condominiums. Their longevity is further supported by the fact that they exist in tightly woven, mixed-use neighborhoods where many resources are shared and users of all types keep buildings occupied and streets and sidewalks active.

There may yet be a use for the obsolete malls, strip centers and big boxes of today, but the current trend is to operate them until they are no longer profitable and then either abandon them or tear them down and build anew. Many communities consider themselves lucky if the latter is the case, particularly in slow or no-growth regions like Northeast Ohio. This method is not sustainable economically or environmentally. New strategies have already begun to address this problem and others are evolving, even as these poorly conceived, short-sighted developments continue to spread across much of the country. It is essential that planners and legislators address these issues and pursue progressive solutions to building and site design; sustainable site planning; zoning reformation; investment in sustainable building practices; and finance of sustainable development.

Sustainability and Building

Architecture and Building

Sustainable development occurs under several different types of contexts and eludes having one definition. The most familiar aspect of sustainability is the ever popular phrase of "green building." Green building is most simply understood as a physical structure constructed utilizing energy saving techniques during its construction as well as its ability to consume limited amounts of energy and have a longer, more usable lifetime than other formats (a "big-box" per se). Many people may not consider the programmatic elements, other than saving energy, that are part of green building design or what ways green design can save energy, aside from cutting down the need for heating and cooling the internal parts of a structure. Understanding green building goes beyond simple design principles. We must also consider aspects such as material intensities and site planning.

LEED stands for Leadership in Energy and Environmental Design. The use of LEED standards is a relatively new effort that promotes the development of environmentally friendly buildings and rates the efficiency of new buildings based on a point system. Buildings can attain a certified, silver, gold, or platinum level of certification according to how many points are achieved though the various stages of construction. Many people are familiar with green building elements like green roofs, but points can be awarded for things like density, location to mass transit and on-site remediation. There are many different types of LEED rating systems for the various types of development that occur in society. LEED-H for homes, LEED-NC for new construction and LEED-ND for neighborhood developments are a few examples. LEED-ND is a category that is relatively new and rests on an important theory that even though a building alone can be considered sustainable by design, one must consider the context in which it rests. LEED-ND is described by the US Green Building Council (USGBC) as

> "…hav[ing] a similarly positive effect on development trends to revitalize existing urban areas, decrease land consumption, decrease vehicle miles traveled, improve air quality, decrease polluted stormwater runoff, and create mixed-income, walkable communities...LEED-ND will address location, linkage to other communities, and infrastructure issues that other LEED programs haven't touched on."[2]

LEED-ND particularly stands out with its newly innovative approach to address issues that go beyond structural efficiency. One of the more interesting elements of LEED-ND is its specification of the actual location of developments and the attention to community design issues. The development of LEED standards are notable for the collaborative approach taken towards their development. For example, LEED-ND did not always incorporate the importance of location and community design and received heavy criticism because of it. However, because of the open and collaborative design approach taken by the USGBC, these elements were later added. Other characteristics of the LEED-ND rating system are its integration of smart growth initiatives, new urbanism and green design.

[2] USGBC – U.S. Green Building Council. 2006. U.S. Green Building Council. April 2006. <http://www.usgbr.org>.

One of the most important factors of LEED-ND has been the introduction of the importance of siting. Not only is growth important because of its impacts on a region's air and water quality, but also because of how it can lead to sprawling communities.

> "The negative environmental, social, and economic impacts [of sprawl] are affecting more and more people on a daily basis. Long-distance commutes and traffic tie-ups contribute to worsening health-related issues, such as air pollution and increased asthma and other breathing related illnesses. More impervious roadways, rooftops, driveways, and parking lots mean more flooding and water pollution, and runoff that have nowhere to go and plenty of toxins to pick up on its way."[3]

This is why 25% the points that can possibly be earned by LEED-ND projects are attributed to location itself. "Location is crucial because it determines whether, and how far, people have to drive to get there…transportation accounted for 28 percent of U.S. energy consumption in 2004, it makes sense to pay attention to how a development affect transportation patterns."[4]

Keeping sprawl in check means paying attention to density and diversity. Good density is typically defined by sustainability advocates as high density. One of the biggest payoffs (but not always recognized as so) of dense development is the preservation of land acquired by using less of it. Smart growth proponents are already promoting such land use behaviors and many municipalities offer density bonuses for developers who develop PUD, or Planned Unit Developments, densely.

Another measure of benefits returned through dense development is the reduction of taxes a home owner may experience in more dense areas because of the less a local government has to extend their utilities to remote or leap-frog developments. Further, dense development can increase the possibility for creating diversity in housing supply.

> "…people can stay in an area throughout their lives and change dwellings without moving very far as they graduate from college, raise families, and eventually retire…diverse housing stock can also help integrate communities by class, race, and age, leading to a higher population density that comes from building both small and large homes…that makes the neighborhood more able to support everything from boutiques to bus systems."[5]

<u>Material Intensity</u>

There is no question that construction, use, and demolition of a building has tremendous environmental impacts. As we start to consider the specific elements that impact the

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[3] Kollin, Cheryl. "The winds of change are blowing through the building community, fueled by consumer demand and discerning practitioners." *American Forests*. Spring 2005. April 2006. <http://american forests.org/productsandpubs/magazine/archives/2005spring/communities.php>.

[4] Kelly, Carolyn. "Rating System Asks: Where You At?." Michigan Land Institute. October 20, 2005. April 2005. <http://www.mlui.org/print.asp?fileid=16929>.

[5] Kelly, Carolyn. "Rating System Asks: Where You At?." Michigan Land Institute. October 20, 2005. April 2005. <http://www.mlui.org/print.asp?fileid=16929>.

environment, we eventually come to the issue of materials. A building is, in its very essence, a composition of materials assembled to create a functional form. As we begin to think about material composition, we have to consider the design choices we make with them. Those design choices must include material selection that is based on a consideration of origin and how it may affect future adaptable uses of the building. The consciousness of a material's origin, production, use-period, and final discarding is also known as having a Life Cycle Awareness of that material.

Through Life Cycle awareness we can make better decisions as we create materials for use in our buildings. Humans are increasingly realizing the interconnectedness to the natural world and our responsibility to work as closely as possible with the natural process. To further illustrate, we must understand that in the natural process there is no waste generated. Even what we may consider a "waste" product of an organism's life cycle has a purpose. Waste that is created by humans through unnatural resource extraction and material production does not have its place in the natural process.

What is it exactly is the life cycle we need to be aware of? The life cycle entails quarrying and refining of raw materials; production and manufacturing of raw materials; manufacturing raw materials into components; use of components on a construction site; use of the building; and finally the demolition, reuse and disposal of the building. Historically, our human society has been limited in our ability to extract resources and materials. However, due to technological advances, we have eliminated many of the limits on what we can build and what we want to build it with. Frankly, sustainability is not just our ability to look into the future and make better judgments, but also our ability to look at our current status as well.

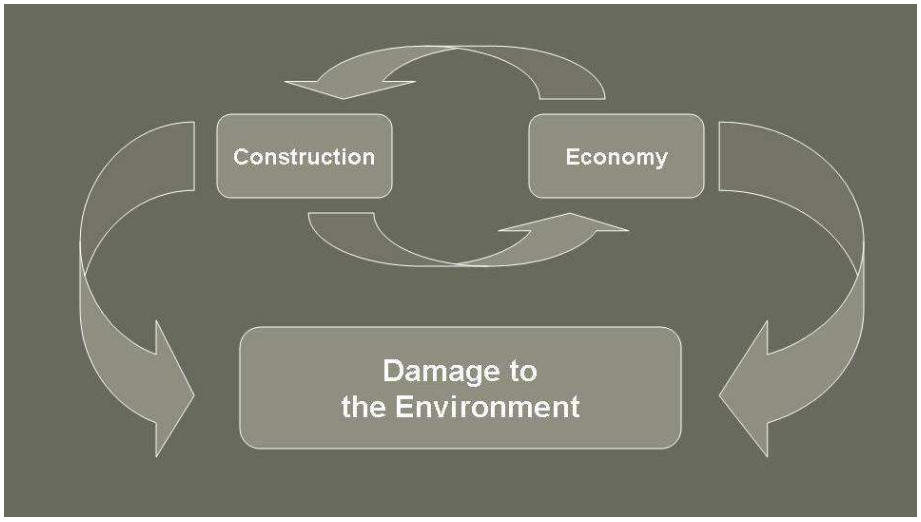

Figure 1.1

Land Use Strategies

Communities that seek to build a sustainable retail landscape have many options to work with. In addition to strategies that work within the structures themselves, the foundation for many of these tools can be found in comprehensive planning and zoning statutes. State zoning enabling legislation gives municipalities and counties the responsibility and authority through

which sustainable retail form can be promoted. The state legislation can go further, spelling out goals and objectives to be developed in local legislation.

Beyond the state legislation, it is up to each municipality to establish its own principles and codes to ensure sustainable development criteria are met. Through comprehensive planning and community goal-setting, communities can establish the appropriate design standards for retail facilities in their community. By tapping into the authority of "police power," which is the legal basis for land use regulation,[6] the community is setting a framework for legislation that can enforce the type of development that they have deemed desirable or appropriate, so long as it can be proven to protect the health, safety and welfare of its residents. Zoning and planning boards may be hard pressed to deny a building permit or development proposal for an undesirable project without the force of these regulations.

Worldwide, progressive land use legislation is demonstrating awareness of the impacts of building and neighborhood form and function on the environment, the economy, social networks, and the overall health of communities. Examples range from seemingly subjective measures like aesthetics, to the precision of maximum store size limits. A growing number of communities have begun to recognize the obsolescence of their zoning code and have adopted new "smart" or "form-based" codes that encompass retail and mixture of uses, while others are attempting to concentrate development around infrastructure improvements and transit. Still others have enacted zoning regulations that are focused specifically on ensuring energy efficiency in the built environment. One theme rings true throughout these examples: regulation and successful implementation are most plausible when the process includes positive planning and collaboration across jurisdictions, regulators, property owners, planning officials, and the community at large.

Aesthetics

A number of communities have been able to enforce their land use regulations on the sole basis of aesthetics. The protection of neighborhood character and stability, often as they relate to historically significant structures and neighborhoods or to economic diversity and function, has been deemed a sufficient application of the police power of legislative bodies.[7] In many cases, the argument for aesthetics comes in relation to franchise retailers, where brand identity is often built into their structures. These free-standing, "cookie-cutter" buildings can prove unsustainable, as they have no real relation to their surroundings and are unlikely to be re-used should they go vacant. Building or project size can also be a factor in the aesthetics argument.[8] The ability of a proposed project to blend into its surroundings, where they are deemed to be worthy of preservation, can prove important in the permitting process where strict regulations have been established. Under these criteria, a standardized drive-thru franchise or an auto-oriented strip center may not be allowed in a district where pedestrian-based form is well-established. Well-planned communities have been able to enforce regulations that have led developers and franchises to fit appropriately into the context of the existing built environment.

[6] Curtin, Daniel J., Jr. 2005. "Regulating Big Box Stores: The Proper Use of the City or County's Police Power and its Comprehensive Plan." *Vermont Journal of Environmental Law*. 6: 34.
[7] Ibid. at 36-41.
[8] Murphy, James. 2004. "Vermont's Act 250 and the Problem of Sprawl." *Albany Law Environmental Outlook Journal*. 9: 223-227.

Size Caps

Placing a size cap on store sizes is another method that has been implemented across the country to promote a more sustainable building form. Smaller building footprints allow for a better mixture of uses, enhanced walkability and a greater possibility of reuse if the built structure is vacated. Additionally, in smaller communities with limited buying power, the potential exists for a single retailer of sufficient size to capture a substantial percentage of consumer dollars, leaving the pre-existing retailers with an insufficient share of the market for survival. This is a bad scenario for a number of reasons, not the least of which are the benefits of thriving small businesses and local ownership, which have been well documented.[9] Large format retailers do not generally exist in districts with a true diversity of retail options, nor do they typically inhabit neighborhoods with public open spaces, functional sidewalks, access to public transit, or a mixture of housing types. For these reasons and many others, they have been deemed an unsustainable retail typology by many communities.

In the early 1990s, Ashland, Oregon established a 45,000 square foot cap on retail stores. Hailey, Idaho enacted a 36,000 square foot cap in the mid-1990s and Rockville, Maryland added their own 65,000 square foot limit in 2000.[10] In Northeast Ohio, the City of Westlake has successfully implemented its limitation on retailers over 65,000 square feet. Dozens of other similar regulations exist nationwide, many of which have withstood challenges in the courts. So long as their foundations are soundly based within the limitations of the legislature's police power, they fare well. However, if they are found to be arbitrary or directed at a single retailer, the retailer's challenge may prove successful.

Other community approaches to the "big box" format include acceptance with conditions[11] and incorporation into existing urban environments. As the market continues to exhibit demand for these mega-stores, it is imperative that communities who cannot abolish them regulate them otherwise to fit more appropriately into their surroundings. This can entail architectural features, building materials, LEED principles, pedestrian access, or site plan criteria relating to parking placement, setbacks, and public amenities. As is the case with most of these regulations, however, the power of the policy is only as strong as the region's ability to work together in enforcing them. If one community has strict guidelines, but its neighbor has none, a retailer may simply pick up and move down the road to the next town, contributing to their tax base, but still draining consumer dollars and leaving its substantial ecological footprint on the broader community.

A more incentive based approach might lead a city or region to encourage retailers to locate in existing commercial areas and ideally, to reuse existing structures. Historic and new markets tax credits are potential sources for these incentives, as are fast-track approvals, reduced parking requirements, and density bonuses for developers. There is evidence of a growing trend in this regard across the country. A recent article cited Wal-Mart's plans to expand into low-

[9] Mitchell, Stacy. 2006. *Big-Box Swindle: The True Cost of Mega-Retailers and the Fight for America's Independent Businesses*. Boston: Beacon Press.

[10] Ibid. at 212.

[11] Merriam, Dwight H. 2005. "Breaking Big Boxes: Learning from the Horse Whisperers." *Vermont Journal of Environmental Law*. 6: 17-22.

income urban areas across the United States.[12] Home Depot recently opened a flagship store in Manhattan that fits snugly into a historic mixed-use structure. Elsewhere, "big-box" retailers have become ground floor tenants in mixed-use developments in downtowns and inner city neighborhoods where income density (and the return of the middle and upper classes) outweighs relatively small per-capita incomes.

Ultimately, if a more sustainable building type cannot be enforced, establishment of reuse clauses or demolition provisions as conditions of project approval can be useful. With the developer or retailer's commitment to these contingencies, it is more likely that a community can prevent the building from sitting vacant should the proposed use fail.

Smart and Form-Based Code

Many communities have begun to acknowledge that their zoning codes are outdated and have enabled the type of development that they now seek to deter. The Euclidian zoning of the past, which separated uses and led to the proliferation of countless sterile, automobile-dependent communities, is being replaced in some communities by "smart" and "form-based" zoning codes. There are other names for this type of land use legislation, including "new urbanism" and "traditional neighborhood development." The common theme among them is a return to the idea of mixed uses and building forms that create lively streets where social interaction comes more naturally and people are able to live, work and recreate in a single place.

River Falls, Wisconsin's Traditional Neighborhood Development (TND) Ordinance is a response to the 1999 Wisconsin Smart Growth Act's requirements that such TNDs be developed by local governments by 2002. The ordinance applies to land annexed to the city consisting of more than 40 acres and to designated neighborhood centers that coincide with the sewer service and water quality management plan. The ordinance adopts principles that were typical to the city in the 1940s with the intention of allowing "for development of fully integrated, mixed use pedestrian oriented neighborhoods."[13] Residential uses in the "mixed-use area" are to be within a 15-minute walk of commercial, civic and open spaces. All modes of transit are promoted, with an emphasis on pedestrian circulation, bicycles and public transit. Parking facilities are to be located beside or behind buildings or in garages and shared supply is encouraged. A number of additional design standards relating to the built environment are laid out in the code, each promoting a diverse, vibrant, attractive, and accessible community.

Form-based codes are more specifically geared towards articulating standards for a particular physical form, as opposed to the Euclidian use standard. These codes are either active or planned in a number of communities, including Charleston, South Carolina; Denver, Colorado; Miami, Florida; and Arlington County, Virginia. Much like the SmartCode[14] or TND, the

[12] Miara, James. 2007. "Retail in Inner Cities." *Urban Land*. 66: 98.

[13] Nolon, John R. 2006. *Compendium of Land Use Laws for Sustainable Development*. Cambridge University Press.

[14] Emerson, Chad. 2006. "Making Main Street Legal Again: The SmartCode Solution to Sprawl." Berkeley Electronic Press. http://law.bepress.com/expresso/eps/954.

objective is to create an urban form that is walkable, transit friendly, dense, and diverse. In

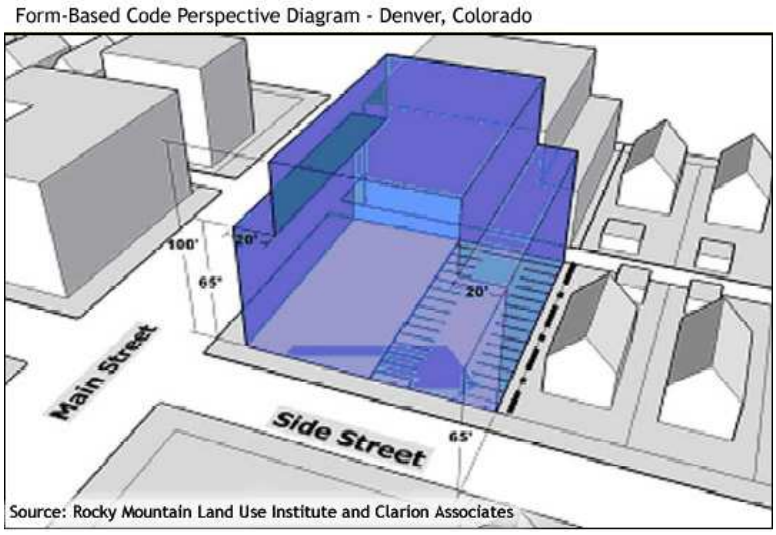

Figure 1.2

Charleston, the code requires that buildings meet with sidewalks and that parking be relegated to the rear of buildings and in on-street spaces. There are no minimum parking or lot-size requirements and no limitations on density.[15] In Arlington County, the form-based codes are not mandatory, but have been used in the vast majority of recent development proposals, due in part to incentives such as an expedited review process.[16]

Form-based codes present a predictable set of rules for developers that have ideally be created through a comprehensive planning and public input process. "They are ideal for jurisdictions seeking a fundamental change in urban form and character – for instance, when redeveloping areas that have become obsolete or which were poorly planned at the outset."[17] In Cleveland, form-based codes are being developed for the Lorain and Detroit Avenue corridors on the West Side. The historic form of these commercial thoroughfares provides a model that the community has deemed desirable and the new overlay zoning code will provide a streamlined tool with which to proceed with future development. If implemented effectively, they may serve as a model for the entire region. Form-based codes have, in fact, been discussed as a way to advance the regional planning process, where regional development and infrastructure patterns are not readily planned for at the local level.

Transit Oriented Development

There are many logical reasons for concentrating development around transit infrastructure. Among them are efficiency of transportation modes, the equity of access to amenities, and maximization of public infrastructure investments. Mass transit vehicles, whether buses, trains, circulator shuttles, ferries, or otherwise, produce far less aggregate emissions than the equivalent private automobiles that could have otherwise been used. They require little or no parking spaces, thus leaving more room for development or open space. Ideally, all members of a community can access transit and reach destinations within a complete network. The

[15] Lanford, Brent. 2003. "The Future of Civic Life: New Rules Concerning Urban Design Could Make Sprawl a Thing of the Past." CharretteCenter. http://www.charrettecenter.com. Reprinted from *Charleston City Paper*.
[16] Madden, Mary E. and Bill Spikowski. 2006. "Place Making with Form-Based Codes." *Urban Land*. September.
[17] Ibid. at 176.

infrastructure often exists, as in Cleveland, but is grossly underutilized. By concentrating development along existing transit corridors or at nodes, the public expenditure on transit can be better justified and can lead to overall ridership increases and better service provision.

A number of communities, including Cleveland, have begun to capitalize on investments in public transit infrastructure and can expect to see expanded networks as a result, along with growing property values adjacent to transit amenities. One example, Oregon's statewide Transportation Planning Rule (TPR), requires al local governments to adopt their own standards for provision of a safe, convenient and economic transportation system. Implementation of transportation plans takes place alongside state and regional plans and incorporates all modes. A transit oriented development (TOD) in the Portland suburb of Gresham capitalized upon an existing light rail line in its Civic Neighborhood Plan, which presented a stark contrast from the site's pre-existing "regional shopping center" designation and strong adherence to TPR requirements.[18]

Under the new code, a set of TOD zoning classifications are split into districts based on density and allowable uses, with an emphasis on a mixture of office, retail and residential uses. Allowable density grows with proximity to light rail stations, minimum lot sizes are eliminated, and parking space requirements are reduced. Aesthetic considerations include windows fronting sidewalks, entrances oriented towards the street, and a set of strong architectural review standards. The first phase of development consisted of nearly 300,000 square feet of office and retail space and 662 residential units. Phase two projects 250,000 square feet of office space, 400,000 square feet of retail, and 1,600 new homes. Because it is built with the pedestrian placed before the automobile and with convenient access to amenities and public transportation, the Gresham Civic Neighborhood promises to have a much smaller ecological footprint, as well as a more sustainable retail component that can be supported by neighborhood residents both as consumers and employees. The earlier "regional shopping center" classification would have led to a single-use, auto-oriented shopping center in this high capacity location.

Another example of TOD is Montgomery County, Maryland's mixed-use "transit station zones."[19] The objective of these zones is to concentrate multiple housing types, with an emphasis on multi-family, around transit amenities and commercial uses. The TS-R "residential" zone allows for convenience and neighborhood retail via special use permits, while the TS-M "mixed" zone focuses on existing commercial or mixed-use districts where automobile usage can be minimized and community self-sufficiency can be promoted through a better mixture of uses. Both of these TOD strategies will enable the development of communities of choice where more residential, retail, recreation, and transportation options will contribute to a better quality of life for residents.

[18] Sullivan, Edward J. 2005. "Cudgels and Collaboration: Commercial Development Regulation and Support in the Portland, Oregon-Vancouver, Washington Metropolitan Region." *Vermont Journal of Environmental Law*. 6: 74-80.

[19] Siek, Amanda. 2002. "Smart Cities: A Detailed Look at Land Use Planning Techniques that are Aimed at Promoting Both Energy and Environmental Conservation." *Albany Law Environmental Outlook Journal*. 7: 54-57.

The Greater Cleveland Regional Transit Authority's (GCRTA) development of TOD guidelines and strategy represents a positive shift in a region where development is all too often created with the "car is king" mentality. The reality is that there are a large number of residents in Northeast Ohio who do not or would prefer not to use their automobiles for every trip. Retail trips account for a massive amount of the region's vehicle miles traveled and developing retail around transit nodes would help to alleviate this necessity. Historic retail developments like Shaker Square and Tower City Center are clear examples of projects built around transit amenities. Lorain Avenue, Saint Clair and Broadway typify retail corridors built along streetcar lines – a typology that has struggled for some time in this region. Recent projects like Steelyard Commons and Crocker Park have incorporated bus stations and extended routes into their plans, but others, like Legacy Village, have gone so far as to prohibit GCRTA buses from entering their property. New retail projects should at least attempt to incorporate bus routes into their plans, but a greater ideal would be to develop with existing infrastructure, such as rapid stations and bus transfer points, in mind. GCRTA's strategy for joint development along the Red Line and Euclid Corridor are a step in the right direction, but a more concerted effort among municipalities, developers and the transit authority is needed.

Energy Efficiency

State legislatures and local planning bodies are increasingly incorporating energy conservation as one of the primary objectives in their comprehensive plans. Legislative focus areas include energy efficient design, incentivising the appropriate location of development, consumption of energy in construction, and alternative energy sources.[20] In Port Arthur, Texas, energy efficient zoning code for new developments requires passive solar orientation, coupled with a mixture of landscape features, to prevent overheating. Dade County, Florida boasts similar legislation, adding orientation towards cool breeze sources, with the goal of reducing energy consumption. San Diego, California has adopted an ordinance requiring that new development in unincorporated parts of the county use solar energy systems to heat water.

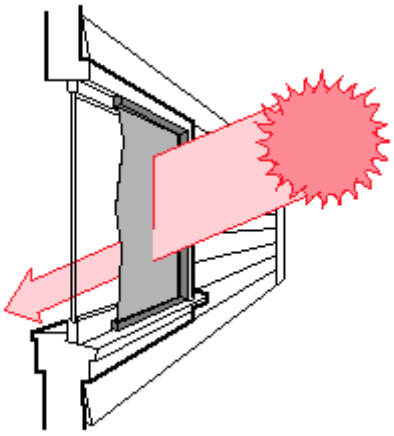

Figure 1.3

[21]

While this applies most readily to residential developments, the legislation could surely be extended to commercial areas as well. Selection and proper platting of a development site is critical to each of these regulations. Poor location within regional infrastructure networks could

[20] Ibid. at 50.
[21] http://oikos.com/esb/34/Screens.GIF

quickly cancel out each of the benefits of these policies. Street alignments and circulation networks are also significant factors to ensuring that the aforementioned regulations are effective.

There are certainly cases where existing infrastructure and site plans constrain these strategies, but many opportunities will arise as retail development continues throughout Northeast Ohio. Brunswick's LEED certified Giant Eagle store, the first supermarket in the US to achieve this status, is an example of a project that took these factors into account. In cases where sites are large or clear, energy efficient site design strategies should be pursued. As this paper will describe in a later section, the results can lead not only to better use of natural resources, but also to a more impressive bottom line.

This set of regulations and examples is certainly not exhaustive. New methods are being developed every day to address unsustainable patterns of development throughout the world. Challenges and opposition, usually in the form of property rights advocates, will inevitably rise to meet them. It is up to the communities themselves to drive the market demand for better design and to advocate for a strong vision of sustainable development that legislative and planning officials can then implement through a series of progressive land use reforms and other methods.

Impacts

Land Use – The Cleveland Context

Over the past 40 years Cleveland has experienced a sharp decline in population. Much of the population has moved outward, creating urban sprawl. The decline of our urban core has left many retail establishments vacant. Most of the retail development that has taken place over the past 40 years in the US has been in the suburbs of major metropolitan cities such as Cleveland. With persistent new retail development, many environmental and ecological issues have arisen. With respect to rapidly expanding retail development, concerns like storm water run-off and sediment flow into streams and rivers are significant.

Some concerns about urban sprawl, big box development, and the environment in Cleveland are:

- Increased traffic congestion and resulting air quality issues. [22]
- Building structure inconsistency with community character. [23]
- Impact on community and economy when retailer goes out of business or relocates.[24]

The City of Cleveland has three districts for retail; Local Retail, General Retail and a Shopping Center District. There are many other districts, such as Planned Unit Developments (PUD) and Mixed-Use Districts that are zoned and created for higher densities. By allowing for higher densities, planners can create pedestrian friendly and transit oriented neighborhoods. The City of Cleveland, through its Citywide Plan and Zoning Plan, can create incentives for existing businesses to remain in these neighborhoods and downtown and to attract new businesses to these areas.

[22] http://www.newrules.org/retail
[23] Ibid
[24] Ibid

Impact Fees and Sustainability

On the other hand, requiring new development to pay "impact fees," rather than subsidizing or otherwise enticing them with incentives, is a way to foster compact neighborhoods and infill development. In this way, planners can lessen infrastructure costs and upgrade and improve what is already there.[25]

Using impact fees to promote sustainability on retail projects can be achieved in Northeast Ohio by requiring that all developments pursue LEED principles, having a full inspection by their municipality to enforce this, and by requiring through zoning, that all new buildings pursue the following criteria:

Water

-Indoor water conservation
-Composting toilets
-Pervious materials
-Harvested rainwater
-On-premise irrigation

Energy

-Passive Solar Design
-Landscaping for Energy Conservation
-Earth Sheltered Design
-Solar Hot Water, Heating and Cooling Systems
-Gas Water Heating Systems
-Fans
-Energy Recovery Ventilator
-Programmable Thermostat
-Energy Efficient Lighting

Building materials

-Dimensional Lumber
-Wood Treatment
-Engineered Structural Materials
-Engineered Sheet Materials
-Engineered Siding and Trim
-Non-Toxic Termite Control
-Earth Materials
-Floor Coverings
-Wood Flooring
-Roofing
-Structural Wall Panels
-Insulation
-Windows and Doors

[25] Save Our Land, Save Our Towns, by Thomas Hylton. (RB Books, 1995).

-Cabinets[26]

Local governments should also require a regional environmental and impact review of large-scale development projects. The reviews should be conducted by Environmental Boards and other representatives from the affected region. Retailers should also increase communication efforts to help state and local officials understand that creating sound zoning code helps the city curve unwanted businesses to the downtown area and strengthens the businesses that are already there.

Policy Recommendations

Implementation of policy recommendations can be achieved by following the City of Cleveland's Comprehensive Plan (Road Map). The City's road map covers all essential development opportunities and zoning criteria. Zoning codes establish the rules that advance and implement the policies set forth in the comprehensive plan.

Create programs, initiatives or activities which are considered leading edge or exceptional models for others to follow. Develop the concept of achieving a minimum standard for a construction project, such as LEED certification, to possess the following basic qualities: acceptable aesthetics, solid construction using appropriate materials, and safety set standards of practices, which will include administrative rules, guidelines, policies and procedures.[27]

City governments, such as Cleveland and other surrounding municipalities, should be willing to endorse a regional planning review board or a regional government agency to review large developments over a standard square foot to ensure that the region is not over-retailed and the region is practicing environmentally sustainable policies.

By redeveloping the inner-city. we can help the environment recover from the benefits that were lost over the years. At the same time, this will help curtail the massive retail development in the outer suburbs. Some plans and programs that can curtail excessive retail development are:

- Enact zoning rules that establish size limits for retail zoning.
- Cap store sizes to help sustain the vitality of small-scale, pedestrian-oriented business districts, which in turn nurture local business development.
- Establishing limits for parking areas
- Increase investments in and access to public transportation.

<u>Investment</u>

The additional cost, or perceived additional cost, represents the most significant barrier for sustainable development and its market uptake. As seen in the Turner Construction Survey, Figure A, executive respondents claim "Higher Construction Costs" as the most discouraging element to green construction. Dr. Gary Pivo of the University of Arizona and Dr. Paul McNamara, from Prudential Investments, in their 2005 publication "Responsible Property

[26] Better Models for Development in Virginia, by Edward T. McMahon with Sara Hollberg and Shelley Mastran.
[27] See footnote 24

Investing," emphasize the power of this negative perception held by the real property investment community in their assertion that "… despite a lack of strong evidence either way, experience suggests that there is currently a tendency for real estate investors to perceive that investing responsibly results in higher costs with no immediate increase in asset value. As such, investing responsibly is perceived as dilutive to investment returns and is not, therefore, undertaken willingly.[28]" The available evidence, however, suggests that these assumptions are without merit. In fact, a fairly thorough literature review returned no articles or books that argued in opposition to the long term cost savings of sustainable development. Pivo and McNamara (2005) claim that "There is enough research evidence available currently to show that it is not axiomatic that investing responsibly will harm investment performance…"[29]Even if there was, in fact, convincing evidence to the contrary it might be worth questioning the current domains employed by fiduciaries in measuring investment returns.

Pivo, et. al. suggest two alternative hypotheses and considerations that could be used by institutional investors, in measuring investment returns that might enhance the value of sustainable development from the perspective of the investor. The first is the "Universal Owner Hypothesis" which acknowledges that investors with high levels of diversification have a stake in the whole economy. Some of the most significant benefits of sustainable development are seen in the form of increased worker health and productivity, which can dramatically increase the returns of tenants, [30]and might have only a direct impact for the property owner, aside from the potential of correlated increases in property valuation and rents. To the extent, however, that the owner of the property has a financial stake, or holdings, in the tenant company, their overall investment portfolio might be enhanced by such green improvements, that were not beneficial to the real estate segment of their portfolio. The Resident Participant Hypothesis (RPH) is slightly more reaching in its assessment but is worth noting. RPH suggests that a resident of a community that is also an investment fund participant might see the sustainable commitment in their community as a positive investment even despite its performing less well than other real estate funds, in effect adding to market demand.

The most current analyses of costs associated with green development suggest a premium over conventional design ranging from .66% for LEED "Certified[31]" buildings to 6.5% for LEED "Platinum" buildings[32]. Sustainability "guru" Ken Yeang, of Llewellyn Davis Yeang, estimates that for some office buildings the cost premium is between 10% and 20 %-- These estimates were by far the highest seen, and were in reference to office buildings in Europe.[33] These costs have been shown to be decreasing over time as economies of scale and increasing

[28] Paul McNamara & Gary Pivo, "Responsible Property Investing," *International Real Estate Review* 8, no. 1 (2005):128-143.
[29] Ibid.
[30] *White Paper on Sustainability, Do Green Buildings cost more to build?* (Oakbrook, Illinois: Building Design and Construction, 2003) https://www.usgbc.org/Docs/Resources/BDCWhitePaperR2.pdf.
[31] LEED has levels of compliance ranging from Certified, the least strict, to Platinum, the strictest, Platinum Certification is rare, and thus only one was used in Kats analysis.
[32] Gregory Kats, *Green Building Costs and Financial Benefits*, Massachusetts Technology Collaborative, 2003
[33] "Green Rhetoric Exceeds Reality: a Dublin Conference called for sustainability in offices, but Agents are a Stumbling Block," *Building Design*, May 19, 2006, http://etextb.ohiolink.edu:20080/bin/gate.exe?f=doc&state=s0a4b1.3.4

knowledge in the different areas of green development lower prices. In fact Seattle has seen the cost of Silver LEED certified buildings drop from 3-4% several years ago to 1-2% today. Likewise 3 Silver LEED buildings in Portland Oregon built in 1995, 1997, and 2000 exhibited cost premiums of 2%, 1%, and 0%, respectively[15]. In Gregory Kats, Managing Principal of Capital E, analysis of sustainable schools he found that 4 out of 33 schools had paid no cost premium for their sustainable designs and 8 paid less than 1% more than conventional design.

Some aspects of design have little or no additional first costs to that of conventional design including site orientation, window and overhang placement,[34] and waterless toilets[35]. Other sustainable systems-- as mentioned by Marylynn Placet and Beverly Dyer in an article entitled "The Business Case for Sustainable Design and Construction," prepared for the U.S. Department of Energy-- that may cost more in the design phase, such as an insulated shell, can be offset by the reduced cost of a smaller mechanical system. This concept is known as "right sizing" of infrastructure and mechanical systems. In addition material costs can be reduced during the construction phase by dimensional planning—a strategy to design for minimizing framing needs, carpet etc.[36]

The dynamism of the fledgling sustainable building and design fields is such that empirical research on costs and benefits are rendered obsolete rapidly. In addition the cost is quite lucid depending on the ability of a local economy to handle the process, the experience of the developer, and the degree to which sustainable design is incorporated. Even still, Dr. McNamara addressed this point, in his response to the survey question "Does the extra cost associated with sustainable development increase the return on investment in the long term?, saying "I think one has to recognize that there is no automatic presumption these days that the extra costs are very material. Even if they are, I think there is a lot that can be done to improve performance at low or near no cost. This makes the economics easier."

In addition to savings on operational expenses many firms stand to save money on increased worker productivity. It has been exhaustively documented that design considerations in the workplace dramatically alter worker productivity and health. The Carnegie Mellon University Center for Building Performance compiled a list of studies regarding the relationships between Air Quality, High Performance Lighting, and Improved Temperature controls as they correlate with health and productivity. The following chart suggests that careful design considerations can have a profound impact on employee efficiency. While the exact financial impacts produced by an increase in worker productivity and health vary firm to firm, and are difficult to quantify, they exist.

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[34]State of California Integrated Waste Management Board *Sustainable (Green) Building: Project Design Cost Issues*, http://www.ciwmb.ca.gov/GreenBuilding/Design/CostIssues.htm#Primers.
[35] Jim Allen Going Green Pays Off, *Buildings*, 98, no. 7 (2004):32, http://www.buildings.com/Articles/detail.asp?ArticleID=1970
[36] U.S. Department of Energy, Energy Efficiency and Renewable Energy, Dyer, Beverly & Marylynn Placet *The Business Case for Sustainable Design and Construction, by Marylynn Placet et. al.* Washington D.C.: Government Printing Office, 2003. http://www.eere.energy.gov/femp/technologies/sustainable_federalfacilities.cfm

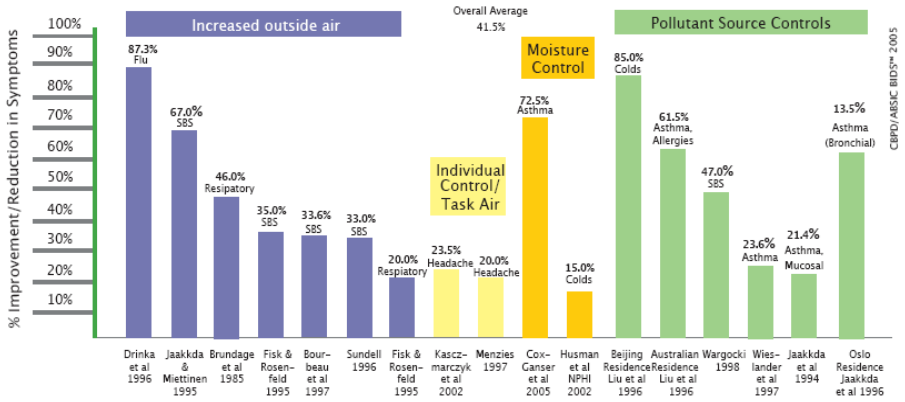

Figure 1.4

Source: Carnegie Mellon University Center for Building Performance, 2005

In a case study of Verifone's distribution center in Southern California, the United States Green Building Council found that in addition to reducing energy by 59% they also saw a 47% decrease in employee absenteeism and a 5% increase in worker productivity, by improving the mechanical systems, introducing daylight, reducing volatile organic compounds (VOC) and introducing ergonomic furnishings."[37] Another study found that the installation of skylights in retail facilities led to an increase in sales of up to 40% over other stores without skylights.[38] Any general claims made as to the financial benefits of increased health and productivity would be misleading given the range of possibilities and the lack of a reliable/long-term measuring tool, but it is apparent that an increase in productivity is a result of better design and it seems obvious that this would have a positive effect on the financial bottom line. It is also difficult to gauge to what extent this increase would pass on to the developer in the form of increasing returns.

Value Added

In theory sustainable development can add value and improve returns in several different ways. First, government, at all levels is increasingly adding pressure to holding companies regarding their social and environmental responsibility. As Yolande Barnes, Director of Research at Savills,[39] notes "[g]overnments response to increasing climate change which is likely to take the form of *stricter* regulation on industry could bode well for the institutional investor interested in alternative energy.[40] Similarly, Jon Emery, Head of UK development and construction for Hammerson, said that "[Hammerson is] looking to how tough the building regulations will be in five or ten years time…we're investors and we're trying to get there early."[41] In reference to institutional property holding companies, Dr. Gary Pivo, of the University of Arizona, claims that "…there is a need to critically review the timescales by which they conduct their fiduciary duties and investment analyses. In a world where general concerns over environmental and social issues are certain to grow and policy responses toughen, fund

[37] US Green Building Council *Building Momentum, National Trends and Prospects for High-Performance Green Buildings*, (Washington D.C., 2003)

[38] Heschong-Mahone Group, *Skylighting and Retail Sales: An Investigation into the Relationship Between Daylighting and Human Performance* (Fair Oaks, CA: on behalf of the California Board for Energy Efficiency Third Party Programme, 1999).

[39] Savills London

[40] Italics added by author for emphasis

[41] Hammerson Launches Green Construction Drive: Developer to Review Building Consultants and Remove Air Conditioning From it's Shopping Centers" *Property Week.* 71(21) P. 53. May, 26, 2006, http://etextb.ohiolink.edu:20080/bin/gate.exe?f=doc&state=gre8qq.2.12

managers need to set the avoidance of small costs in the short term against the potential for major deleterious investment impacts in the medium and long term. Such 'short-termism' could be deemed to run contrary to fiduciary responsibilities over the medium term." [42]Second, development that approaches local concerns considerately and with the blessing of the community and its officials is obviously more likely to receive subsidies and expedited permits than indifferent development. Third, multiple opportunities exist to enhance operational efficiencies and increase competitiveness when the high cost of resource consumption is thoroughly addressed, and these opportunities are becoming more affordable as economies of scale develop around them. Fourth, strong reputation benefits can be achieved. And fifth, responsible producers can increase their knowledge of these practices early providing a long term competitive advantage.

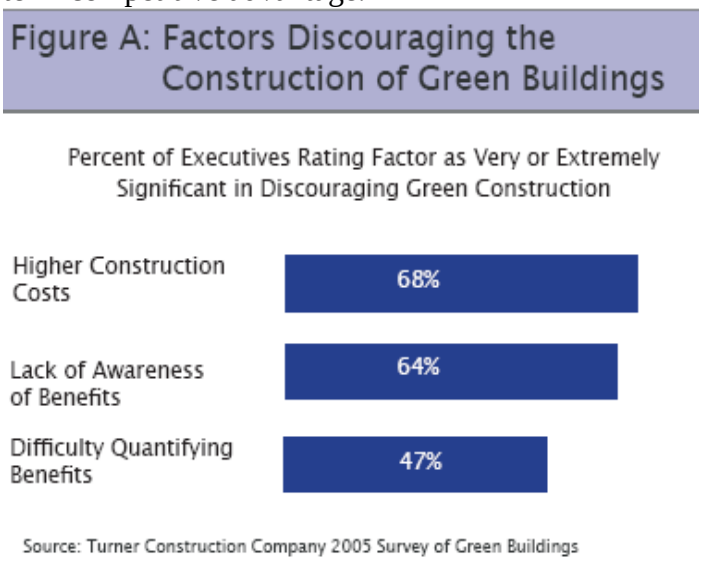

Figure 1.5

Turner Construction Company[43], an industry leader in sustainable building construction, surveyed top executives regarding their opinions about the factors most discouraging to green construction. There were three separate factors for which respondents selected answers from a Likert scale. Figure 1.5 displays the percentage that answered either "very" or "extremely" discouraging.

According to this survey 47% of respondents suggested that the difficulty quantifying benefits was very or extremely discouraging to green construction. While long term, or retrospective studies focusing on this matter are unavailable- given the novelty of these design concepts- there have been significant attempts at quantifying future benefits.

The most easily quantified financial benefits of green design deal with energy and water efficiency, though attempts have been made concerning other benefits. Some of the more accepted and cited studies have used Net Present Value (NPV) calculations that seek to determine the present value (in current dollars) of sustainable design implementations that can be used as a comparison tool with first cost premiums. Gregory Kats, managing principal of Capital

[42] Paul McNamara. & Gary Pivo "Responsible Property Investing" (Power Point), http://www.u.arizona.edu/~gpivo/Toronto%20Presentation_files/frame.htm
[43] Turner Construction Company- http://www.turnerconstruction.com

E[44] and advisor to the states of Massachusetts and California,[45] has worked extensively on developing a model that assesses the future values of sustainable design elements. Kats, in his most recent analysis, on sustainable schools, has separated the design elements into five separate categories: energy savings, emissions savings, water savings, operations and maintenance savings, and productivity and health value. A discount rate is used to more accurately determine the present value of future benefits. In Kats analysis a discount rate of

Table 1.1

Table 1: Financial benefits of Green Building Kats Approach		
Category	**20 Yr NPV**	
Energy Savings	$5.80	per sq ft
Emissions Savings	$1.20	per sq ft
Water Savings	$0.50	per sq ft
Operations and Maintenance Savings	$8.50	per sq ft
Productivity and Health Value	$36.90 to $55.30	per sq ft
Subtotal	$52.90 to $71.30	per sq ft
Average Extra Cost of Building Green	(-$3.00 to -$5.00)	per sq ft
Total 20-Year Net Benefit	**$50 to $65**	per sq ft
Source Capital E		

7 percent was used (5 percent real interest rate plus 2 percent inflation). The study found that the initial sustainable first cost premium of $3 per square foot was more than compensated by the NPV of energy saving designs of $9 per square foot, not to mention the additional $2 per square foot value of emissions and wastewater savings. Kats also attempted to calculate the NPV of increased earnings and teacher retention, for which he determined $49, and $4 per square foot, respectively. Lastly, he figured that the reduction in asthma, cold and flu resulting from a more healthy building would result in an $8 per square foot value.[46] The last five categories for which he calculated savings are certainly the most difficult to put in financial terms and should be handled accordingly. Energy, emissions, and wastewater savings are more tangible and thus more easily quantified. Kats, in a 2004 report prepared for the Massachusetts Technology Collaborative[47], analyzed data, provided by building representatives and architects, on 33 green buildings across the U.S. He found that these buildings while exhibiting a slight cost premium promised future cost savings. The average annual cost of energy in a Massachusetts building was, at the time of study, $2 per square foot. So by estimating an average 28% (see below) energy reduction in a 100,000 square foot office building the owner would realize a cost savings of $56,000 a year. Above is a breakdown of the savings or the added value using Kats' discounted future cash flow approach to arrive at NPV. With a twenty year present value of expected energy savings at a 5 percent real discount rate this

[44] A national clean energy design firm
[45] On the Costs and Benefits of Green Design
[46] Gregory Kats, *Greening America's Schools Costs and Benefits*, Capital E Group, 2006
[47] *White Paper on Sustainability, Do Green Buildings cost more to build?* (Oakbrook, Illinois: Building Design and Construction, 2003) https://www.usgbc.org/Docs/Resources/BDCWhitePaperR2.pdf.

Table 2: Reduced Energy Use in Green Buildings as Compared with Conventional Buildings				
	Certified	Silver	Gold	Average
Evergy Efficiency (above standard code)	18%	30%	37%	28%
On-Site Renewable Energy	0%	0%	4%	2%
Green Power	10%	0%	7%	6%
Total	**28%**	**30%**	**48%**	**36%**
Source USGBC, Capital E Analysis				

Table 1.2

represents a present value of about three quarters of a million dollars[48]. According to the United States Green Building Council (USGBC) review of 60 LEED[49] rated buildings green buildings are

- On average 28 percent more energy efficient
- Characterized by even lower electricity peak consumption
- More likely to generate renewable energy on-site
- More likely to purchase grid power generated from renewable energy sources (green power and/or tradable renewable certificates) see Table 1.2

Table 3: Financial Benefits of Green Building Pivo and McNamara Approach						
	Investment per SF	Rate of Energy Savings	Annual Savings Per sq ft	Savings per 100,000 SF Office Building	Asset Value Increase at a 10% Cap Rate	Simple Payback
Janitorial Services	$0.01	5%	$0.14	$13,500	$135,000	IMMEDIATE
Operations & Maintenance	$0.05	9%	$0.20	$19,800	$198,000	4 MONTHS
Lighting	$1.04	16%	$0.36	$36,000	$360,000	3 YEARS
Heating Cooling & Ventilation	$1.21	9%	$0.21	$20,700	$207,000	6 YEARS
All Combined	$2.30	40%	$0.90	$90,000	$900,000	2.5 YEARS
Source: Dr. Gary Pivo and Dr. Paul McNamara						

Table 1.3

Dr. Gary Pivo and Dr. Paul McNamara have also developed a process for determining value increase of properties via energy efficiency.[50] Rather than discounted cash flows and net present value calculations they used the annual combined projected savings of four energy efficiency components (Janitorial Services, Operations & Management, Lighting, and Heating Ventilation & Cooling) divided by a 10% capitalization rate to determine the asset value increase, see Table 1.3. For example, the total investment for all four energy efficient components is equal to $2.30 per square foot. The energy savings for this analysis is 40% over conventional design which results in annual savings of $.90 per square foot. Again if we assume a 100,000 square foot building the annual savings are $90,000 and at a 10% cap rate would increase the property value by $900,000. If the energy savings and costs were evaluated and capitalized into the building value and returned after 10 years, the internal rate of return on investment is 41%. In the short term the simple payback on the first cost premium would be neutralized within 2.5 years. Both sustainable janitorial services and operations and maintenance

[48] Gregory Kats, *Green Building Costs and Financial Benefits*, Massachusetts Technology Collaborative, 2003
[49] LEED is the Leadership in Environmental and Energy Design
[50] Paul McNamara & Gary Pivo, "Responsible Property Investing," *International Real Estate Review* 8, no. 1 (2005):128-143.

implementations, not entirely included in Kats analysis (not grouped with energy efficiency[51]), more than pay for themselves in less than six months, see Table 3.

There are other factors that an astute investor will want to consider. Many of the additional considerations require foresight by the investor. An article in the July 2005 edition of Energy and Power Management notes that "[i]nvestment firms totaling more than $4 billion in assets under management are looking at companies EnergyStar performance for signs of superior overall management quality[52]." In this sense the effect of environmentally responsible investment might have an impact on reputation and indirectly on bottom-line.

Conclusion

Sustainable Development requires strategies that respond favorably to social and environmental issues while simultaneously satisfying investor goals and financial responsibilities. The evidence suggests that in the case of energy, and operations and maintenance timely investments will enhance returns. If it could be shown that sustainable development as a whole actually enhanced investment returns, then this would be unproblematic since it would become a fiduciary duty to do so. Given the complexity of the process and the far reaching effect that many of the elements have, however, an accurate financial analysis of all the benefits as it relates to investment returns is not yet possible.

By contrast, if it could be shown that there was no demonstrable gain or loss associated with investing in sustainable development, then real estate investors would face a moral choice as to whether to invest in this manner. Increased energy efficiency was thoroughly documented as the most easily quantified way to enhance returns. Because of the inchoate sustainable building process, many of the other benefits are harder to quantify and therefore are less reliable for measuring increased returns. As Roderick Wille of Turner Construction said "The biggest paybacks (which unfortunately are difficult to accurately quantify) are in areas of increased productivity, better learning (in schools), less sickness and absenteeism among occupants and these are usually related to less costly design features such as increased daylighting and better indoor air quality."[53] Overall sustainable design elements are increasingly implemented in development and institutional investors are more aggressively investing in environmentally responsible property[54], which suggests that the market demand is present and therefore that the preliminary financial analyses were correct in their projections. Jeff Hines claims that "…the green market is gaining steam as the public becomes more aware of its benefits." As this knowledge continues to filter into the mainstream it can be expected that green developments' cost premium will dissipate.

Finance

Cities across the rust belt are struggling with disinvestment in the inner-city core while development on the fringe continues unabated. This is just as true with retail as it follows the

[51] Other discrepancies between Pivo et. al and Kats are mitigated by the difference in electricity cost assumptions, The older Kats article assumed $.08 per kw/h and Pivo assumed $.09 per kw/h.
[52] "Three Dimensions of Energy Opportunities: Boost Profits and Asset Value." *Energy and Power Management* July 2005, 30, no. 7.
[53] Response to questionnaire distributed by author
[54] "Hines forms green fund with CalPERS" Retrieved from http://proxy.ulib.csuohio.edu;2065/universe/printdoc

rooftops. As this process continues, historic retail nodes within urbanized areas become underutilized, vacant, and abandoned. Although, these central cities may be losing population, a spatial mismatch is created between remaining city residents and the retail needed to support them. This spatial mismatch is shown in the Retail Analysis that was completed in 1999 for the Northeast Ohio region that shows Cleveland being under-represented in regards to retail while suburban locations are greatly over-represented. Not only is this a concern of access and ethics but also a concern of environmental degradation. Centralized retail in historic nodes is more environmentally conscious then the greenest LEED certified shopping center in exurban communities. This is true in part because of embodied energy (emergy) within buildings, meaning the materials used to build have an energy cost and the demolition and landfill storage of construction debris has inherent energy loss. In addition to this, most new construction is only accessible by car and new and expanded roads and services must be constructed to meet need. The fact that historic retail nodes are already in a built environment means that re-investing in these areas for retail means minimal additional stress to the ecological system of the region (run-off, impervious services) would be incurred if these areas were re-invested in. With this being said, it is important to understand that if the central city is declining and the retail stock is functionally obsolete, there is a need to re-examine the use of these retail structures and the land they occupy.

Sustainability

The Cleveland region has a complex retail structure and the city of Cleveland is a good example of a shrinking city in a no-growth region and the effects this has on retail options for residents. Cleveland City has 46 identified retail nodes and large swaths of retail that follow linear routes along historic trolley lines. In the 2020 City Wide Plan: Connecting Cleveland, the city planning department recognizes the issues involved including: poor quality and limited variety of retailing, mismatch between residents' spending power and shopping opportunities, and absence of "big draw" retail anchors to name a few[55]. Their policy initiatives include such items as building smart (strategically), consolidating into "town centers," and preservation as a means of having competitive retail. The city of Cleveland is recognizing its need for sustainable retail. However, due to the continued fractured way the region approaches retail, each city vying for their piece of the retail pie, the city will continue to struggle to attract and maintain a high quality mix of retail.

Well designed new urbanism retail centers such as Crocker Park and to a lesser extent Legacy Village still represent a repackaged shopping mall on the outer fringe rather than a truly sustainable model. Although built as walk-able town centers, they generate massive amounts of car trips, are on the fringe of the urban area, and in the case of Crocker Park, is a greenfield development (Legacy Village is partially on an old industrial site). The fact remains that the most sustainable development is re-use and adaptation of historic structures in the urban core.

Impacts

Addressing the spatial mismatch between retail and the residents of the urban communities within the region would have an impact on the amount of car trips and the

[55] City of Cleveland Planning Department, "Goals and Policies: Retail." http://planning.city.oh.us (accessed 4/12/2007).

continuation of retail being built further and further from Cleveland. Many current initiatives exist within the city to create retail options for residents. Many of these should continue to be pursued such as the many Main Street initiatives that exist across the region and the Storefront program[56] that offers incentives to repair retail businesses in the city of Cleveland. Another important tool to encourage development in the city as opposed to the fringe is the ability to use historic tax credits and preservation easements to developers. Rethinking the retail structure within the city of Cleveland is also important.

Policy

Four policies should be implemented or enhanced to re-invest in retail in inner city communities throughout Greater Cleveland and specifically inner-city Cleveland:

- Historic Tax Credits for Commercial Buildings and Preservation Easements
- Enhancement of the Storefront Program, Restore Cleveland and Mainstreet Initiatives
- Cluster development in retail nodes in the city
- Thinning out retail in other areas

Historic tax credits and preservation easements should be pursued to give a competitive advantage to retail developers to look at the city of Cleveland to do projects. As was stated earlier, the environmental costs of tearing down buildings are greater than the benefits building LEED-certified. The preservation easement and historic tax credits are tools that can be used to greatly reduce the cost of rehabilitating a building. Much of the benefit is seen in the way of reduced taxes on the property but in some cases, according to Rollin Stanley, Planning Director for St. Louis, can account for 40% of the cost of a project[57]. A structure must be certified historic for the incentives as outlined by the National Trust for Historic Preservation. In the case of preservation easements the structure must be "donated" to a qualified nonprofit organization for the purpose of "protecting the property's conservation and preservation values[58]."

The Storefront Program at the end of 2006 accounted for over 2000 rehabbed storefronts and $44 million in private investment from participants[59]. The city offers a percentage of the renovation costs to make businesses more appealing and increase their street presence. Supporting local retailers is extremely advantageous. Cleveland's "Got It in the Neighborhood" campaign outlines the many benefits of shopping at locally owned businesses including: for every $100 spent at a locally owned business$45 goes back into the community while at a chain store only $14 comes back and neighborhood businesses support non-profits 350% more than non-locally owned businesses. Main Street programs should be encouraged throughout the

[56] Ohio Historical Society, "Ohio Historic Preservation Office." http://www.ohiohistory.org (accessed 4/11/2007).
[57] Morrison, Hunter & Stanley, Rollin. 2007. Strategies for Rebuilding Urban Environments. American Planning Association Conference. Lecture.
[58] National Trust for Historic Preservation, "Preservation Easements." http://nationaltrust.org (accessed 4/12/2007).
[59] Schuemann, Nancy Loyan, "Back to Form: Slavic Village-Broadway Capitalizes on Storefront Renovation Program." November 2005. http://www.propertiesmag.com/current/2005 (accessed 4/12/2007).

metropolitan area to reinvigorate historic downtowns as well as neighborhood retail nodes in Cleveland. Participating main streets in the program after ten years have averaged over $14 million in investment in the physical environment, over 60 new businesses created, and over 250 jobs created[60]. The continuation of programs with this level of success is extremely important to the vitality of historic retail districts and their success could make retailing in urban areas competitive within the suburban strip mall style development.

It is important to note that retail in the city of Cleveland as well as surrounding inner ring suburbs such as Lakewood, might be designed in an obsolete fashion or following historic patterns of travel (streetcar) that are no longer relevant. It is important to begin to be strategic in these communities about where the best locations for a vibrant retail mix are. Building smart and consolidating retail are two policies in Cleveland's 2020 Plan. This is extremely important in that it allows for a clustering of retail activity that draws to people to shop in the area and can provide the diverse retail needs of people in one location. The Plan also identifies "strategically located shared parking" as a goal and this is extremely important for convenience. By having a one-stop shopping atmosphere where most goods people need are in a small area, it will be easier for retail nodes within the older communities to compete with the big box style retail located farther out.

Finally, and perhaps most importantly, it is important to begin to thin out the retail in other areas, specifically in the city of Cleveland. This is where the city can be creative. Due to lack of funds for demolitions, it is important to begin to leverage other available resources. Hunter Morrison, Professor at Youngstown State University, has proposed taking an entire abandoned Youngstown neighborhood and returning it to its natural state as a wetland. Not only does this deal with abandoned and vacant property, green the city, and help with ecological issues, but it also leverages funds through need for developers to pay for wetlands mitigation. Imagine driving down a grand Cleveland boulevard with parks and wetlands abutting well-positioned retail centers. Not only could Cleveland compete with cluster retail in historic structures, but the environment would actually be improved through creating a more sustainable retail model in Cleveland and if that is successful perhaps it could begin to slow the expansive growth of retail on the fringe. True urbanism at its best.

[60] National Trust for Historic Preservation, "Main Street: Revitalizing Your Commercial District." http://nationaltrust.org (accessed 4/12/2007).

Chapter II: Economic Development

Introduction

Retail Development as a function of Economic Development

Retail development is a significant component of a community's economic development strategy. Without question, healthy retail districts generate property tax revenue, draw people to a community, and paint a picture of economic vitality. New retail development may provide competition for existing retailers, but it may also attract more shoppers to an area, thereby providing support for neighboring businesses.

Yet, many economists would argue that retail has very limited economic development potential. Retail is a nonbasic industry, which means that it primarily serves the local population. [61] It does not bring new money into a region by exporting products or attracting outside dollars. In addition, most economists will argue that economic development can only occur at a regional level because economies function on a regional level, not a municipal level.[62] Shifting spending from one community to another only redistributes wealth within a region; it does not generate wealth for the region as a whole.

Despite this, retail development is not likely to lose its place among local economic development strategies. A mismatch of economic versus political geography leads local leaders to pursue investment for their jurisdictions.[63] Political leaders must consider how their decisions impact their constituents, and therefore, may give less weight to how they affect the region as a whole. Barnes and Ledebur write, "Local governments pursue economic development strategies for their jurisdictions that reflect the assumption that they are coherent economies with economically meaningful borders."[64] The microscopic view of each locale has effects on the region as a whole. To a local political leader, shifting spending to their community *is* economic development, even when that spending is drawn from within the region. Local leaders operate in a highly competitive environment where the ability to attract new investment is an important measure of their individual success and important to the economic health of their community.

This report discusses the relationship between retail development and sustainable economic development and then examines the economic impact of retail development. Specifically, it addresses the way in which location decisions affect economic impact, the impact created in terms of employment and wages, and the impact of big box retail on local retail.

Retail Development, Economic Development, and Sustainability

Understanding that in the current political environment local retail development is considered to be economic development, the question still remains as to whether retail development is an effective economic development strategy for a municipality. Is retail

[61] Emil E. Malizia and Edward J. Feser. (1990). Understanding Local Economic Development, Rutgers, NJ: State University of New Jersey, p.52.
[62] William R. Barnes Larry C. Ledebur. (1998). The New Regional Economies: The U.S. Common Market and the Global Economies. Thousand Oaks, CA : SAGE Publications, Inc., 1998, p.40.
[63] Ibid., p.67.
[64] Ibid, p.75.

development sustainable economic development? In this context, "sustainable" refers to the long-term impact of retail on a local economy.

In most communities, signs of a retail life cycle are evident. In the 1970s and 1980s, large enclosed malls were springing up in suburban communities across the country. By the 1990s, strip plazas with big box anchors began to take over. Today, new retail developments often take the form of "lifestyle" centers.[65] As new forms of retail gain popularity, older forms tend to fall out of favor. The retail life cycle has very real consequences for both older and newer communities, as new developments are most often built in newer communities, leaving older communities to contend with outdated, obsolete retail centers.

The retail life cycle was documented decades ago by Davidson, Bates, and Bass[66] and more recently by Lowry.[67] Both studies identify four stages to the life cycle of shopping centers: 1) innovation/birth; 2) accelerated development/growth; 3) maturity; and 4) decline. During the innovation/birth phase, retail establishments enter the market place and experience a sharp rise in sales because they offer a new product or unique experience. During the second phase, acceleration/growth, the number of similar types of stores or shopping centers grows rapidly. Individual retailers in this phase are focused on market expansion. At the maturity phase, competition is sharp, market share levels off, and strong retailers located in older shopping centers may relocate to new centers. Excess capacity may become an issue. In the final phase, decline, sales fall to a level where profits are limited and a developer must determine whether to reinvest in the center or shift resources to other interests.

Lowry notes that identifying the stage of the life cycle for a particular type of shopping center is difficult because a center's age, competitive forces, changes in shopper behavior, and marketplace changes all affect a center's vitality and determine how it moves through the various stages. Transportation linkages and the market position of a retail center's anchor store(s) also have significant impacts. The interplay of these factors can cause an individual center to be in a different stage than other centers of a similar type.

Although both Davidson, et.al. and Lowry argue that retail managers and developers can adapt their strategies to prolong profitability and extend the retail life cycle, neither suggest that decline can be avoided. In fact, Davidson et.al. specifically state that "the institutional retail life cycle is a natural evolutionary process that is impossible to stop."[68] Furthermore, the length of the life cycle appears to be contracting. Some experts currently estimate the retail life cycle to be twenty (20) years or less, depending on how the factors described above affect a particular center.

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[65] The term "lifestyle center" means different things to different people, but according to the International Council of Shopping Centers, lifestyle centers generally have the following attributes: a location near affluent residential neighborhoods; an upscale orientation; 150,000 sq. ft. to 500,000 sq. ft. of gross leasable area, an open-air format; and at least 50,000 sq. ft. of national specialty chain stores. Source: http://www.aia.org/siteobjects/files/The%20Life%20in%20Lifestyle%20Centers.pdf (accessed April 24, 2007).

[66] William R. Davidson, Albert D. Bates, and Stephen .J Bass. (1976). "The Retail Lifecycle." *Harvard Business Review* 54: p.89-96.

[67] James R. Lowry. (1997). "The Life Cycle of Shopping Centers." Business Horizons 40, no. 1: 77-86.

[68] William R. Davidson, Albert D. Bates, and Stephen .J Bass. "The Retail Lifecycle." *Harvard Business Review* 54, no. (1976), p.93.

Lowry noted that shopping centers have been around long enough to observe growth, maturity, and decline (and rebirth), which gives developers and retailers and opportunity to plan for changing conditions in the industry. If developers and retailers can plan for changing conditions, it would seem that planners and policy makers should be able to do so as well.

In *Shopping Towns USA* (1960), Gruen and Smith predicted some of the issues that would arise from shifting development patterns. They wrote,

> "New highways and freeways will bring about a reorganization and reorientation of metropolitan traffic patterns. Fresh opportunities will open up for the locating of shopping centers. With the shifting patterns, it is likely that while certain existing shopping centers will gain through better accessibility, others may suffer."[69]

Gruen and Smith address planning for growth, traffic, marketing, design, and engineering of shopping centers, but do not address planning for decline, despite the recognition that some centers would suffer. Little has changed since 1960 – most planners and public officials are still unprepared to address the consequences of retail decline.

Impacts

The Retail Life Cycle Illustrated in Northeast Ohio

Shopping centers can change, grow, or die. According to Lowry, owners must carefully evaluate the market potential of a mature or declining shopping center and decide whether it can be repositioned and move back to the growth phase of the retail life cycle. The outcome of such decisions can be seen across Northeast Ohio. For example, Severance Town Center and Westgate Mall demonstrate a strategy focused on change in order to adapt to new shopping preferences. Great Northern Mall represents an attempt to revive an existing shopping mall through growth. By contrast, Euclid Square Mall and Randall Park Mall illustrate the last option (death) – the consequence of a developer's decision not to reinvestment.

Severance Town Center, located in Cleveland Heights, Ohio, was constructed in the early 1960s. It was Ohio's first indoor shopping mall. The mall went through several changes in the 1970s and 1980s, attempting to adapt to different shopping preferences and to the highs and lows of various anchor stores. By the 1980s, the mall was seriously struggling. In the mid-1990s, the site was cleared to make way for the current shopping center – a "town center" anchored by several big box stores.

Approximately 10 years later, Westgate Mall in Fairview Park is experiencing a similar fate. The enclosed mall that existed on the site since the late 1960s was in a serious state of decline by the 1990s. In 2005, a plan was announced to demolish most of the existing structures and clear the site to make way for a lifestyle center. The new shopping center is expected to open in 2007.

[69] Victor Gruen and Larry Smith. (1960). *Shopping Towns USA*. New York, NY: Reinhold Publishing Corporation, p. 267.

By comparison, Great Northern Mall in North Olmsted avoided the fate of other older, enclosed shopping malls built in the 1960s by expanding both the original structure and attracting new forms of retail to the immediate area. In the late 1990s and into the current decade, a number of new stores were added to and around the enclosed mall. It has become one the region's largest shopping areas.

In contrast to the above examples, developers have not redirected resources to Euclid Square Mall or Randall Park Mall. Randall Park briefly held the title of "largest shopping mall in the world." When it opened, it made national news and drew huge crowds. Today, both Euclid Square Mall and Randall Park Mall remain largely vacant. Apparently developers have determined that these locations will not provide an adequate return on investment or that the risks are simply too great.

What made the difference in Cleveland Heights, Fairview Park, and North Olmsted versus Euclid and North Randall? The first three communities have a very strong residential base and a solid commercial core. There is little evidence of decline in any of these communities. Euclid and North Randall have struggled to some degree. The above-described examples show that retail developers respond to market conditions – they do little to shape market conditions. It has often been observed that "retail follows rooftops." This is an important point if community leaders continue to include retail development as a large component of their economic development strategy.

This is not to suggest that community leaders should not pursue retail development – a vibrant commercial core is an important component of an economically healthy community. A strong retail district helps to establish and maintain community vitality while a weak retail district can diminish vitality. Furthermore, the tax revenue that can be retained or generated by retail development is very important to municipal budgets. It does suggest that community leaders should carefully consider the type and amount of retail that is more likely to be sustained in their municipality over the long-term. The tax revenue that is generated from large-scale retail development is attractive, but over-retailing can create large holes in the community in the future. Communities need to consider the long-term impact of retail development if they want to achieve sustainable economic development.

Location as a Factor of Economic Development

Location is a central factor in selecting a proper area for retail placement. Location is the sum of multiple parts and is more than simply physical dirt and stone. Through proper placement of retail, retail can be an economic generator for a community.

By properly analyzing the benefits and costs of placing retail in a specific area, location can be a factor in economic development. For example, a 2004 study conducted of nine central Ohio communities found that retail development generates a net fiscal loss to local governments.[70] Specifically, retail generated an average net loss in those central Ohio communities of $0.44 per square foot.[71] Often, a high cost is attributed to retail due to the high

[70] Randall Gross. (2004). "Understanding the Fiscal Impacts of Land Use in Ohio." *Regional Connections: A Growth Strategy for Central Ohio,* p. 3.
[71] Ibid.

volume of traffic that retail use generates.[72] Such costs often outweigh the income tax revenues generated by the relatively low retail wages.[73] However, in one of the central Ohio communities (Upper Arlington, Ohio), it was shown that a well-planned mixed-use re-development can cross-subsidize retail costs through a balanced mix of office, retail, and residential.[74]

An analysis of certain Northeast Ohio communities demonstrates the influence that retail location has as a factor of economic development.

Severance Town Center

Severance Town Center draws from the 50,700 residents in the immediate Cleveland Heights, Ohio area.[75] Originally constructed as one of the first enclosed malls in the country, Severance Town Center commenced significant renovations, transforming itself into an open-air, outdoor shopping center.[76]

Trade Area, Access, and Demographics

Located twenty minutes east of downtown Cleveland, Cleveland Heights, Ohio had a population of 18,814 residents within a 1 mile radius of Severance Town Center in 2000.[77] Over a six (6) year period, the population decreased by 3.4% to an estimated 18,171.[78] 21% of the households in that area have an average income between $50,000 and $75,000. While Severance Center never enjoyed highway access, the physical location sits in the immediate vicinity of East Cleveland, South Euclid, University Heights, and Lyndhurst. Although once a more vibrant shopping center, Severance Town Center has enjoyed increased sales due to the placement of big-box retailers such as Home Depot and Wal-Mart.

Steelyard Commons

Steelyard Commons, the new urban shopping center located in Cleveland, Ohio, is expected to generate significant economic benefit to support such aspects as job creation and local neighborhood services.[79] Location placement of Steelyard Commons was a key factor. Unlike other areas throughout Northeast Ohio, the Steelyard Commons project was able to assemble over 1 million square feet for retail use.[80]

Trade Area, Access, and Demographics

Steelyard Commons enjoys a retail spatial monopoly. The shopping plaza was intentionally placed in an area immediately adjacent to downtown which allows the plaza to

[72] Ibid.
[73] Ibid.
[74] Ibid.
[75] Pinetree Commercial Realty, LLC. http://www.pinetreecommercial.com/properties/seve_tow-cle/index.htm
[76] Ibid.
[77] Ibid., referencing the 2000 Census
[78] Pinetree Commercial Realty, LLC. http://www.pinetreecommercial.com/properties/seve_tow-cle/index.htm
[79] First Interstate Properties, Ltd, "Cleveland's Steelyard Commons." 2005. http://wwwsteelyardcommons.com/econ_impact.asp
[80] First Interstate Properties, Ltd, "Cleveland's Steelyard Commons." 2005. http://www.steelyardcommons.com/place_making_1_2.asp

draw from surrounding areas such as Tremont, Ohio City, Old Brooklyn, along with the Flats and Clark-Metro neighborhoods.[81] Highlights of these adjacent areas include:

- Tremont, located just north of Steelyard Commons, has posted an 8.3% average annual increase in sale price of new single family homes during the last 13 years (which ranks #2 out of 16 Cleveland neighborhoods);

- Ohio City, located northwest of Steelyard Commons, has posted a 7.3% average annual increase in the sale price of new single family homes during the last 13 years (ranking #4 out of 16 Cleveland neighborhoods); and

- Downtown Cleveland, located two miles north of Steelyard Commons, has over 147,500 daily workers, which equates to the eighth largest downtown labor force in the nation.[82]

The immediate trade area has 320,812 people, and 34% of the households have a median income over $50,000.[83] In 2000, city of Cleveland residents spent approximately $1.3 billion in retail purchase at suburban stores.[84] As such, the new urban shopping plaza seeks to capture that revenue stream by offering residents a more convenient shopping location.

In addition, Steelyard Commons has immediate access to all the major highways. Specifically, I-71, SR 176, I-490, I-90, and I-77 are all in close proximity to Steelyard Commons. The one mile radius demographics include a 2006 average household income of $34,630 and a 2006 median household income of $29,437.[85]

External Factors that Impact and Influence the Location of Retail

Corporate marketing factors influence and impact site placement of retail. Corporate franchises, such as fast food restaurants and other national retailers, have internal marketing restrictions that prohibit their franchises from existing within a certain distance from each other.[86] Such restrictions are particularly devastating for cities like Bedford that are sandwiched between and among other dense cities such as Maple Heights and Bedford Heights. For example, because there is an Arby's (on Northfield Road) and a Wendy's (on Warrensville Center Road) in Maple Heights, the City of Bedford is precluded from placing another Wendy's within a two mile radius. Accordingly, the Wendy's in Maple Heights, Ohio draws revenues from Bedford residents; however, such revenues do not benefit the City of Bedford.[87]

Impact of Retail Development on Employment and Wages

[81] First Interstate Properties, Ltd, "Cleveland's Steelyard Commons." 2005. http://wwwsteelyardcommons.com/econ_impact.asp
[82] Ibid.
[83] Ibid.
[84] Ibid.
[85] Ibid.
[86] Information obtained from a February 21, 2007 telephone interview between E. Mark Young and Rebecca Kwiatkowski-Corrigan, Economic Development Director for the City of Bedford.
[87] Ibid.

Retail development directly influences changes in employment and income opportunities in communities. These types of changes may be temporary (e.g., construction projects or seasonal employment) or may constitute a permanent change in the employment and income profile of a community should the development project bring long-term job opportunities for community residents. Changes in income also influence the social environment in a number of ways such as raising or lowering the average standard of living for residents.

In the past couple of years retail development has boomed in the Northeast Ohio region and contributed to employment growth. Such growth is a key measure of regional economic performance. As shopping centers are developed, there is increased demand for workers.

Wages for retail sales fluctuate depending on a wide variety of factors. However it is not uncommon to see wages barely above the minimum wage requirements. Some salespersons are paid a regular and/or fixed salary, while many earn a combination of salary and commission. Successful commission-based employment depends on the real value or popularity of the merchandise they sell. Often, employee benefits are not associated with these types of jobs. However as an incentive, many retail stores offer employees a discount of as much as 10-25 percent off the merchandise in stock. A few of the larger department stores and retail chains offer life insurance, health and pension plans.

Many retail store sales positions are part-time only, with schedules of 20-35 hours per week. These employees are on duty during peak selling hours, including evenings and weekends. Because weekends are busy days in retailing, almost all employees work at least one of these days and have a weekday off. The life span of these sales positions and/or managerial positions varies. The average employee's employment period in retail spans from 1 to 2 1/2 years. The lack of benefits and low salary increases the turn over rate.

Retail establishments provide jobs for a less educated and less skilled workforce. For most sales jobs, no specific training is needed. On average, beginning sales jobs require no more than a high-school education. Good verbal communication skills are a plus and an out-going and courteous disposition is a requirement. Any additional training is normally on-the-job training in sales techniques and internal store policies.

Retail jobs generally do not provide an avenue for wealth creation. The aim of economic development is to create primary jobs that pay more than minimum wage, and increase the amount of income coming into a community from outside its market area. Primary jobs are defined as jobs that produce goods and services in excess of what can be consumed in the local marketplace.[88] This creates a flow of money into the community. For the purpose of economic development, the retail sector does not create export income.

According to research done by the City of Lake Dallas, Texas, shopping centers located within an area typically draw in money that has already been "created" by primary employers in that area. It is not "new money."[89] The research also indicates that “The indirect impact of

[88] "Lake Dallas Texas Economic Development Corporation." http://www.lakedallas.com/lded_principles_eco_dev.html (accessed April 2007).
[89] Ibid.

primary job creation is the creation of additional jobs. The demand for goods and services generated by the primary employer is increased and “indirect" or "spin-off" jobs are created.”[90] Retailing does not create wealth. It is a product of "wealth" created by primary employment.

Although most jobs generated by retail development are not high paying jobs and may not lead to wealth creation, these jobs are essential and desirable segments of their community. Retail jobs allow for certain demographics to earn an income where they would not be able to in other market segments.

Today, more and more elderly citizens are working part-time in the retail sector. The pay provides a supplement to their retirement benefits and can stretch out their retirement savings. It also provides the elderly with social opportunities and a way to meet people and continue to be a contributing part of the community. Many older residents who have not adequately saved for retirement often need these types of jobs to make ends meet.

Another large portion of retail jobs is held by students. Retail is an ideal situation because these jobs require little or no prior experience. Also the jobs are available at hours that work around the school day and employers do not expect long-term commitments for these types of positions. These jobs can provide students the funds needed to help pay for school or can provide extra spending money.

Retail also provides second-job opportunities for many people. Often, people find that the compensation they receive from their primary job is not sufficient to live on or they may desire a special item or a vacation, which they cannot afford. In these cases, retail positions provide the second job or part-time work, which can provide the extra money. Many people take temporary jobs around the Christmas season to help pay for holiday gifts or other items.

Many of the new retail centers today are located in very exclusive areas and by having this mix in the workforce; it creates an overall better community dynamic and economy. A large majority of these big box and retail tenants in these types of areas pay higher wages than similar locally owned retailers.

In addition, when a retail center is going through the planning and construction phases, it will usually lead to the employment of people from that region. Construction professionals, architects, and engineers command a very high hourly rate. The average life span for these jobs is typically 6 months to 2 years – the span of the construction phase of the development. Construction jobs are normally full-time and, in 2004 the median hourly earnings of carpenters were $16.78, the middle 50 percent earned between $12.91 and $22.62, and the lowest 10 percent earned less than $10.36.[91] On average, construction jobs require experience and/or technical training in a specific area. For example, a carpenter learns his trade through formal and informal training programs with 3 to 4 years of both classroom and on-the-job training. Other skills required are manual dexterity, eye-hand coordination, physical fitness, and a good sense of balance.

[90] Ibid.
[91] U.S. Department of Labor. http://www.bls.gov/oco/ocos202.htm (accessed April 2007).

The high level wages associated with construction, architecture, and engineering, and jobs may not directly impact the community where the retail center is going, but they will have a great impact on the economics of the region as a whole. As you start to look at the benefit of these projects to a region as a whole, you begin to see the trickle down effect.

Movement of Retail Development in Northeast Ohio

In Northeast Ohio retail developments are leaving the city and development is occurring more rapidly in the first and second ring suburbs. As shopping centers are developed, the prime locations are found outside the city on the fringe. The shift in retailing location has left the city dismal.

General merchandise stores (SIC 5300) have grown considerably in the suburbs. In 1993, there were 43 establishments in the city of Cleveland and 209 in the suburbs.[92] By 2002 that number had increased by 2.3% in the City and 7.2% in the suburbs.[93] In this time period the number of jobs in the City declined 64% while they increased 11% in the suburbs.[94] It is evident that retailers are leaving the City at an alarming rate. Smaller local retailers are being forced out of business by the larger big box developments. The boom in suburban development has indirectly forced local city retailers to go dark. These events feed more suburban development.

Food stores (SIC 5400) have also been affected by the phenomena. From 1993 to 2002, the number of jobs declined 32% in the city and remained nearly constant (0.2%) in the suburbs.[95] Both the city and suburbs actually saw a decline in the number of establishments during this period, but the decline was greater in the city. The fact that employment in the city declined more rapidly than the number of establishments may be due to the fact that smaller food stores are more likely to survive in the city but larger and growing food stores are located in the suburbs. Grocery chains such as Heinen's and Zagara's have a large number of jobs and are generally located in the inner suburbs. This, however, becomes problematic. Many of the people who seek this type of employment live in the city, but the jobs are rapidly leaving the city. Although these jobs don't create wealth for a region, they can sustain a community and/or family.

This trend is similar in other areas of retail. Apparel and accessory stores (SIC 5600) in the city of Cleveland have also felt the effects the suburban shift. From 1993 to 2002 the number of jobs in the city declined 25% while jobs in the suburbs remained constant (0.4%).[96] Again, the number of establishments declined in both the city and suburbs but the decline was greater in the city. These figures can be explained by the abundance of dead retail strip malls in the city and inner-ring suburbs. Places like Euclid Square Mall and the closing of retailers in Tower City are prime examples.

[92] State of the Cities Data Systems. http://socds.huduser.org/
[93] Ibid.
[94] Ibid.
[95] Ibid.
[96] Ibid.

In miscellaneous retail (SIC 5900), the city experienced some job growth between 1993 and 2002 (14%) but the suburbs had a job increase of 28%.[97] The number of establishments during this time period increased slightly in the city (1.3%) and the suburbs (3.9%).[98]

Although the data collected range from 1993-2002, the patterns seem to be continuing. Retailers are continuing to develop in the suburban cities of Northeast Ohio. Every city and/or county in the region has or plans to equip itself with its own *Legacy Village.*

The Effect of Big Box Retail on Economic Development

While retail is largely considered to have little impact on a region's economic development, big box retail can have a big impact in other ways. Cities across the United States use retail development as part of their larger overall economic development strategies. With increased tax revenues as the goal, many cities actively court large retail projects in hopes that the tax receipts will augment city coffers. Retail, depending on the size, shape, location and flavor, has varying effects on the economic health of a region.[99] Big box retail, though it is not always so cut and dry, oftentimes can have a detrimental effect on the economic health of a city.

Economic development can mean different things to different people and its definition is often stretched beyond its true meaning. Economic development is generally defined as the sustainable creation of wealth that works within the framework of community parameters to maximize the efficient and effective utilization of community resources for economic gain for the local population.[100] More simply, it is the process of creating wealth for as many people as possible within a defined area. When discussing retail, one city's economic development may be detrimental to the region's economy. Oftentimes, cities claim economic development when large retail centers break ground. This claim often fails to consider the larger economic development picture and may actually negatively affect the area's economy.

The economic health of individual cities within a region is never independent of one another. While one city may benefit by luring a large employer into its jurisdiction from a neighboring municipality, there is no sum gain for the entire region.

Economic development scholars often describe the effects of new investment in terms of the multiplier effect. This term refers to how many times dollars are re-circulated within a local economy before leaving through the purchase of an import.[101] Usually, the multiplier effect is used when discussing the effects of industrial production on a local economy. Unlike industry, earnings from retail businesses are not as beneficial to a community because they usually do not draw in money from outside the region. National chain store retailers can help to increase employment, however they generally remove more wealth from the local economy than they add. Therefore, there is not a sum gain from the development of additional retail establishments.

[97] Ibid.
[98] Ibid.
[99] Texas Perspectives (2004). "Big Box Retail and Austin." (accessed April 18, 2007).
[100] www.delawarecountybrc.com/glossaryterms.htm (accessed 4/18/2007).
[101] Truit, Tricia. "1." 11/04. http://www.geo.coop/localmultipliereffect1104.htm (accessed 4/15/2007).

Money spent at big box retailers, however, does have a different effect on the local economy than money spent at a locally-owned business. The profits generated by local businesses are often poured by into the community when the proprietor hires local printers, advertisers, attorneys, etc. to help him or her operate the business. Big box retailers are usually headquartered outside of the region, creating a net financial loss. One study shows that for every one dollar spent at a local retailer, forty-five cents is poured back into the economy.[102] The same study shows that only fifteen cents is returned to the local economy when a dollar is spent at a national chain store. Even though economic development scholars do not consider retail sales to be economic development, big box retailers do more damage by removing more dollars from the local economy when compared to local independent stores.

While most big box development tends to occur on the suburban fringes, the Steelyard Commons retail development in Cleveland has recently opened in the heart of an urban area. The merits of this controversial development have been actively debated in the region. As a requirement for permitting this development to go forward, the developer paid for a local retail impact study to be performed (mjb consulting). While studies show that the urban area of Cleveland is underserved by retail, a new big box center could have a detrimental effect on existing businesses.[103] The study predicted mixed results for local businesses.[104] In terms of economic development, Steelyard Commons would cause some local independent businesses to fail. Nearby supermarkets, low-priced apparel stores, and large chain drug stores will face the greatest risk by the big box tenants that will occupy Steelyards. Interestingly, other independent businesses may see increased profits due to the additional traffic that the new center would attract. These businesses are the ones that fill niche needs that the big boxes cannot supply. The positive effect that Steelyard may have is that it will increase the number of jobs available to Cleveland residents and it will improve the local tax base through increased income, sales and property taxes.

[102] Ibid.
[103] Cleveland City Planning Commission, "Retail: goals, issues and policies." http://planning.city.cleveland.oh.us/cwp/SummaryGoals.php?section=ret (accessed 4/18/2007).
[104] Michael Berne. "Big Centers and Neighborhood Business Districts: Impact Analysis and Competitive Strategy." 11/21/2006, p.1-5.

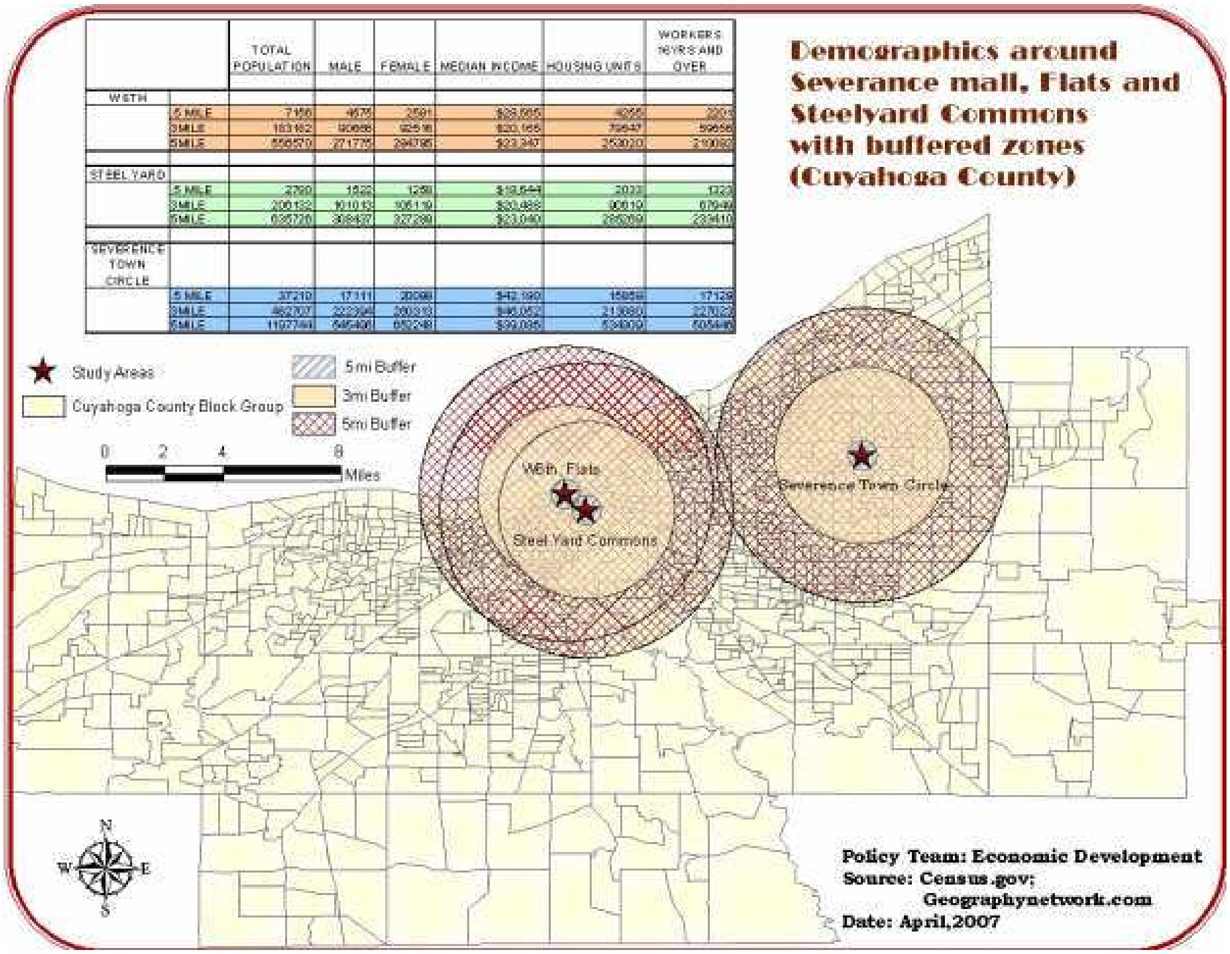


Figure 2.1

Policy Recommendations

Increasing the Economic Sustainability of Retail Development

Public officials, planners, economic development specialists, and other community leaders may have limited ability to impact the retail life cycle, but they can make decisions in recognition that a life cycle exists.

First, community leaders should make a realistic assessment of what retail development will bring to the community – this includes both the costs and benefits. Again, a strong commercial district is important but leaders should not buy into false promises or be unrealistic about the economic benefits of retail development.

Second, retail development should only be pursued as one element of an economic development strategy. Diversification is crucial – without a strong residential base (and in some cases, a strong industrial base), municipalities will have limited success in sustaining a strong commercial base. Retail *responds to* the market. Furthermore, when community leaders seek to attract retail, they should give careful consideration to type and mix of retail that is appropriate for their municipality based on what already exists in the community and surrounding

communities. Developers will do careful market research, but they will likely focus on relatively short-term profits, not the long-term economic vitality of a city.

Third, municipalities can take measures to prevent over-retailing by conducting a thorough assessment of what the market can support and by adopting policies that place controls on retail development. These policies may include revising the zoning code to prevent retail development in areas where other uses are more appropriate, limiting the size of individual retail establishments or shopping centers, or limiting the amount of retail that can be included in mixed-use projects.

Finally, when municipal leaders are in a position to negotiate with retail developers, they should consider potential re-use strategies if a big box store or shopping center goes dark. Although a city may have limited control over what private land owners do with their property, developers often receive financial incentives to build at a particular location. This provides an opportunity to build clawbacks into the agreement. If a retailer opts to close a store or a developer allows a shopping center to remain vacant after a specific period of time, a city can attempt to stipulate what happens to the property. It is often argued that demolition and site preparation costs are the greatest barriers to redevelopment.

Davidson et.al. stated that "retailing will continue to be an area of turbulence and uncertainty for some time to come."[105] Sustainable development is defined as development that meets the needs of the current generations without compromising the ability of future generations to meet their own needs. Too often, retail development focuses only on current needs – and it take less than a generation for the compromises to be felt.

Maximizing Economic Development Based on Retail Location Decisions

In utilizing retail as a tool to generate economic growth, careful consideration must be given as to the location for such retail projects. Placing retail in a specific, targeted area determines whether that retail will survive or fail. In modern society the old adage of "If you build it, they will come" is no longer a viable retail strategy. Instead, retailers must accommodate and locate near their respective target markets. Busy consumers currently demand retail that combines convenience and shopping selection. As such, the following policy recommendations should be considered in determining the proper location for retail:

Because retail often generates a net fiscal drain, a fiscal impact analysis should be employed to outline and forecast whether a location is ripe for retail. Fiscal impact analysis is a powerful tool for examining the costs and benefits of various land uses, for prioritizing projects and infrastructure investment, and for assessing development alternatives.[106] Fiscal impact analysis tests the annual costs and benefits of development on local government budgets.[107] In particular, the analysis weighs, compares, and attributes budgetary costs (provision of infrastructure, delivery of services, administration, etc.) with benefits (taxes, fees, etc.) for land

[105] William R. Davidson, Albert D. Bates, and Stephen .J Bass. "The Retail Lifecycle." *Harvard Business Review* 54, no. (1976), p.96.
[106] Randall Gross. (2004). "Understanding the Fiscal Impacts of Land Use in Ohio." *Regional Connections: A Growth Strategy for Central Ohio*. p.5.
[107] Ibid., p.7.

use.[108] Examples of benefits include, but are not limited to, real and personal property taxes, fees, income taxes, and user charges. While examples of costs include, but are not limited to, infrastructure, police, sanitation, emergency medical services, fire, and administrative services.[109]

Location of retail centers should be planned in conjunction with the local government in that community. Private/public partnerships are encouraged whenever possible. Rather than place retail in the heart of a community, a balance should be reached whereby retail can exist in a high traffic count area that will not compromise the integrity of the community. For example, retail has conveniently congregated around the I-271/Chagrin interchange. Not only is that retail placement convenient and accessible, but that location does not displace the core of the community. Similarly, a new exit ramp was constructed at I-271 and Harvard Road in order to provide greater accessibility to the Harvard Park Shopping Center. By contrast, Severance Town Center is located in the heart of Cleveland Heights, Ohio. In fact, the shopping center is adjacent to Cleveland Heights City Hall and the Cleveland Heights Police Department. If Severance Town Center were to go dark, that entire core area of the city would be affected and the community at large would suffer as a result of that void. In the event that retail fails, having a location on the outskirts of a community provides an excellent opportunity for conversion or redevelopment into another viable industry alternative. Consequently, placement of retail should strike a balance in the community.

Location incentives are a necessity to enhance the success of a retail development. As illustrated by Steelyard Commons, very few areas have the ability to amass large land parcels for development. Thus, certain less developed areas have more of a competitive advantage over others. Similarly, newer cites have a competitive advantage over older cities in Northeast Ohio. Evaluating the political climate and partnership potential of local and county government is a must. In addition to financial incentives, communities should also provide incentives to place retail in certain, pre-determined areas (i.e., entertainment zones/districts). For instance, favorable zoning and relaxed restrictions may encourage retailers to voluntarily locate in specific areas. Finding a cooperative local government that will collaborate to secure incentives for development can be the difference between developmental success and failure.

Private/private partnerships should be promoted and encouraged for retail. In particular, various types of retail should continue to partner with other types of retail and entertainment. The synergy created by a mixture of food and beverage services with clothing, furniture, and other general retail creates an entire shopping/entertainment district and also enhances sustainability. Just as important is the marketing of entire areas as a whole district. Examples of this include the Coventry area in Cleveland Heights, Ohio and Cedar Center shopping plaza, located at the boarder of South Euclid and University Heights, Ohio.

<u>Increasing the Employment and Wage Benefits of Retail Development</u>

Increasing the wage benefits for a retail employee is a very tough policy to enact. Due to the inherent nature of retail positions, it is very difficult to change compensation strategies adopted by retail corporations. Retailers work like any other company, in that their primary

[108] Ibid.
[109] Ibid.

objective is to maximize profits. Since the average retail employee does not need any prior experience or education, the labor pool for these positions is rather large and their earning potential is low. Many times the wages paid are not enough to live on. The communities in which these retailers are trying to locate must take the lead in requiring at the very minimum, a wage level that reflects living standards. The community has the upper hand in these types of situations. The municipality can block retailers and developers from coming into their communities. Communities should use their position as leverage, requiring that retailers or developers compensate retail employees by giving them livable wages and/or provide health benefits. Many retail employers including Starbucks provide tuition assistance programs and management training.

One of the latest initiatives that we see from some communities deals with accountable development. Communities can negotiate a Community Benefits Agreement (CBA) which affects big box retail stores. A CBA is a legally-enforceable contract between a private or public developer and a community coalition. The agreements typically obligate the affected developer to pay living wages and, and in many cases, to establish hiring and living wage goals for tenant and contract employers at these sites. CBAs often include first source hiring agreements that require businesses and commercial interests to work with a specified labor market intermediary in order to fill specific types of job openings.

As it relates to economic development, the focus should be to retain existing retailers. Attracting new retailers will not enhance a city's or regions wealth. Retail in Northeast Ohio needs to be managed not expanded.

Increasing the Benefits and Mitigating the Negative Effects of Big Box Retail

Because big box retail does not increase economic development in a region unless it draws in money from outside the area, the region should look to attract retailers that will bring in consumers from the outside. The region should also look to foster the development of independent and local retailers over national chains due to the fact that they retain more dollars in the region. Other regions have incorporated strategies to improve the climate for small businesses.[110] Loan and grant programs are a popular strategy. As a city with limited resources, Cleveland could set up tax-incremental financing districts, perhaps in areas where new big box retail centers are proposed. This strategy would use the increased tax revenue from these developments and use it to support new local enterprises.

Cleveland could also seek to limit future big box developments as a strategy. As was attempted earlier, legislation could be passed that would limit the size of retail establishments that sell groceries.[111] This would eliminate the threat of Wal-Mart Supercenters and SuperTargets to area small businesses. Other strategies could include impact studies, impact fees and vacant box legislation that forces big box developers to put up a bond that would be used to pay for the demolition of the big box if it goes dark.

While other areas have provided examples that Cleveland could use to stem the development of big box centers, this region needs to address the issues that are particular to the region. The leaders of the seven-county region should meet to work towards a regional retail plan that

[110] The Hometown Advantage, "1-3." http://www.newrules.org/retailer/mir.html (accessed 4/10/2007).
[111] Ibid.

prevents the over-saturation of big box retail and provides an equitable tax-sharing solution that serves to strengthen the region as opposed to creating a region that fights within itself for fool's gold.

Chapter III: Municipal Finance

Introduction

Different choices and opportunities inform a city's development and affect their future viability. This study examines the retail development mantra, "grow, morph, or die" and its effect on city finance as one potential indicator of viability, or sustainability, as a community. The cities of Cleveland Heights and Euclid were chosen for the study due to their similarity in size and demographic make-up. Retail development at Severance Town Center and Euclid Square Mall, respectively, are focus sites, representing re-investment and disinvestment in these inner-ring suburbs. Upon examination of retail development at the focus sites and differing impacts on municipal finances, policy recommendations to support long-term viability of communities related to retail development will be discussed.

History of Cleveland Heights and Euclid

As the city of Cleveland grew, settlers also discovered the suburbs of Euclid and Cleveland Heights and emigrated there due to the good quality of land for farming and the opportunities for quarrying. Although farming was predominant in both cities (wheat and table grapes in Euclid), bluestone quarrying was also lucrative. [112]

Cleveland Heights

Cleveland Heights is located southeast of downtown Cleveland in a pocket of land mostly isolated from direct highway access. Beginning in the late 1800's, the elite residents of the city of Cleveland began to move farther and farther east to avoid the city's growth. People longed for a home away from the grit and noise of the industrial city. The population of Cleveland Heights increased due to this out-migration and continued to grow as the advent of the streetcar made travel to the community on the hill more accessible. It was incorporated as a city in 1921. Cleveland Heights continued to grow as University Circle's Case Western Reserve University, The Cleveland Clinic and University Hospitals grew and added increased job opportunities in close proximity to this suburb. Today, with a total population of 49,958, [113] Cleveland Heights is home to a diverse mixture of immigrants and people of different ethnic backgrounds. It is characterized as a community of unique, tree-lined streets, dotted with beautiful neighborhood parks and with homes and businesses with beautifully crafted architecture. [114]

Euclid

Euclid is located directly east of downtown Cleveland along Interstate 90. It was one of the first cities to be established in the Western Reserve, via contract between Superintendent Moses Cleaveland and 41 members of the Connecticut Land Company. In addition to farming, the industries of saltworks, sawmill, gristmill and ship building drew people to the community. Between 1809 and 1815, Euclid was larger and considered more promising than nearby Cleveland. However, completion of the Ohio Canal in 1827 assured Cleveland's future

[112] http://www.clevelandheights.com/historyarch.asp; http://www.ci.euclid.oh.us/about/history.cfm
[113] U.S. Census Bureau, Census 2000 Demographic Highlights, City of Cleveland Heights
[114] http://www.clevelandheights.com/historyarch.asp

dominance. In 1850, the Cleveland, Painesville and Ashtabula Railroad built tracks through Euclid. World War II brought sudden growth to the community. An influx on new industry began replacing the farmland. Euclid's city planners assured orderly growth by segregating commercial and industrial land from residential neighborhoods, becoming pioneers of modern zoning concepts.[115] Today, Euclid has a total population of 52,717.[116] It is a diverse community with beautiful neighborhoods, but characterized primarily by its industrial and business core which bisects the city and is visible from I-90.
Table 1 shows summary characteristics for both cities in 1970 and 1990, the approximate years both retail centers were built and closed. Income and property tax are also indicated.

Table 3.1 Summary Charcteristics for the cities of Euclid and Cleveland Heights, 1970 and 2000

Year	City	total population	total households	total income ($ billions)	median household income ($)	income tax rate (%)	commercial property tax rate (%)
1970	Cleveland Heights	60,767	20,586	1.3	62,723.97 [1]	not available	not available
	Euclid	71,552	25,303	1.4	55,507.52 [1]	not available	not available
2000	Cleveland Heights	49,958	21,798	1.0	46,731.00	2.00	3.15
	Euclid	52,717	26,123	0.9	35,151.00	2.85	2.50

[1] Actual dollars: Cleveland Heights $13,368 and Euclid $11,830 inflated to 2000 dollars: http://www.bls.gov/

Although population shifts have occurred and total income levels have dropped overall, income in general has been and remains consistent between the two cities over the 30 year time span indicated in Table 1. The City of Euclid has a more favorable commercial property tax rate, which, in theory, would indicate a more favorable development climate.

History of Severance Town Center and Euclid Square Mall

From the time that these retail centers were built, population in Euclid and Cleveland Heights and in Northeast Ohio in general, has steadily decreased, as shown in Table 1. Not only has this decrease had an impact on sales for existing retailers in these centers, it has also created increased competition for new retailers to the area in general.

Severance Center

Severance Center was built in Cleveland Heights at the corner of Mayfield and South Taylor Roads in 1963, on the former site of the John L. Severance estate, Longwood. It was the first enclosed shopping mall in the state of Ohio. The mall was anchored by two Cleveland-based department stores, Higbee's and Halle's, and within 5 months of opening, it featured 52 retailers. [117]

[115] http://www.ci.euclid.oh.us/about/history.cfm
[116] U.S. Census Bureau, Census 2000 Demographic Highlights, City of Euclid
[117] http://www.heightslibrary.org/question_archive2.php?id=119

Figure 3.1

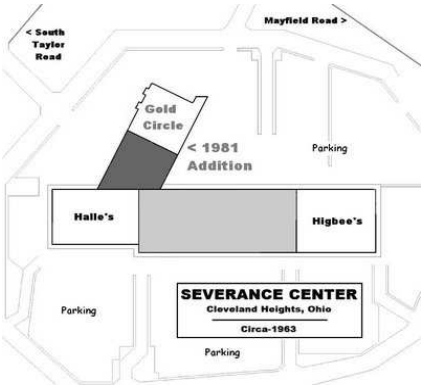
Figure 3.2

At the time the mall was built, Cleveland was the 8th largest city in the United States, with a population of 876,050. Cleveland Heights had a population of 61,813.[118]

By the mid-1960's, there were 8 other regional shopping malls in Greater Cleveland. [119] Several renovations were completed in the next several years, in an effort to remain competitive with retail around the region:

- Mid-1960's: second retail level built over the first
- 1981: northwest wing constructed, with the addition of Gold Circle Department Store
- 1984: Galaxy Food Court added and cinema expanded; 120 retailers now housed in the mall

Figure 3.3



Other retail centers in the region that provided competition for Severance, and spurred its renovations, were Beachwood Place, Golden Gate Plaza, Southgate Shopping Center, Euclid Square Mall, Richmond Mall and Randall Park Mall. By 1960, Southgate was the largest strip shopping center in the United States and with 2 million square feet of retail, Randall Park Mall was marketed as the largest mall in the country when it opened in 1976. Table 2 shows retail center competitors for both Severance Center and Euclid Square Mall.

[118] 1960 U.S. Census
[119] http://mall-hall-of-fame.blogspot.com/2006_10_01_archive.html

Table 3.2 Retail competitors to Euclid Square Mall and Severance Center

Retail Center	Location	Distance from Severance Town Center (miles)	Distance from Euclid Square Mall (miles)	Date Opened	Square Footage
Severance Town Center	Cleveland Heights	n/a	8.4	1963	500,000
Euclid Square Mall	Euclid	8.4	n/a	1977	687,000
Great Lakes Mall	Mentor	17.0	10.8	1961	1,300,000
Golden Gate Plaza	Mayfield	5.4	9.9	1958	360,000
Eastgate	Mayfield	6.1	10.5	1954	360000
Beachwood Place	Beachwood	4.0	12.8	1978	950,000
Richmond Town Center	Richmond Heights	3.8	4.3	1968	875,000
Southgate Shopping Center	Maple Heights	8.4	19.3	1955	800,000
Randall Park Mall	North Randall	7.6	18.5	1976	2,000,000

The mall struggled over the years as retailers, especially anchor tenants, closed. Gold Circle closed its store after only 4 years due to lagging sales. Halle's went bankrupt in 1982, leaving a vacancy at the mall that wasn't filled until 1989 when the Joseph Horne Company opened. Higbee's was re-branded as Dillard's in 1992, but closed their store altogether in 1995. The cinemas went out of business in 1998. [120]

SEVERANCE TOWN CENTER
CLEVELAND HEIGHTS, OH

Figure 3.4

The shopping center was re-developed by Chicago-based Pinetree Commercial Realty in 1998 and converted to a 500,000 square foot power center with Home Depot, Wal-Mart and Marshall's as anchors. [121] Approximately 35,000 square feet, or 7%, is vacant.

At the time of the mall re-development, the population of Cleveland Heights decreased to 54,052. [122]

<u>Euclid Square Mall</u>

The population of the city of Euclid was at its peak in 1970, with 71,552 residents.[123] Euclid Square Mall was built in 1977 on a former 71-acre industrial site, just off Interstate 90 between E. 260th Street and Babbitt Road.

The mall itself is primarily a one-story shopping mall with 687,000 square feet of retail space.[124] May Company and Higbee's anchor stores were each two-story buildings. There are also four outparcels on the site: a closed Red Lobster, Toys -R-Us, Bank One and a convenience wing

[120] Ibid
[121] www.pinetreecommercail.com
[122] 1990 U.S. Census
[123] 1970 U.S. Census
[124] Euclid Square Mall redevelopment study, September 2001, International Economic Development Council

that included a Fazio's supermarket store at one time.

The mall declined with the growth of additional suburban malls in the trade area, primarily Great Lakes Mall in Mentor and Richmond Mall in Richmond Heights. In 1998, Kaufman's (formerly May Company) closed its location at Euclid Square Mall and moved to Richmond Mall, undergoing a vast renovation and expansion under the new name Richmond Town Center.

By 2003, the mall was mostly vacant. A few food retailers and Dillard's, operating as an outlet store, remained. By 2000, the population of the city of Euclid had decreased to 52,717.

There have been several attempts by the city to attract developers and other retailers to the mall site, with no success:

- interest expressed in the site for medical offices
- Home Depot and Target have been interested in the site for "Big Box" retail, but both ultimately chose other locations: Home Depot on E. 200th Street in Euclid and Target in Willoughby
- interest in the Kaufman's portion of the mall for a call center

The International Economic Development Council completed a redevelopment study for the Euclid Square Mall site in 2001. Their suggestions include development as a call center or location for back office operations, new "power center" retail or institutional uses such as museums, educational or art centers.[125]

In 2004, the mall was purchased by Ted Lichko who opened Outlets USA in the former Kaufman's space in an attempt to revitalize the mall. "What we are about to do is very big for Euclid," he said Tuesday, while in the office of his furniture store. "We're first going to open what we're calling Outlets USA. We will have between 300-500 vendors of high quality products at low prices. We want to stress these will be high quality products." Mike Resnick, working with Lichko as Outlets USA's director of leasing, said, "We're talking about (shoppers) buying a Cadillac at a Chevrolet price." [126] Unfortunately, Outlets USA closed within months of opening.

Figure 3.5

Today, Euclid Square Mall is vacant, except for Dillard's, which still operates as an outlet store, though only on the first floor of the former Higbee's and utilizes approximately 55,000 square feet. Dillard's lease expires in 2010. All of the outparcels are vacant.

[125] "Euclid Square Mall Redevelopment", International Economic Development Council, September 21, 2001
[126] "Mall's new owner has big plans", March 25, 2004, Sun Newspapers

Sustainable Municipal Finance

Sustainability is a concept of growing and developing a community in a manner that protects and conserves the ecosystem where it is situated. On a regional watershed level, all development done in this way will contribute to better environmental quality.

The problem lies in how to apply tax policy in a way that enforces or encourages sustainable growth without destroying the bottom line of retail development. Major retailers are in the business of making money, not paying excessive taxes. For example, the Northeast Ohio Regional Sewer District (NEORSD) is currently adding capacity and rebuilding portions of the regions sewer system. Current customers are paying for the new sewers with increased rates in the coming years. However, the customers are not directly creating the storm water; most of it is coming from large impervious surfaces-parking lots throughout the region. Big box stores pay the same water/sewer rate as the average customer based on how much water the use and sewage they produce. Missing in this equation is the cost of the storm water the parking lots for the stores are producing. The solution seems straightforward, calculate the amount of storm water produced and charge the stores accordingly. Unless this is a regional policy, the stores will locate in areas where they do not have to pay that amount. Tax credits and incentives are a way to influence behavior. By including these into the tax code, sustainable growth can begin in Ohio.

Sustainable municipal finance includes tax policy and costs of public services. Current tax structure in Ohio regulates that schools' primary revenue source is from sales property tax revenues while the municipalities gain revenues from both property and income tax. In this set up, schools and communities benefit from more and larger retail development. Municipalities encourage industrial and commercial growth that supports higher paying jobs. It is clear where the affiliations are under this structure.

In linking tax policy to land use, Boston performed a study, devised a "series of strategies that might tilt decision-makers away from 'fiscal zoning' and toward 'smart growth' or 'sustainable development'". The study is based on the premise that key elements of state and local tax policy influence local development decisions. These policy drivers contribute to sprawl, unsustainable development, and competition among communities, all with negative environmental impacts. Reliance on the property tax to fund local services, especially schools, and the "new growth" provisions of Proposition 2 ½ lead communities to grow more and differently than they otherwise might. Results include growing traffic congestion; stresses on water supplies, water quality, and wastewater treatment capacity; high housing costs; loss of open space and agricultural land; greater energy use; and lower air quality.

The optimal set of strategies would

- Promote higher density, mixed use, transit-oriented development in appropriate areas;
- Encourage development where there is infrastructure to support it;
- Promote the protection of environmentally sensitive resources;
- Encourage a mix of housing opportunities throughout the region; and

- Make it easier within the home rule framework for communities to plan cooperatively and share tax bases, revenues, and tax burdens. [127]

In the residential sector, there are tax credits are already in place for green building and energy efficient practices from federal government. Credits are available for items like doors, windows and roofs that meet energy conservation requirements.[128]

At the federal level there are incentives, credits and deductions for businesses and corporations. These incentives are mostly based on equipment and systems that conserve or produce energy. While these measures are a step in the right direction, what is lacking is any federal promotion of sustainable growth. The first example below explains part of the process for commercial uses to get tax credits for energy efficient systems. The second and third citations detail the expansion of energy property equipment available for deduction and the amount of deduction.

> "This notice sets forth interim guidance, pending the issuance of regulations, relating to the deduction for energy efficient commercial buildings under § 179D of the Internal Revenue Code. Specifically, this notice sets forth a process that allows a taxpayer who owns, or is a lessee of, a commercial building and installs property as part of the commercial building's interior lighting systems, heating, cooling, ventilation, and hot water systems, or building envelope to obtain a certification that the property satisfies the energy efficiency requirements of § 179D(c)(1) and (d)."[129]

> "For periods in 2006 through 2008, the investment credit for energy property has been expanded to include the business installation of qualified fuel cells, stationary microturbine power plants, and equipment that uses solar energy for illumination. In addition, the credit percentage has increased to 30% for solar energy property placed in service in 2006 through 2008. For more information, see Form 3468."[130]

> "For property placed in service in 2006 through 2008, you can deduct the cost of energy efficient building property. The maximum deduction for any building for all tax years is $1.80 multiplied by the square footage of the building. Energy efficient building property includes property installed as part of: Interior lighting systems; Heating, cooling, ventilation, and hot water systems; and the building envelope.
>
> The property must be certified as being part of a plan to reduce annual energy and power costs for those systems by a least 50% in comparison to a reference building that meets certain requirements. For more information, see Notice 2006-52, 2006-26 I.R.B. 1175."[131]

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[127] TOWARD A SUSTAINABLE TAX POLICY: Tax Strategies to Promote Sustainable Development in Metro Boston**.** Metropolitan Area Planning Council, The McCormack Institute U. S. Environmental Protection Agency. September 2001.

[128] http://www.irs.gov/pub/irs-pdf/p553.pdf
[129] http://www.irs.gov/pub/irs-drop/n-06-52.pdf
[130] http://www.irs.gov/pub/irs-pdf/p553.pdf
[131] http://www.irs.gov/publications/p553/ch02.html#d0e2102

Another program at the federal level is the Modified Accelerated Cost-Recovery System (MACRS) which allows businesses to recover costs through depreciation reductions. Under the Modified Accelerated Cost-Recovery System (MACRS), businesses can recover investments in certain property through depreciation deductions. The MACRS establishes a set of class lives for various types of property, ranging from three to 50 years, over which the property may be depreciated. For solar, wind and geothermal property placed in service after 1986, the current MACRS property class is five years. With the passage of the Energy Policy Act of 2005, fuel cells, microturbines, and solar hybrid lighting technologies are now classified as 5-year property as well."[132]

The federal tax credits and deductions available today help businesses and corporations progress towards a goal of sustainability. There are more tax incentives controlled at the state level and they can be more progressive than the incentives the federal government offers. For example, Maryland has a tax policy to encourage large retail stores to develop on brownfields or to renovate old stores. This is a good example of policy that would be easily adapted in Ohio and may influence corporate decisions on where and how to build.

> "To qualify for the credit in Maryland a business must construct or rehabilitate a building located in Maryland with at least 20,000 square feet of interior space that is used primarily for non-residential purposes; or a residential, multi-family building with at least 12 dwelling units; or any combination of the above. The building must be located in a priority funding area or qualified "brownfields" site and not on wetlands."[133]

Ohio tax policy includes exemptions from sales and use tax for energy conversions. Below is a summary of Ohio's corporate tax exemptions for energy conversion. An example is using a wind turbine to produce some of the electrical needs of a business. Tax incentives and credits at the state level in Ohio should be more progressive, like Maryland, to promote sustainable growth.

> "Ohio exempts certain energy equipment from property taxation, the state's sales and use tax, and the state's franchise tax where applicable. The exemption applies to tangible property used in energy conversion, thermal-efficiency improvements and the conversion of solid waste to energy. Generally, "energy conversion" refers to the replacement of fossil-fuel resources with alternative fuels or technologies; "thermal efficiency improvements" refers to the recovery of waste heat or steam produced in any commercial or industrial processes; and "solid waste conversion" refers to the use of waste to produce energy and the utilization of such energy. Eligible technologies include solar-thermal systems, photovoltaic systems, wind, biomass, landfill gas and waste-recovery systems."[134]

Sustainable building practices do not always have to focus on new development. It is essential to reuse vacant big box and other abandoned retail in a community. It not only

[132] Directory of State Incentives for Renewables and Efficiency (www.dsireusa.org)
[133] http://business.marylandtaxes.com/
[134] Directory of State Incentives for Renewables and Efficiency (www.dsireusa.org)

generates sustainable revenue for the municipality, it affects the viability and future success of the community as a whole. In northeast Ohio there is a surplus of vacant retail, as noted in the NORRA update this class performed. The cost of rehabilitation can be lower than new greenfield development because the cost of existing infrastructure can be rolled into the total cost of the site. Another plus is the recycling; reusing a building saves a lot of materials that would otherwise be disposed of in a landfill.

Obsolete shopping malls and strip centers are increasingly being reinvented as live/work/shop/play centers designed to engage customers seeking a creative mix of retail and entertainment, and to appeal to residents seeking a "walk to everything" living environment, according to participants at ULI's 14th annual Reinventing Retail conference, held February 22–23 in Beverly Hills, California. A recurring conference theme was how essential it is to get the mix right—whether it is the mix of retail tenants or the mix of retail, residential, and other uses—in terms of offering the best combination of quality, ambience, service, value, and convenience.[135] Examples are the former Uncle Bill's Department store at Euclid Beach Park that is planned to be a new community center and the Mid-Ohio Conference Center in Mansfield, Ohio.

According to Max Reim, principal at Live Work Learn Play, LLP, in Montreal, the best way to ensure project sustainability is to provide an intergenerational environment that is not homogeneous, but instead unique in its ability to appeal to a variety of demographic groups: aging baby boomers (particularly women), gen-Xers now getting married and having children, gen-Yers spending their parents' money on the latest electronics, and those in the millennium generation who are also tapping out their parents' wallets. "The trick is to revisit your marketing plan every year and tweak the plan in response to the users. . . . True brilliance is not in just building buildings, but it creating the soul of a place," Reim said. [136]

Communities are finding other interesting ways to reinvent and make relevant abandoned retail buildings for their residents and other stakeholders. Julia Christensen is a new media artist who began investigating How Communities are Re-Using the Big Box in the winter of 2003. Since the spring of 2004, she has traveled over 75,000 miles around the country in her car, visiting the sites and meeting the people who are transforming empty Wal-Mart buildings, K-Mart buildings and Target buildings and more into useful structures for their community. [137] Some of these uses include the Spam Museum, churches, apartments and an indoor raceway.

Impacts

Introduction

The purpose of a fiscal impact study is to determine the direct impacts a development has on a municipality. This type of analysis measures the estimated costs of services a municipality

[135] Riggs, Trisha. . "Retail: Reusing Obsolete Space with New Combinations." April, 2007.http://www.uli.org/AM/Template.cfm?Section=Current_Issue&template=/CM/ContentDisplay.cfm&ContentID=88416 (accessed May 1, 2007).
[136] Ibid
[137] Christensen, Julia. April 19, 2007.http://www.bigboxreuse.com/ (accessed May 1, 2007).

may incur due to a development and also the revenue the development may generate (e.g., taxes and user fees). A fiscal impact study may be used to aid in determining the viability of a development in addition to formulating growth and planning management strategies.

The fiscal impact study presented within examines and compares the direct impact Severance Town Center ("Severance") has had on the City of Cleveland Heights and Euclid Square Mall ("Euclid Mall") has had on the City of Euclid and their corresponding school districts. The specific time period is from the year 1999 to 2004. The time frame covers the following year after the redevelopment of Severance in 1998 and the proceeding years afterward to allow for an appropriate time lapse for measurement. Severance is designated as the base development due to the reinvestment into the center as opposed to little to no investment in Euclid Mall. The approach is an attempt to illustrate and test the "morph, grow, or die" mantra mentioned earlier in this report.

Methodology

This study uses a hybrid-multiplier per capita approach to measure for the impacts of each development in each of the municipalities and their respective school districts. Under this approach, demographic and budget data are used to estimate municipal costs and revenues on a per capita basis. Specifically, the per capita is proportioned into values residentially and commercially induced. For the purposes here, the study only measures for values that are commercially induced since the residential component of the developments was omitted. Two steps are used to calculate for the multiplier (Appendix A). The first step involved calculating the proportion of commercial uses to the total costs of the municipality. This is accomplished by averaging the percentage of commercial designated parcels and the total value of the commercial parcels for each municipality. The proportion of commercial parcels is determined by dividing the total commercial parcels located in each municipality by the total number of parcels. The proportion of the value of commercial parcels is determined by dividing the total value of the commercial parcels by the total value of all the parcels.[138] Next, the proportion for commercial uses is then multiplied to the actual costs and revenues of each municipality in a given year[139] to estimate the total value allocated to commercial uses. To calculate for the multiplier, the total value allocated to commercial uses is divided by the total number of employees in each given year. The total costs and revenues associated with each development are determined by multiplying the multipliers and estimated number of employees generated. However, property tax is not calculated on a per capita basis. The employees generated are an estimated figure assuming one employee generated per 212.4 square feet of retail.[140]

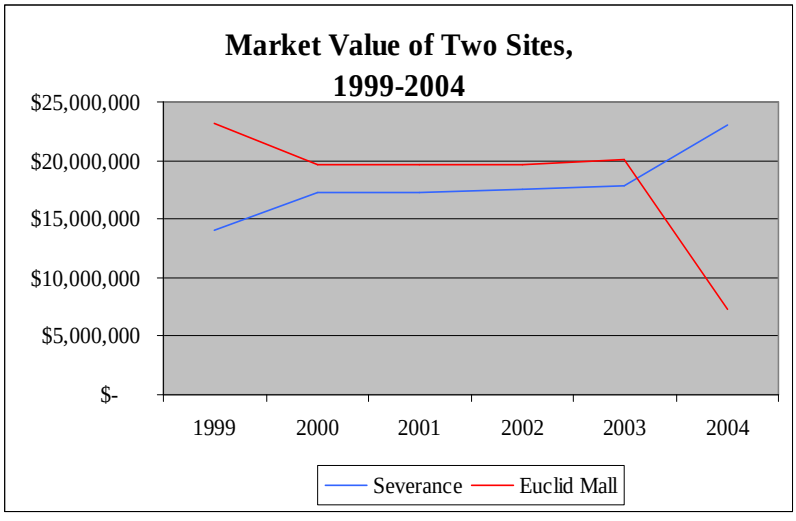
The major considerations of revenue sources are property tax, municipal income tax, charges for services, licenses and permits, fines and forfeitures, and intergovernmental revenue. Costs that are taken into consideration are public works, general government expenditure, public works, recreation, sanitation, and transportation. It does not take into account any infrastructure or capital improvements. Cleveland Heights city officials stated that there were no abatements

[138] NEO CANDO system, Center on Urban Poverty and Community Development, MSASS, Case Western Reserve University (http://neocando.case.edu).
[139] Data compiled from the Comprehensive Annual Financial Report of each municipality, Source State of Ohio Auditor, www.auditor.state.oh.us
[140] CoStar Report

or tax incentives given offered in the redevelopment of Severance. The only capital cost to the city was towards road improvement of Severance Circle. Unfortunately the exact amount contributed by the city and the specific details of the deal could not be obtained. It was determined that the City of Cleveland Heights contributed $2 million toward infrastructure redevelopment through the use of the Department of Housing and Urban Development's Section 108 Program. This development finance technique allows communities to "use their CDBG allocation as a guarantee to backup federal financing for community and economic development projects, including commercial and industrial real estate projects".[141]Cash flow from Severance is then used to repay debt service on outstanding HUD notes. If the project were unable to make debt service payments on the outstanding notes, HUD would draw upon the City of Cleveland Heights' annual CDBG allocation. There were no incentives offered by the City of Euclid towards Euclid Mall during this period.

There are several assumptions made for the study. Beginning in 2000, Severance is assumed to be at full capacity (i.e., retail space fully occupied), less a ten percent vacancy applied. Capacity of Euclid Mall is based on a combination of actual occupied retail space[142] (2001 and 2004) and an estimate for the unspecified years. For the unspecified years prior to 2001, ten percent of occupied retail space was added based on 2001. For the years 2002 and 2003, a ten percent vacancy was added. In calculating for the fiscal impact on the respective school districts, we assumed that zero students were generated, as there is no residential component included in the study. Therefore, the cost of development to the school district is zero (See Appendix B).

Figure 3.6



Limitations of Study

The model of this study does not take into account the costs at the margins because it is using a straight-line average costing approach. There are circumstances within where the study either over- or underestimates the results. The specific circumstances are noted.

Trend Analysis

The determination to invest and therefore "morph" Severance into the type of retail development the market demanded, as opposed to the disinvestment that occurred on the Euclid Mall site, resulted in at least three broad impacts on the corresponding taxing districts. The effect of investment into the site had a demonstrable effect on: Market Value, Property Tax Collections, and Municipal Income Tax Collections. The site's market value and property tax effects are measured against both the corresponding City

[141] Seidman, Economic Development Finance, p. 326
[142] Euclid Square Mall Occupancy Report (2/01/2001)

and the School District, whereas income tax collection impact was only measured for the cities of Euclid and Cleveland Heights, where an income tax is levied.

Market Value

During the time period 1999 through 2004, there was dramatic dissimilarity in the market value of the two sites. Figure 3.6 demonstrates the change in each site's market value. Prior to Figure 3.6 ıg of Severance, Euclid Square Mall enjoyed a market value nearly $10 million greater. However, the effect of investment is realized in 2004, where the market value of Severance increases. Throughout the five year period, the value of Severance increased by just over $9 million or 39.3%[143], whereas the value of Euclid (through a request by the site's owner) decreased by over $15.8 million or 218.7%[144]. The performance at each site was paralleled by a decline in the taxing district's property tax collection capacity.

Property Tax Collections

In order to determine the direct effect investment had on the City of Cleveland Heights, the Cleveland Heights/University Heights City School District, the City of Euclid, and the Euclid City School District, actual collections were examined for the study period. After determining actual collection figures from the Cuyahoga County Auditor, it was necessary to determine the millage rates and distribution associated with each taxing district. This information was made available by the Cuyahoga County Treasurer. Table 3.3 below illustrates total collections, distribution of mills, and distribution of taxes.

Table 3.3

	1999	2000	2001	2002	2003	2004
Severance Town Center						
Total Tax Collections	$ 489,995	$ 640,677	$ 611,492	$ 633,697	$ 644,756	$ 854,540
City Millage Distribution	14.80%	14.00%	13.81%	13.65%	13.59%	12.38%
School Millage Distribution	67.76%	68.07%	68.30%	67.91%	66.28%	67.90%
City Property Tax Collections	$ 72,518	$ 89,681	$ 84,418	$ 86,528	$ 87,633	$ 105,803
School Property Tax Collections	$ 332,042	$ 436,080	$ 417,640	$ 430,342	$ 427,351	$ 580,267
Euclid Square Mall						
Total Tax Collections	$ 537,586	$ 289,332	$ 288,750	$ 188,662	$ 233,746	$ 189,851
City Millage Distribution	13.33%	13.41%	13.42%	13.19%	12.94%	12.45%
School Millage Distribution	66.95%	65.70%	65.56%	64.92%	62.92%	64.08%
City Property Tax Collections	$ 71,644	$ 38,813	$ 38,750	$ 24,893	$ 30,257	$ 23,641
School Property Tax Collections	$ 359,898	$ 190,104	$ 189,307	$ 122,479	$ 147,063	$ 121,648

During the study period total tax collections increased at Severance by over $360,000 or $60,000 annually or 42.7% while the total tax collections derived from the Euclid Mall site declined by just under $350,000 or $58,000 annually or a total decrease of 183.2%. The Severance site experienced a growth in tax collections of over 7% annually while the Euclid site experienced a decline of 31% annually.

[143] Cuyahoga County Auditor
[144] Ibid.

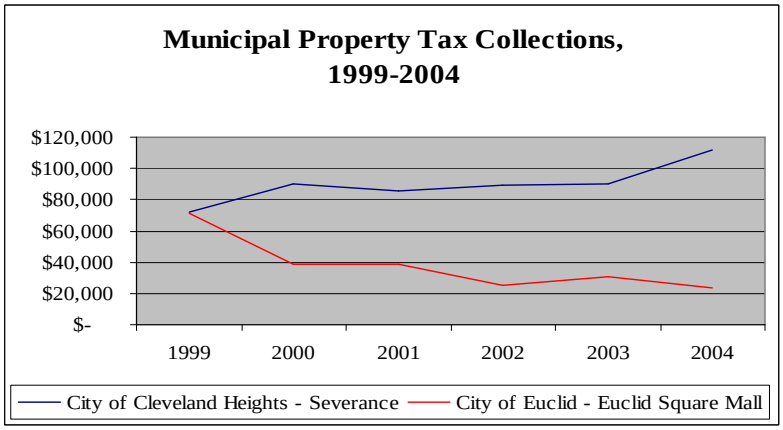
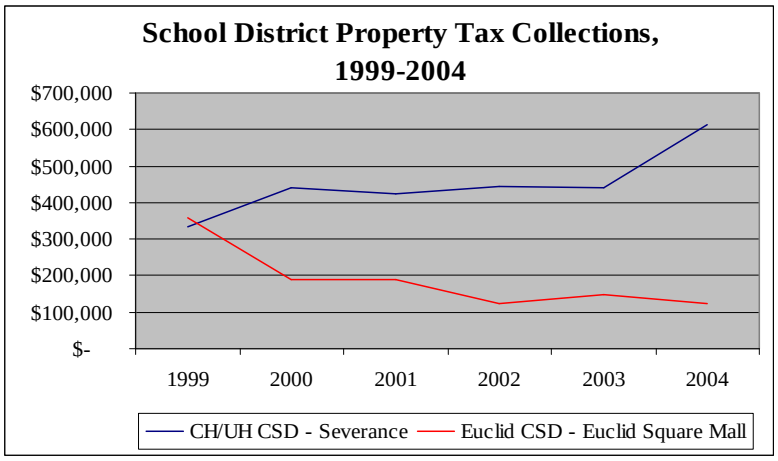


Figure 3.7

Figures 3.7 and 3.8 plot the actual collections by both cities and school districts derived from the two sites. The City of Cleveland Heights experienced an annual increase of over $5,500 or over $33,000 in total (or 31.46%) in tax collections from the Severance site. The City of Euclid's annual property tax collections from the Euclid Mall site decreased by over $8,000 or over $48,000 in total (or 203.0%).

Figure 3.8



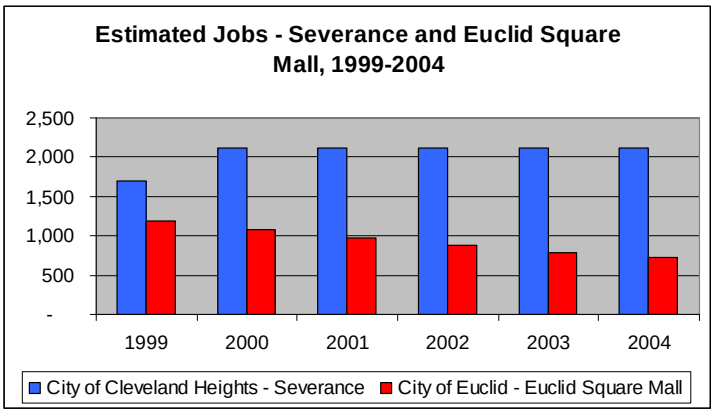
School district property tax collection trends were similar. However, given the strong reliance on property taxes by school districts in Ohio to fund operations, capital projects, and debt service, any significant growth or decline in collections is more meaningful. Like municipal property tax collections, the Cleveland Heights/University Heights City School District realized an average annual gain near $42,000 or just under $250,000 during the time period reviewed. This net gain in property tax collections represents an increase of 45.9%. At the same time, because of the declining value of the Euclid Mall site, the Euclid City School District experienced an annual decline in property tax revenue of over $39,000 or $238,000 in total. This loss of property tax revenue represents a decline of 195.8%. Without making too many assumptions as to the cost of providing services for each entity, the performance of these two sites undoubtedly, at some level, affected service provision in each taxing district.

Income Tax Collections

The City of Euclid levies a total income tax of 2.85%, of which .47% is earmarked for the Euclid City School District. The City of Cleveland Heights levies an income tax of 2.0% and the Cleveland Heights/University Heights City School District does not levy an income tax. Because the Cleveland Heights/University Heights City School District does not collect any income tax, a comparison of school collections from the site was not conducted. Therefore the analysis focuses

the City of Euclid's 2.38% income tax collection and the City of Cleveland Heights' 2.0% income tax collection.

Figure 3.9



In order to estimate the amount of income tax revenue generated from each site, several assumptions needed to be made. First, an assumption on the vacancy rate of each site was assumed. As was cited previously, beginning in 2000, Severance is assumed to be at full capacity (i.e., retail space fully occupied), less a ten percent vacancy applied. Capacity of Euclid Mall is based on a combination of actual occupied retail space (years) and an estimate for the unspecified years. For the unspecified years prior to 2001, ten percent of occupied retail space was added based on 2001. For the years 2002 and 2003, a ten percent vacancy was added. Second, the United States Census Bureau's County Business Patterns were consulted in order to determine average payroll for workers in the two-digit NAICS 44, Retail Trade classification. An average payroll for retail workers in the Cleveland-Lorain-Elyria MSA was used for workers at both sites. The average payroll was calculated for 1999 at $18,725 and was adjusted annually based on increases in the Consumer Price Index (CPI). Third, employees generated are an estimated figure assuming one employee generated per 212.4 square feet of retail.[145] Finally, although a major limitation of the trend analysis, it was assumed that each City captured 100% of the income tax revenue generated at the site. In general, cities in Northeast Ohio have some income tax sharing agreements in place; therefore because not all of the employees at Severance or Euclid Mall live in Cleveland Heights or Euclid, the City will not realize 100% collections. However, for the purposes of this analysis, it is assumed that both cities capture all collections. Without question, this assumption artificially inflates the actual income tax collection data in the report. Appendix C summarizes all income tax collection data.

Figure 3.9 illustrates the estimated number of jobs at each site from 1999 through 2004. Again, these estimations are based on Costar's estimated jobs per square foot.

Figure 3.10

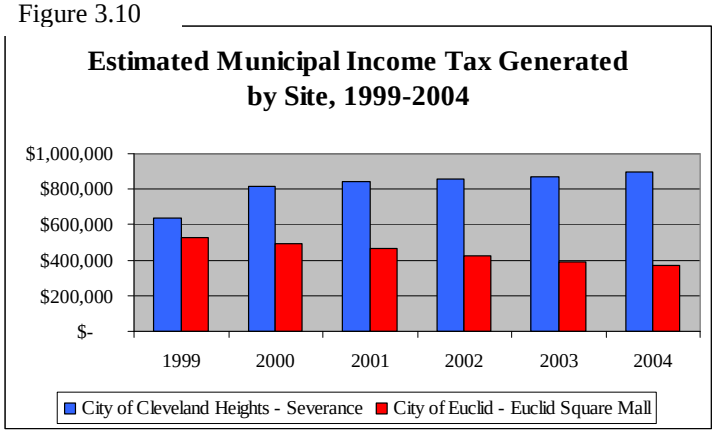


Figure 3.10 demonstrates the corresponding income tax collections derived from each site and paid to the cities of Cleveland Heights and Euclid. As with all other trends in this review, income tax collection from Severance consistently outperformed collections from Euclid Square Mall.

[145] CoStar Report

During the period reviewed, the City of Cleveland Heights realized an estimated annual increase in income tax collections of $43,600 or a total of $261,000 (29.2%). At the same time, the City of Euclid lost an estimated $27,000 annually in income tax revenue. The total loss of income tax revenue to the City of Euclid is estimated at over $160,000.

Again, this analysis likely overstated the income tax collection from each site. However, the same assumptions were made for both Severance and Euclid. Therefore, even when taking into account a slight dip in actual income tax revenues, Severance consistently outperformed Euclid Square Mall. Finally, it is worth noting that this difference could potentially be even greater if the City of Cleveland Heights levied income taxes at the same rate as the City of Euclid.

General Trend Conclusions

Although predictable, the trend analysis demonstrates the quantifiable net gain or loss each city realized during the period reviewed. Without question, the decision to "morph" at the Severance site had positive implications for the City of Cleveland Heights and the Cleveland Heights/University Heights School District revenue sources. Whereas the dire situation that Euclid Square Mall finds itself in has led to declining revenues for both the City of Euclid and Euclid City School District.

Fiscal Impact Analysis

The study shows a distinct difference in the benefits derived from each of the two developments in Cleveland Heights and Euclid. Though there is an increase in positive fiscal impact for both developments on their municipalities from 1999 to 2004, Cleveland Heights derived a much higher benefit from Severance (Table 3.4). In 1999, Severance had revenue to cost ratio of 5.60 while Euclid Mall had a ratio of only 3.93. This means that Severance produced $5.60 for every dollar of cost associated to it. By the year 2004, Severance had a revenue to cost ratio of 6.19. The revenue to cost ratio for Euclid Mall was 4.18 in the same year. The significance here is the drastic difference in total revenue Severance generated for Cleveland Heights as opposed to the amount generated by Euclid Mall for the City of Euclid.

Table 3.4

Fiscal Impact

	1999	2000	2001	2002	2003	2004
Cleveland Heights						
Total Cost	$ 208,647	$ 289,237	$ 302,632	$ 307,733	$ 296,843	$ 292,860
Total Revenue	$ 1,168,563	$ 1,516,872	$ 1,510,589	$ 1,549,208	$ 1,575,143	$ 1,812,607
Net Fiscal Impact	***$ 959,916***	***$ 1,227,634***	***$ 1,207,957***	***$ 1,241,475***	***$ 1,278,300***	***$ 1,519,747***
Revenue to Cost Ratio	5.60	5.24	4.99	5.03	5.31	6.19
Euclid						
Total Cost	$ 318,860	$ 250,579	$ 234,092	$ 165,628	$ 101,830	$ 160,150
Total Revenue	$ 1,251,677	$ 947,689	$ 906,077	$ 739,185	$ 729,935	$ 668,953
Net Fiscal Impact	***$ 932,817***	***$ 697,110***	***$ 671,985***	***$ 573,557***	*$ 628,104*	*$ 508,804*
Revenue to Cost Ratio	3.93	3.78	3.87	4.46	7.17	4.18

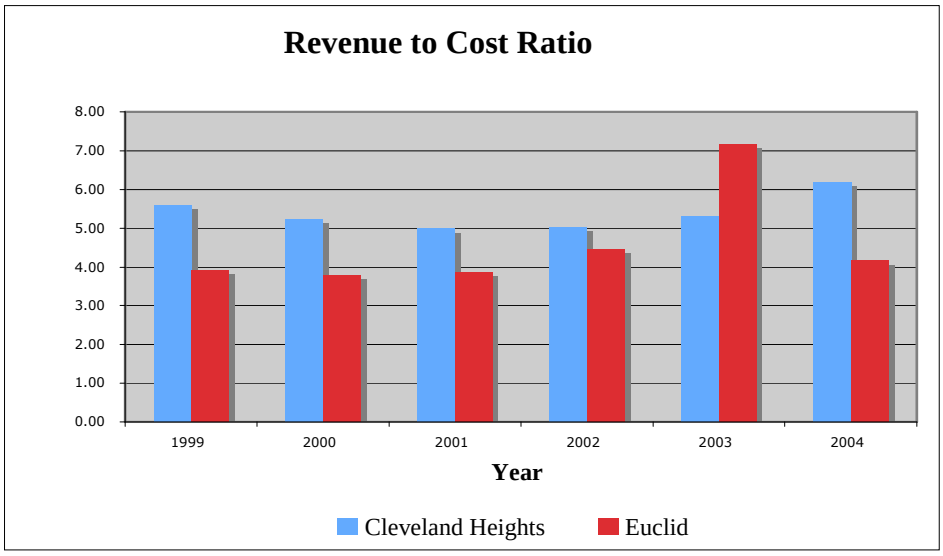


Figure 3.11

The figures here are reflective of the recent history of the two retail sites. The scenarios are an example of the "grow, morph, or die" mantra. In 1999, the net fiscal impacts were similar for both municipalities. However as Figure 3.11 illustrates, their paths diverge from that point. Reinvestment into Severance resulted in increased net revenue for Cleveland Heights. In 1999, Cleveland Heights derived from Severance a net of $959,916 of which increased to $1.52 million by 2004. This represents an average annual increase of $111,966 (11.7%). The cost of Severance to Cleveland Heights remained relatively stable through this period of revenue growth. Overall, Cleveland Heights saw a 58.3% increase in total net revenue generated for the municipality by Severance. From the net gain, a conclusion can be drawn that the municipality was correct in supporting the redevelopment of Severance from an indoor mall into a power center.

While Cleveland Heights experienced an increase in net revenue, the reverse trend occurred for the City of Euclid. Though total costs declined by 50% from 1999 to 2004, the revenue Euclid Mall generated declined in similar fashion. In 1999, Euclid derived from Euclid Mall a net revenue of $932,817. However the figure declined to $508,804 by 2004 representing an average annual decrease of $84,803 (9.1%). Overall, the municipality saw a 45.5% decrease in net revenue derived from Euclid Mall. This decline in net revenue is indicative of the general state of Euclid Mall and its recent history of increasing vacancy and obsolescence due to the newer and more desirable competition that surrounds it. Aside from Outlets USA opening in late 2004, the mall has seen a steady decline in tenants and increase in vacancy.

Figure 3.12

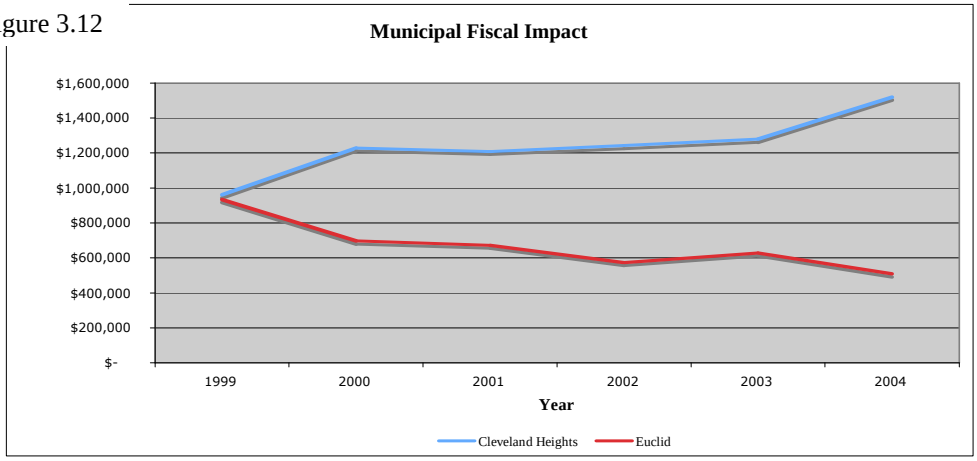
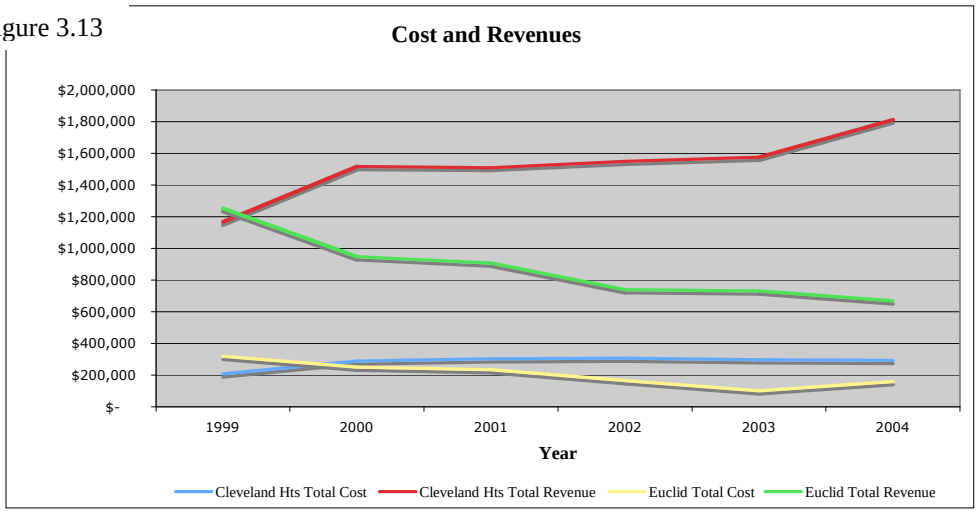


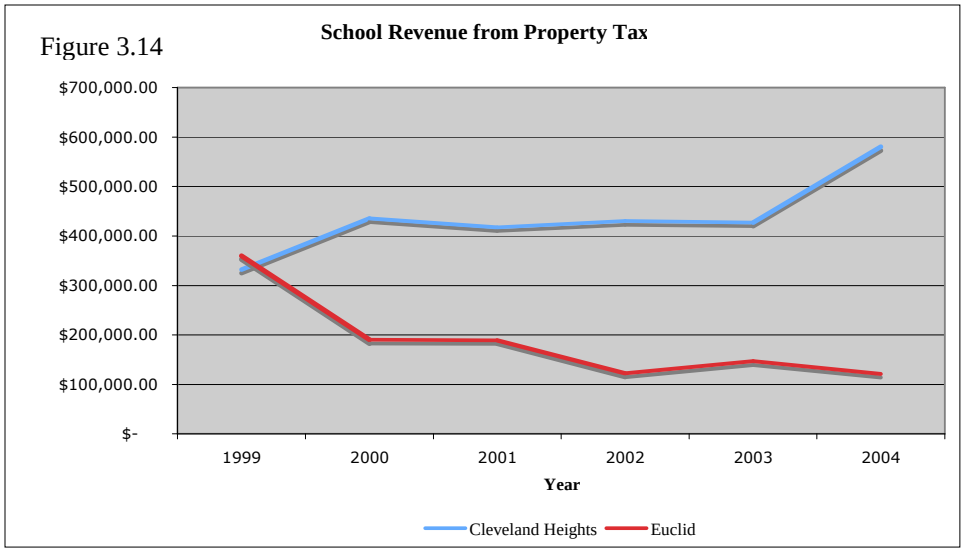
Figure 3.13



School District

The fiscal impact on each of the school district was consistent with their municipality. The Cleveland Heights/University Heights School District ("Cleveland Heights School District") saw a steady increase in revenue from property tax derived from Severance.

Figure 3.14



In 1999, it received approximately $332,042 in property tax revenue derived from Severance. This amount increased to $580,267 in 2004 representing a gain of $248,225 and an average annual increase of $49,645 (15%). As mentioned earlier, there were no costs to consider as zero students were generated from the developments (See Appendix). The Euclid School District was consistent with the City of Euclid overall as it saw a steady decline in property tax revenue derived from Euclid Mall. Revenue derived from property tax declined from $359,898 in 1999 to $121,648 in 2004. The total decrease in revenue from property tax amounts to $238,250 with an average annual decline of $47,650 (13%).

Fiscal Impact Conclusion

The results of the fiscal impact study illustrate what can result when there is reinvestment as opposed to no investment. As with the trend analysis conclusion, the redevelopment of Severance from an indoor mall to a value-oriented power was a beneficial and successful endeavor for Cleveland Heights. The city reaped the benefits Severance offered as the revenues generated steadily increased and exceeded the cost to the city by almost six to one in 2004. In contrast, the disinvestment or lack of investment in the Euclid Mall led to a decline in revenues the City of Euclid received over the five-year period. Though the overall fiscal impact remained stable, when compared to Severance and Cleveland Heights, there is cause for concern and belief that there may be a better alternative than the status quo.

Policy Recommendations

After thoughtfully examining each site and city's history and characteristics, how retail development relates to sustainable municipal tax policy, and quantitatively demonstrating that the decision to invest, and therefore "morph", a retail site pays dividends to the affected community, several policy recommendations were developed. Each is aimed at creating an environment where retail development is encouraged while at the same time sustaining a constant or growing municipal revenue source. The limitation of these recommendations is that rather than addressing any shift that may occur in retail market demand, they are site specific. Instead, each encourages both public and private officials to enter into the retail development framework with more foresight given to maintaining a relevant retail site.

1. **Encourage re-development of abandoned retail sites under smart growth principles:**
    - Take advantage of existing infrastructure
    - Re-use existing resources
    - Conserve land resources via re-development
    - Promote high-density, mixed-use, transit-oriented development

2. **Encourage cities to develop master plans for development that coincide with their fundamental fiscal structures.**
    - Example: Columbus, Ohio's reliance on income tax collections places job creation at the top of its land development goals, while Oklahoma City's heavy dependence on sales tax has led to development of significant retail projects. (idea from "City Fiscal Structures and Land Development", Michael Pagano, April 2003).

3. **Work towards multi-industry creation of a paradigm shift in the physical structure and layout of retail develop to:**
    - Conserve land
    - Eliminate blight
    - Protect environmental resources
    - Encourage pedestrian-friendly communities
    - Promote adaptive re-use, ease of redevelopment

4. **Develop innovative economic incentives, through investor tax credits, for redevelopment of obsolete structures**
    - Already in place are investment incentives such as New Markets Tax Credits (NMTC) and Historic Tax Credits (HTC). Both programs utilize federal tax credits in order to attract equity investment in either low-income communities or historic structures.
    - Further, there is often an initial capital market gap that prevents the rehabilitation or demolition of an existing retail site, discouraging potential investors.
    - Given the combination of the growing number of abandoned, obsolete retail structures that exist throughout the urban, suburban, and rural landscape and the gap in financing that often exists – it may be time to consider retail-specific redevelopment investor tax credits.

5. **Encourage additional use of TIF districts to stimulate re-investment in existing infrastructure**
    - TIF (Tax Increment Financing) was developed in order to encourage reinvestment in blighted or distressed areas. Current TIF legislation in Ohio permits borrowing debt on future growth in property tax revenue.
    - Designating obsolete or abandoned retail structures, either by project or by district, as a TIF district will encourage developer investment in site.
    - Explore option of expanding TIF revenues to include any increase in sales tax derived from site.
    - TIF revenues can either be used to provide up-front debt financing to restructure site (when appropriate) and provide additional incentive for redevelopment.
    - Consideration should be given to designating new developments as TIF districts. A portion of the new tax revenue generated would be set aside for future use, maintaining site relevance. By utilizing a pay-as-you-go approach to any new development TIF revenues, increased tax revenues would be earmarked for continued site improvements such as: lighting, future land acquisition and structure rehabilitation, or new construction.

6. **Encourage regional tax revenue sharing for new development property and income tax**
    - Make it easier within the home rule framework for communities to plan cooperatively and share tax bases, revenues, and tax burdens

7. **Development of a regional retail site landbank**

- A landbank may be used as a municipal finance tool to address two factors important for developers—time and money
- A landbank addresses the issue of time by providing land for development projects when needed. Making land available provides an incentive for attracting developments. Furthermore, it reduces the opportunity cost to developers as it can streamline the process of assembling land for development
- A municipality can offer land from the landbank to developers at a nominal or discounted price, it is an incentive by reducing acquisition costs, therefore improving the development's pro forma projections
- A landbank may be made more effective if it works in conjunction with a comprehensive or citywide strategic plan. In addition, it may be used as leverage in structuring a deal whereby the developer agrees to give the municipality first rights in purchasing the property if certain predetermined benchmarks are not met, in exchange for property from the landbank.

Chapter IV: Riparian Systems

Introduction

> "No matter where you live, you live in a watershed."
> U.S. Environmental Protection Agency, Adopt Your Watershed[146]

Land use planning and development in urban areas is often quite detached from any conscious concern about environmental sustainability or ecosystem health. Planners, builders, and developers adding to the built environment follow rules and regulations that have been mandated and have the force of law behind them, but may not give any further thought to the effects such development may have on the surrounding environment. Similarly, people living and working in urban areas take the goods and services they need from the natural realm in the form of food, water, clean air, and materials, but they may not be fully aware of the dynamic ecosystems in which these goods were formed. In general, the disconnect that has developed between urban cultures and the ecosystems they are part of has created patterns of planning and development that undermine the very systems that sustain the diversity of life on earth.

The following discussion aims to illuminate many of the services ecosystems provide, particularly the services watersheds provide, and the impact retail development has on these services. The first section includes a discussion of the quantification of ecosystem services so that government entities can analyze these services in terms of costs and benefits, as well as an analysis of ways in which planning for the sustainability of watershed ecosystems and related services can be accomplished. The second section provides an overview of Northeast Ohio's regional watershed and retail trends. To understand the impact of retail developments on watersheds, this section provides relevant definitions, reviews nonpoint pollution, and offers the practice of sustainable development as a method of mitigating the impact of retail development on watersheds. The third section reviews some of the major environmental laws addressing the need to improve the condition of our waters. This section also examines the power of the law to mitigate watershed degradation in a sustainable manner while. The fourth section examines the greatest challenge to environmental sustainability in the Northeast Ohio region, its own economy. The fifth section provides an overview of stormwater best practices from across the country. Case studies of both old, recent, and proposed retail development in Northeast Ohio are presented in the sixth section. Conclusions are discussed in the final section.

Sustainability

Ecosystem Services

In order to engage in land use planning and development that takes environmental sustainability and ecosystem health into account, it is important to understand what an ecosystem is. Ecosystems are all of the biotic and abiotic components and processes that comprise and govern the behavior of some defined subset of the biosphere[147]. These elements include, but are not limited to, plants, animals, microorganisms, water, soil, and humans. Human beings are very

[146] USEPA. "Adopt Your Watershed." July 2005. http://www.epa.gov/adopt/ (accessed April 15, 2007).
[147] Franklin Institute, The. 1994. Ecosystems. http://www.fi.edu/tfi/units/life/habitat/habitat.html (accessed at 23 April 2007).

much a part of ecosystems, which provide services for us as they do for all other living things in the system. Land use planning and development which takes into account human interdependence with ecosystems, the benefits ecosystems provide, and the negative externalities created when ecosytem services are lost can create structures, dwellings, nodes, and urban environments that are more appropriately sited, properly sized, efficient, and sustainable. Awareness of our dependence on ecosystems and ecosystem services is especially important in terms of retail development, which, with the advent of "big box" stores and huge, super-regional malls and their correspondingly large swaths of impervious ground cover, have the potential for large environmental impacts.

In order to begin thinking consciously about the human role in the ecosystems we are part of, we must understand what ecosystem services are, and what they provide. Ecosystem services are the conditions and processes though which natural environments, and the species and abiotic elements that create them, sustain human life[148]. These services include, but are by no means limited to pest control, insect pollination of crops and other plants, fisheries, the dispersal of seeds, moderation of climate and temperature extremes, soil retention and erosion and flood control, soil formation and richness, regulation of the composition of the atmosphere, water purification, decomposition of waste materials, and the support of flora and fauna that either are themselves aesthetically beautiful or lead to the creation of products that are attractive, medicinal, or used for industrial purposes[149].

Unfortunately, these ecosystem services are greatly undervalued and either misunderstood by or entirely unknown to much of human society, and unlike currency or stocks, the benefits ecosystems provide are not traded in formal markets and do not send price signals of changes in their supply or condition[150]. Often, society at large does not become aware of a loss of ecosystem services until it becomes painfully obvious. For example, only in the aftermath of Hurricane Katrina did the public become aware of the importance of coastal wetlands as a ecosystem service that provides crucial storm protection[151]. Loss of ecosystem services also illuminates the ways in which the services are intertwined. Deforestation and associated erosion shows the critical role forests play in the hydrological cycle by mitigating floods, drought, wind, and rain[152]. Changes in forest cover also create changes in evapotranspiration, which affects the regulation of the local climate[153].

Cities, counties, or other planning and economic development entities that wish to develop retail in forested areas in their jurisdictions would be wise to analyze the flood and

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[148] Daily, Gretchen. 1997. Introduction: What are ecosystem services? Pages 1-10 in G. C. Daily, ed. *Nature's services: Societal dependence on natural ecosystems*. Island Press, Washington, DC.

[149] Mooney, Harold and Paul Ehrlich. Chapter 2 -- Ecosystem Services: A Fragmentary History. Pages 11-19 in G. C. Daily, ed. *Nature's services: Societal dependence on natural ecosystems.* Island Press, Washington, DC.
See Daily.
Koellner, Thomas and Oswald Schmitz. 2006. Biodiversity, ecosystem function, and investment risk. *BioScience.* 56(2): 977-985.

[150] See Daily.

[151] Farber, Stephen, Robert Costanza, Daniel Childers, Jon Erickson, Katherine Gross, Morgan Grove, Charles Hopkinson, James Kahn, Stephanie Pincetl, Austin Troy, Paige Warren, and Matthew Wilson. 2006. Linking ecology and economics for ecosystem management. *BioScience.* 56 (2): 121-133.

[152] See Daily.

[153] See Farber, *et.al.*

erosion controls that forests provide, and take these services into account when deciding how to site and build such proposed developments. Indeed, a key challenge for planners and governments concerned with taking the costs of ecosystem services into account is finding ways to quantify the link between levels of biodiversity and other aspects of the environment that in turn produce desired ecosystem services[154]. Governments can then use these quantified services to estimate the monetary costs of the loss of services in a given area in the form of increased need for storm water management and flood control, for example. In terms of the benefits forested areas provide, hydrological services, including the movement of water through forests, have been modeled, allowing the implications of loss of forest cover to be estimated -- these estimations could then be given an economic value that government entities could use to help them make land use decisions[155].

In many municipalities, counties, and regions, the allocation of natural resources such as land and water and associated ecosystem services represent tradeoffs between urban uses and fully functioning ecosystem services. This is apparent in Northeast Ohio and other similar regions where farmland is being lost to retail, residential, and industrial uses. Governing entities are also developing a greater understanding of the tradeoffs between increased revenue due to retail development and loss of flood control services, clean water, and increased costs for storm water management. These tradeoffs present increasingly difficult practical and ethical considerations for the governing bodies that must make them[156]. Because such tradeoffs can represent difficult choices to be made about whether and to what extent retail and other developments should be built, it is very important for governing bodies to have the tools to quantify the ecosystem services provided by their surrounding environment, and the ways in which development causes a loss of these services. Evaluations of these tradeoffs are critical to finding management options that provide the highest-value service flows from an ecosystem[157].

Watershed Planning

One particularly important set of ecosystem services are those provided by watersheds. Watersheds provide many valuable services to society, including benefits to urbanized areas, where they provide clean water, flood control, and soil retention[158]. Ironically, the more developed urban watersheds become, the more their human inhabitants rely on these ecosystem services, but, at the same time, increased development causes these services to decline. Indeed, changes in land use, from forest to farmland, or from farmland to urban use, diminish the ability of watersheds to provide their crucial ecological services[159]. As watershed services are diminished, the water purification services they provide also decline. The loss of this ecosystem service can be calculated by increased costs for water treatment in watersheds that are urbanizing. The rising costs for clean water have been taken seriously by New York City officials, who realized that protecting the watershed that provides drinking water to the city would be less costly than building and operating a new water treatment plant:

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[154] See Koellner and Schmitz.
[155] See Farber *et. al.*
[156] See Daily.
[157] See Farber *et. al.*
[158] Platt, Rutherford. 2006. Urban watershed management: sustainability, one stream at a time. *Environment.* 48(4): 26-42.
[159] Postel, Sandra and Barton Thompson. 2005. Watershed protection: capturing the benefits of nature's water supply services. *Natural Resources Forum.* 29(2005): 98-108.

> "Faced with estimated capital costs of $6 billion and annual operation and maintenance costs of at least $300 million for the filtration plant, the City opted to seek a waiver of the filtration requirement by investing in a comprehensive watershed protection program in the Catskill-Delaware watershed, which supplies 90% of the City's drinking water"[160].

Retail development in particular has the potential to endanger many of the services watersheds provide. Since large retail developments nearly always include large impervious rooftops and parking lots, these areas generate large quantities of storm water runoff that, due to the impervious nature of the built environment, often rush from culverts into streams within the watershed. In a more natural environment, storm water behaves much differently; pervious soils and ground cover allow water to percolate slowly and naturally into the ground. In addition, large retail developments are often sited in a ways that make sense economically but do not take the surrounding ecosystem or geography into account. Retail is often placed at large intersections or highway interchanges; if this infringes on vital streams or wetlands, the streams are often culverted and the wetlands mitigated somewhere else entirely according to regulations. However, such siting of major developments is unwise economically *and* ecologically. Wetlands and headwater streams are hugely important in terms of maintenance of clean water. Headwater streams also help to ensure that water flows properly through watersheds, and help to absorb excess water flows and control flooding downstream[161].

In order to understand the services a watershed can provide, it is crucial to understand how one operates. A watershed can be defined as the land basin that collects all of the surface water that flows though or rains on a given geographical area. Watersheds are defined by geological features such as streams, hills and valleys. Typically, relatively high points in the elevation of a given area mark watershed boundaries. Watersheds, as far as patterns of water drainage are concerned, are self-contained units made up of basins and the streams that originate in them. These self-contained watershed units can combine to make up a larger watershed unit, which can in turn make up a larger unit. For example, the Euclid Creek Watershed is within the larger Chagrin River Watershed, which makes up part of Lake Erie's watershed. These units within units are, in many ways, quite analogous to the way in which cities are located within counties, and counties are located within states—they are all parts of an interconnected whole.

The key factor of importance that must be understood about watersheds is that, ecologically, they also function as a whole. When it rains or snows, storm water that falls on rooftops, parking lots, lawns, forests, grasslands, wetlands, and farms enters the watershed. This storm water percolates into the soil or groundwater of the watershed, or remains on the surface and flows into sewers, retention basins, or ditches and ends up in the streams and wetlands of the watershed. The relative "quality" of this storm and surface water determines the health of the watershed ecosystem and water systems downstream from where water originally entered the basin[162]. For example, storm water that falls in the huge parking lots of large stores or shopping centers does not percolate into the ground; instead, it flows on the surface, picking up pollutants

[160] See Postel and Thompson.
[161] Edgar, Chad. 2007. Interview by Rosemary Giesser of Mr. Edgar of the Lake County Soil and Water Conservation District on 18 April 2007.
[162] See Postel and Thompson.

such as oils, bacteria, and chemicals. This storm water flows into drains, which lead to outfalls into streams or wetland areas. Polluted storm water degrades aquatic ecosystems, which nurture other terrestrial or avian wildlife. Impervious pavement can change the hydrology of soil when areas of land are graded or packed down during construction and regular use by vehicles; soils covered by pavement also receive less natural percolation by rainwater. Changes to soil hydrology effect ecosystems throughout the drainage basin.

Clearly, a loss of ecosystem function in one part of a watershed can decrease the ecosystem services the watershed provides to people living throughout the basin. It follows, then, that government entities, planners, and citizens living in a watershed would be wise to ensure that the entire basin is protected in order to maintain the economically beneficial services the watershed provides such as clean water and flood control. Indeed, since watersheds can be thought of as geographical units, much like cities or counties, watersheds have been identified by many scholars, planners, and ecologists as suitable planning units for addressing many natural resource issues such as water quality, water supply, and fish and wildlife habitat[163]. Unfortunately, watersheds, unlike cities and counties, do not have mayors, council members, economic development directors, capital budgets, or police power. In other words, they have no real political authority or rule of law. However, since the roads, housing, retail developments, and storm sewers built under city and county authority within watersheds have an enormous effect on their ecosystem services watersheds provide, it is important to postulate what paths development might take if decisions were made with more consideration of watersheds. It is also important to analyze the ways in which such decision-making might be made more feasible.

In order to understand development patterns and land use changes, and ascertain how these patterns may be made to better account for the health of watersheds, the following questions must be answered:

1. How do economic and social factors influence land-use practices and development patterns?
2. What are the impacts of development patterns (in this case, retail development) on the environmental quality of watersheds and the ecosystem services they provide?
3. How can environmental quality and ecosystems services be managed to foster ecological sustainability[164]?

In general, in terms of retail development in Northeast Ohio, the economic and social factors that influence land-use practices and development patterns rarely take watershed health into account. Instead, individual cities encourage retail development on parcels of land where it is cost-effective to build stores, shopping centers, and malls. Cost-effectiveness could have to do with location, market area, previous uses of the land, and is most likely a combination of many factors. The impacts retail developments have on the ecosystem services watersheds provide are discussed above and are becoming increasingly more widely understood. The third question—how to manage wetland ecosystems—is the most difficult to answer. Because watersheds are

[163] Bentrup, Gary. 2001. Evaluation of a collaborative model: a case study analysis of watershed planning in the intermountain west. *Environmental Management.* 27(5): 739-748.
[164] Lant, Christopher, Timothy Loftus, Steven Kraft, and David Bennett. 2001. Land-use dynamics in a Southern Illinois (USA) watershed. *Environmental Management.* 28(3): 325-340.

delineated by natural, not political boundaries, management of their resources and services is a complex issue.

The market areas of large retail developments include not just individual municipalities but the region at large and cross over many jurisdictions. In a similar way, watersheds include many different governmental entities and do not follow political boundaries. The stakeholders that are interested in dictating the development and/or preservation of certain aspects of a watershed include, but are certainly not limited to cities, townships, counties, sewer districts, soil and water conservation districts, the EPA, non-profit watershed partnerships, developers, citizens and homeowners in the region. These diverse sets of groups can add meaningful insight to various aspects of watershed planning, but also complicate the process. Organizers of watershed planning groups often find difficulties when conducting and managing the collaborative process of working with stakeholders[165], most if not all of which have their own political agendas and are reluctant to give up any customary power they may hold.

In general, the multi-jurisdictional nature of watersheds necessitates collaboration between the many stakeholders in order for implementation of goals aimed at preserving the ecosystem services of watersheds to occur. Even though watershed boundaries are distinct from political boundaries, effective watershed planning can and does occur. The factors that allow for successful watershed planning can be summed up as follows:

> Successful implementation of watershed management goals depends heavily on local social and political conditions. Factors such as effective leadership, participation of those most affected by water conditions, clear definition of the scope of issues to be discussed, the availability of technical and financial resources, and fair processes for decision making contribute to conservation of watershed environments and ecosystem services[166].

These conditions, combined with other necessities (including adequate funding of watershed conservation projects and education of local citizens on the impacts poor watershed health can have on water quality and flood control) can help to ensure watershed planning goals are implemented.

Impacts

Northeast Ohio Regional Watershed and Retail Trends

Watershed and Riparian Zone Defined

The U.S. Environmental Protection Agency (USEPA) defines "watersheds" as the "land area that drains to a common waterway, such as a stream, lake, estuary wetland, or ultimately the ocean."[167] The streams, lakes, rivers, or wetlands are all connected in such a way as to form a watershed, and smaller watersheds or subwatersheds are connected to larger ones (**Figure 4.1**).

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[165] Ryan, Clare and Jaqueline Klug. 2005. Collaborative watershed planning in Washington State: implementing the Watershed Planning Act. *Journal of Environmental Planning and Management.* 48(4): 491-506.
[166] O'Neill, Karen. 2005. Can watershed management unite town and country? *Society and Natural Resources.* 18: 241-253.
[167] *See id.*; *see also* USEPA. "Handbook for Developing Watershed Plans to Restore and Protect Our Waters." Oct. 2005. http://www.epa.gov/owow/nps/watershed_handbook/ (accessed April 2, 2007) [hereinafter Handbook for Developing Watershed Plans].

Figure 4.1**.** Elements of a Watershed

The Ohio Department of Natural Resources identifies watersheds at different levels. There are 1756 watersheds at the 14-digit level, 333 at the 11-digit level, and 44 at the 8-digit level in Ohio (**Figure 4.2**).[168] These divisions compare to the division of census tracts into block groups. In the region, there are 6 watersheds at the 8-digit level (**Figure 4.3**): most of the Black & Rocky River, Cuyahoga River, and Chagrin River watersheds are included with portions of the Tuscarawas River, Grand River, and Mahoning River watersheds. Most of the region is also part of the larger Lake Erie Basin. **Figure 4.4** shows the watersheds within the region's county boundaries.

[168] ODNR. "Geographic Information Management System." http://www.dnr.state.oh.us/gims/ (accessed April 15, 2007) (These digit levels are defined as hydrologic units.).

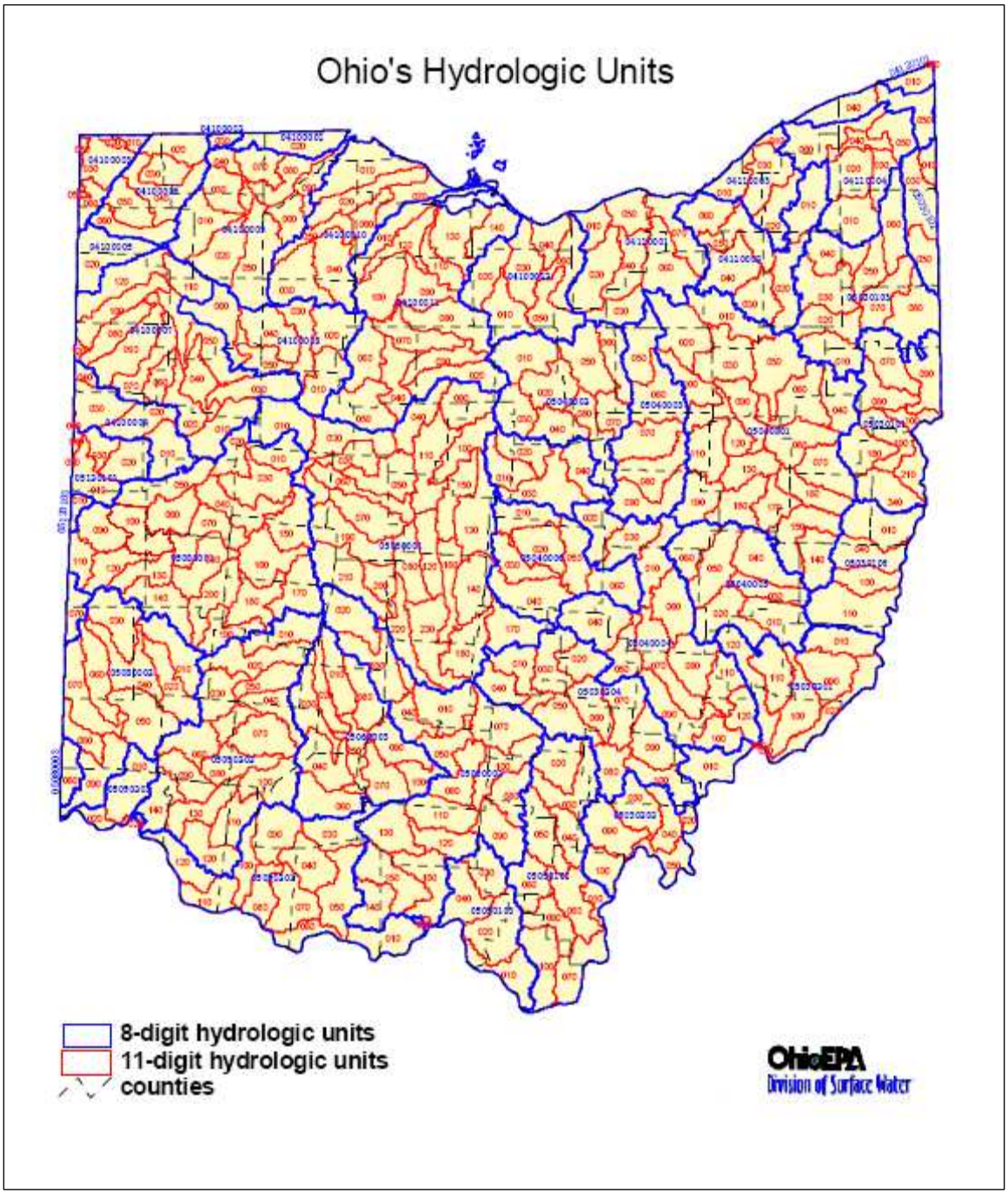

Figure 4.2. Ohio Main Watersheds and Subwatersheds

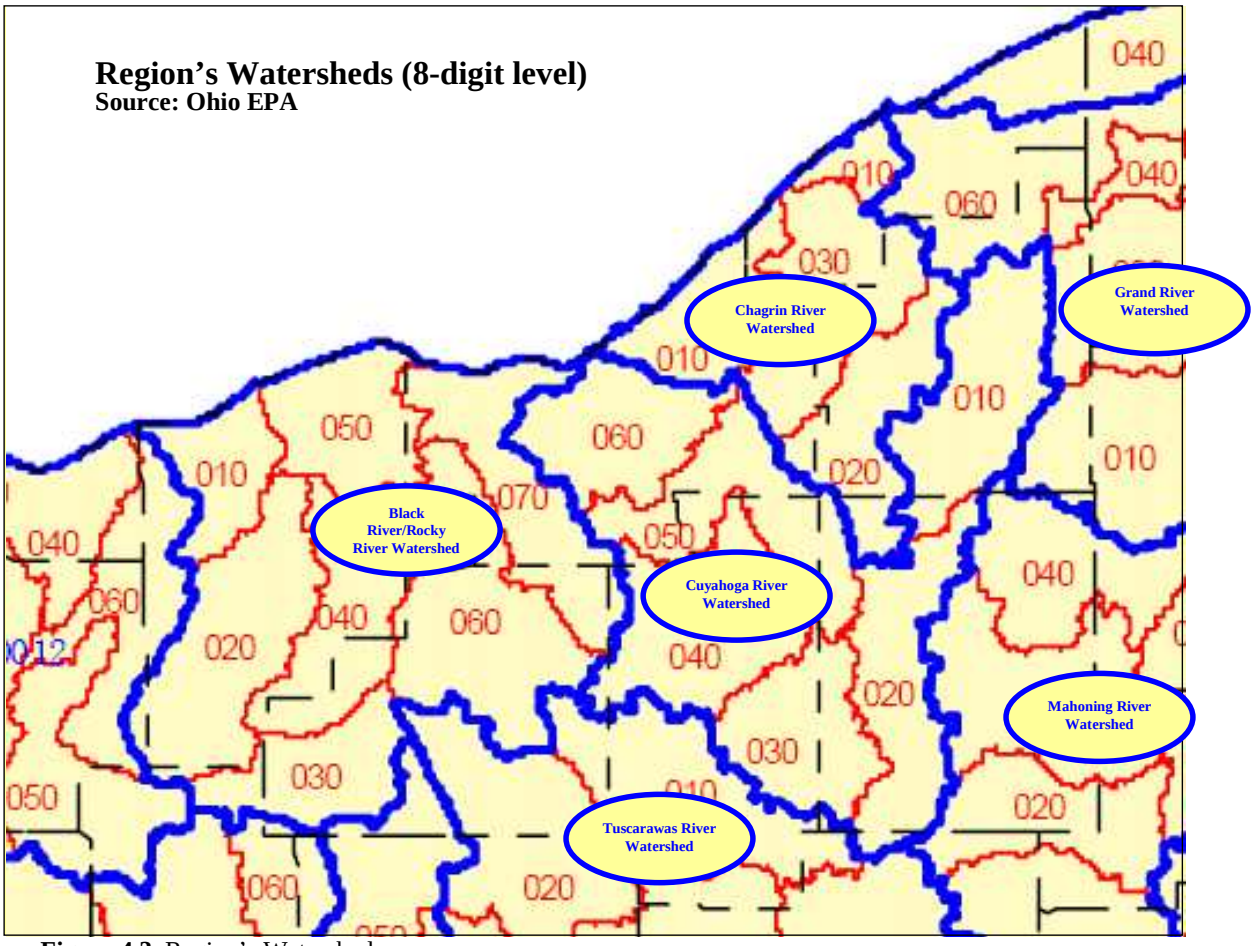

Figure 4.3. Region's Watersheds

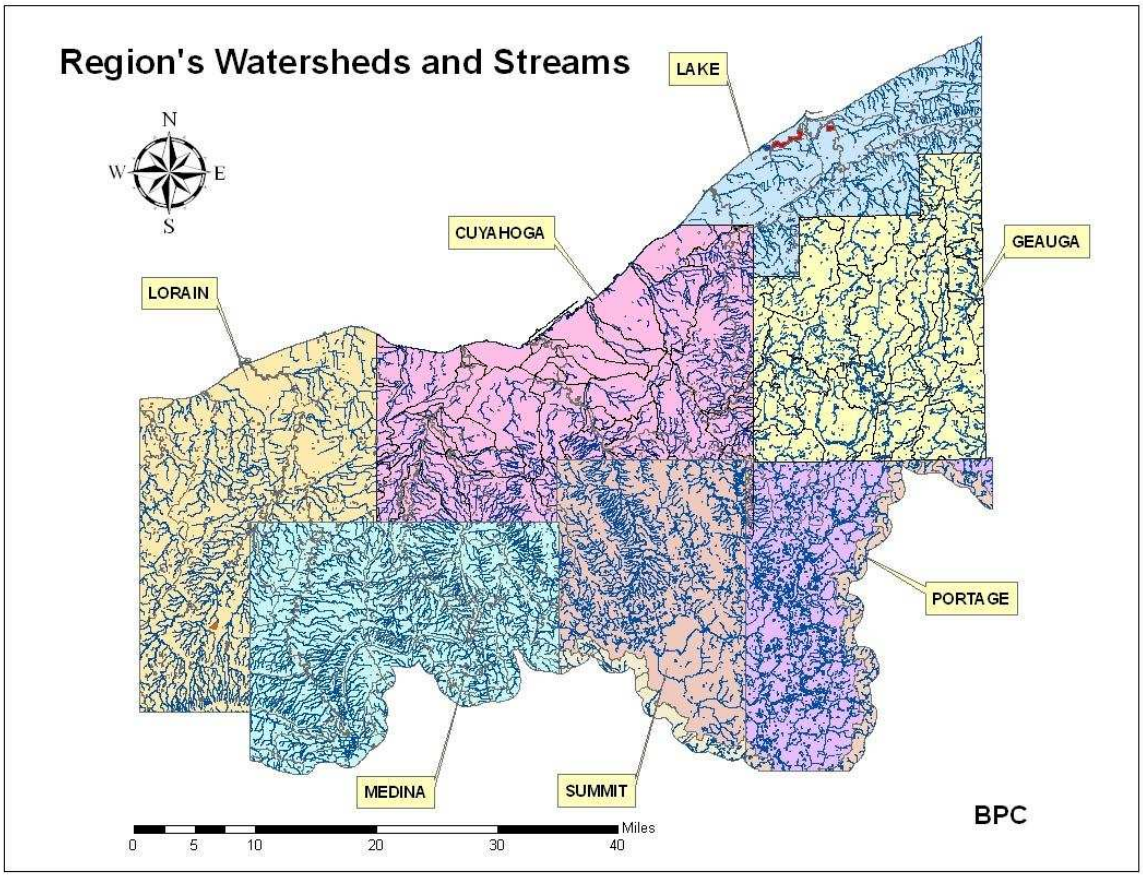

Figure 4.4 Region's Watersheds and Streams

A riparian zone is the land along the banks of rivers or streams that separate the water from the surrounding landscape. In other words, riparian zones are corridors. They may include wetlands and floodplains. Riparian zones are also called riparian setbacks.

Nonpoint Source Pollution and the Degradation of Watersheds

For quite some time, the USEPA has determined that the health and the integrity of watersheds have been impaired primarily by so-called "nonpoint source" pollution.[169] Nonpoint source (NPS) pollution, unlike "point source" pollution, which comes from industrial and sewage treatment plants, comes from diffuse sources.[170] The USEPA further provides that "NPS pollution is caused by rainfall or snowmelt moving over and through the ground."[171] These waterfall or snowmelt runoffs are known as stormwater runoffs.

Stormwater runoff occurs when precipitation or snowmelt flows *over* the ground instead of soaking *into* the ground. If the water soaked into the ground, the soil would naturally filter the

[169] USEPA. "What is Nonpoint Source (NPS) Pollution?" Nov. 2006. http://www.epa.gov/owow/nps/qa.html (accessed April 5, 2007) [hereinafter NPS]; *see also* Handbook for Developing Watershed Plans, *supra* note 2 (defining "*nonpoint source*" as "Diffuse pollution source; a source without a single point of origin or not introduced into a receiving stream from a specific outlet." The Handbook also defines "*impaired waterbody*" as a "waterbody that does meet the criteria that support its designated use.").
[170] NPS, *supra* note 4.
[171] *Id.*

debris, chemicals, and pollutants stormwater carries.[172] Instead, where development occurs, stormwater flows over the ground because the surface on which the water falls or melts is mostly impervious. Impervious surfaces include driveways, roads, streets, parking lots, rooftops, and sidewalks. As the water rolls over the impervious surface, it picks up debris, chemicals, dirt, and other pollutants and flows into a storm sewer system or directly into a lake, river, stream, or wetland, affecting water quality, groundwater recharge, and the physical, chemical, and biological health of the lake, river, stream, or wetland in which it flows.

The impact of stormwater runoff and the degradation of watersheds occur at two levels: (1) the "biotic" level; and (2) the "abiotic" level (**Table 4.1**).[173] At the "biotic" level, the focus is on the richness, diversity, and composition of aquatic life. Water pollution, caused by motor oil, grease, salt, or debris washed into watersheds when it rains or when snow melts, is likely to poison aquatic life. At the "abiotic" level, the focus is on water volume, sedimentation, "channelization and streambank erosion," habitat, water temperature, dissolved oxygen, or nutrients.[174] For instance, stormwater runoff may erode the riparian zone and cause unusual flooding because the water runs at higher speed on impervious surfaces than it would on pervious surfaces.[175]

Table 4.1. Nonpoint Source Impairments to Selected Watersheds in the Region

Watershed	**Nonpoint Source Impairments to Region's Watershed**				
	Mileage Assessed	**Percentage Impaired by Land Use**			
		Urban Runoff	Agriculture	Channelization and Dams	Other Sources
Black River	215.48	14	87	13	0
Rocky River	146.1	37	5	6	1
Chagrin River	94.9	89	0	5	26
Lower Grand River	66.65	21	21	0	26
Cuyahoga River	187	51	20	13	9
Euclid Creek	18.52	100	0	51	0

Source: Ohio EPA 1996 Ohio Water Resource Inventory & NOACA, Clean Water 2000
Not all factors impairing the rivers listed are cited.

<u>The Importance of Imperviousness: Understanding the Impact of Retail Development on Watersheds[176]</u>

> The construction of strip centers, malls, big-box stores, and now lifestyle centers has devoured roughly nine thousand acres of land around Cleveland since the 1960s, even as the region's population

[172] This is not to say that the agricultural use of fertilizers, for instance, is harmless simply because the soil filters the chemicals.
[173] Elizabeth Brabec, Stacey Schulte, and Paul L. Richards. "Impervious Surfaces and Water Quality: A Review of Current Literature and its Implications for Watershed Planning." *Journal of Planning Literature* 16(4) (2002): 505.
[174] Ibid.
[175] Center for Watershed Protection. *Better Site Design.: A Handbook for Changing Development Rules in Your Community* (Ellicott City, MD 1998): 1.
[176] Thomas R. Schueler and Heather K. Holland, eds. *The Practice of Watershed Protection* (Ellicott City, MD: Center for Watershed Protection, 2000): 7-18.

> declined slightly. Wetlands have been filled [and] forests have been cut down….[177]

The concept of *imperviousness* is key to understanding the impact of urban development in general, and retail development in particular, on watershed quality. Urban development irremediably increases the level of imperviousness.[178]

Besides highways, commercial use is the use with the highest percentage of imperviousness.[179] Retail development produces more stormwater runoff than any other type of land use.[180] New retail centers generate twenty percent more runoff than industrial use and three times as much as residential use.[181]

And the fact that corporate retailers, big box stores and chain retailers, usually consume undeveloped land instead of redeveloping existing commercial land for example, only exacerbates the problem caused by runoff. This is true in the region where most new retail centers have consumed undeveloped land: Avon Commons in Avon (83 acres of farmland), Crocker Park in Westlake (75 acres of farmland and woods), or Legacy Village in Lyndhurst (67 acres of forest land) are three examples of this.

Additionally, retail space is growing faster than population. This means that the increase in imperviousness is not proportionate to population increase. First, retailers build bigger stores, and second, a vacant mall or shopping center does nothing to reverse the impact of impervious surface on watersheds as long as it remains standing.

Finally, retail development does not have to be near a creek or on a lake to have an impact on watersheds and riparian zones. All retail centers, not only those requiring drainage of a wetland, have an impact on watersheds. That impact is mostly indirect. Because retail development produces imperviousness, it causes runoff, and runoff in turn causes the degradation of watersheds, including Lake Erie, major rivers, tributaries, streams, riverbanks, streambanks, wetlands connected to streams, isolated wetlands, or groundwater. No water escapes pollution runoff from an impervious surface.

The peak rate of runoff measures the short-term impacts of a change in land use while the average annual runoff measures the long-term impacts of that change.[182] If a meadow, for example, becomes a parking lot, the peak rate of runoff will increase dramatically. In this case,

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[177] Stacy Mitchell. *Big-Box Swindle* (Boston, MA: Beacon Press, 2006): 105-06.
[178] Brabec, Schulte, & Richards, *supra* note 8: 499.
[179] *Ibid.* at 504.
[180] *See* Mitchell, *supra* note 12: 116; *see also* The New Rules Project. "Retail Sprawl Impairing Nation's Waterways." Sep. 1, 2003. http://www.newrules.org/retail/news_archive.php (accessed April 11, 2007); Brabec, Schulte, & Richards, *supra* note 8: 504.
[181] The New Rules Project, *supra* note 15.
[182] Cuyahoga County Planning Commission. "Northeast Ohio Regional Retail Analysis." 2000. http://planning.co.cuyahoga.oh.us/retail/ (accessed January 22, 2007); Purdue Research Foundation. "Impacts of Land Use Change on Water Resources." 2004. http://www.ecn.purdue.edu/runoff/Index.html (accessed April 3, 2007).

the rate of runoff would be 16 times higher.[183] And the consequences are erosion of the riparian zone in which the water flows, impact on the aquatic vegetation and animals, and flooding. Additionally, because the water rolls off the ground, there is less groundwater recharge.

Because we all live in a watershed, the impact of stormwater or snowmelt runoff is on us as well. Flooding does not limit itself to uninhabited zones, and water pollution does not limit itself to the aquatic life of a river or wetland. Flooding affects homes and water pollution affects water quality. These have price tags we understand, more so than the enormous price tag that goes with restoring the aquatic life and the native vegetation of a watershed. In sum, the impact of retail development ultimately creates a cost we must bear as taxpayers, households, and insurance holders.

Sustainable Development: Mitigating the Impact of Retail Development on Watersheds

Sustainable development has been characterized as the kind of development that combines economic growth with protection of the natural environment.[184] Sustainable retail development, therefore, would successfully combine retail growth with protection of the environment, air, land, and waters.

The first step toward sustainability is to think of retail development as having opportunity costs. Building more impervious parking lots and more impervious rooftops involves opportunity costs: the cost of flooding or the cost of water pollution for instance. The challenge, then, is to be able to determine the opportunity cost of building one more square foot of retail in terms of water quality foregone or wetland services foregone. If it can be shown that protecting the region's water resources is economically sensible based on opportunity cost, then the region may better embrace the challenge of protecting the environment, and sustainable retail development may become a viable management practice. The idea of sustainable retail development, in a region already saturated with retail, may seem a contradiction in terms, an oxymoron but the reality is that there is proposed retail development in the region. The solution, therefore, is not to stop any kind of new retail development but to manage retail growth in a way that best promotes sustainability, in economic terms, in a way that best promotes efficiency.

To manage retail growth in a way that best protects the region's watersheds, the second step toward sustainability is to review the political decision-making process. And one preliminary, yet necessary, step is to look at the law and assess the efficacy of the law in mitigating the impact of urban development in general, and retail development in particular, on the region's waters.

Existing Law and Policy for Watersheds and Wetlands

Watershed Protection: A Legal Gridlock

> Erosion, floodwater, and sediment damages in the watersheds of the rivers and streams of the United States, causing loss of life and damage to property, constitute a menace to the national welfare; and it is the sense of Congress that the Federal Government should

[183] Schueler & Holland, *supra* note 11: 7.
[184] Better Site Design, *supra* note 10: 1.

> cooperate with States and their political subdivisions, soil or water conservation districts, flood prevention or control districts, and other local public agencies for the purpose of preventing such damages, of furthering the conservation, development, utilization, and disposal of water, and the conservation and utilization of land and thereby of preserving, protecting, and improving the Nation's land and water resources and the quality of the environment.[185]

There has been, at the federal and state level, an understanding of the need to improve the quality of land and water resources for the past thirty years at least. In fact, most waterbodies, lakes, wetlands, and watersheds, have been protected by law, both at the federal and state levels.

The impression, however, is that of a very large "command-and-control" regulation system that raises questions of efficiency.[186] Given the number of bureaucracies and nonprofit organizations involved in the system, one question necessarily arises: Has the enormous cost of all federal environmental regulation delivered a large increase in environmental quality?[187] If not, where is the ill in the system and can it be cured?

Nonpoint Source Pollution Regulations

The Clean Water Act requires that all fifty states adopt "water quality standards."[188] The Act takes a quantitative approach to measure water quality. Specifically, the Act requires states to identify polluted waters by calculating the total maximum daily load (TMDL) of certain pollutants, like nitrogen or phosphorous, that a stream segment can absorb and still meet water quality standards.[189] In Ohio, 20 out of 23 large rivers did not meet water quality standards in 2006 and 244 out of 331 watersheds.[190] By comparison, 20 out of 22 large rivers surveyed for quality did not meet water quality standards in 2004 and 242 out of 331 watersheds. This shows that there has been very little change in two years, neither substantial degradation nor substantial improvement.[191]

To reduce nonpoint source pollution or stormwater runoff, the Clean Water Act sets out a series of requirements.[192] Under the nonpoint source pollution reduction program, each state must identify the waters within the state requiring remedial action[193] and prepare a "management

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[185] Watershed Protection and Flood Prevention Act, 16 U.S.C. § 1001 (2006); *see also* National Environmental Policy Act of 1969, 42 U.S.C. § 4331(a) (2006).
[186] Terry L. Anderson, ed. *Breaking the Environmental Gridlock* (Stanford, CA: Hoover Institution Press, 1997).
[187] *Id.* at 150.
[188] *See generally* Clean Water Act, 33 U.S.C. §§ 1251-1387 (2006) (originally known as the Water Pollution Control Act of 1972 before becoming the Clean Water Act in 1977); *see also* 33 U.S.C. § 1313 (2006). Every other year, the State of Ohio published a report on current water quality conditions. This report, known as 305(b) report, is required by the Clean Water Act.
[189] § 1313(d).
[190] Ohio EPA, Division of Surface Water. "Ohio 2006 Integrated Water Quality Monitoring and Assessment Report." 2006. http://www.epa.state.oh.us/dsw/tmdl/2006IntReport/2006OhioIntegratedReport.html (accessed April 19, 2007): viii.
[191] *Id.*
[192] *See generally* 33 U.S.C. § 1329 (often referred to as Section 319).
[193] § 1329(a)(1)(A).

program" on a "watershed-to-watershed basis."[194] The management program should identify best management practices and describe "State and local programs for controlling pollution added from nonpoint sources."[195] The management program is a four-year implementation program. The program is also a necessary step to obtain federal funding: Once the program is approved, the EPA awards grants to the State.[196] For the year 2007, the available grant amount is $194 million, down from $206 million in 2006 and $205 million in 2005.[197]

Phase I and II Stormwater Permits Programs

In 1987, the Clean Water Act was amended to include permit requirements for industrial and municipal discharges of pollutants in the "waters of the United States."[198] Subsequently, the USEPA issued permit application requirements for certain categories of stormwater discharges associated with industrial activity and for discharges from municipal separate storm sewer systems (MS4) located in municipalities with a population of 100,000 or more.[199] These permit requirements, known as National Pollutant Discharge Elimination System (NPDES) permits, constitute the first phase (Phase I) of the EPA's stormwater permits program.

In 1999, the USEPA expanded the Phase I program by requiring NPDES permits for smaller municipalities and small construction projects. This new phase constitutes the second phase (Phase II) of the EPA's stormwater permits program.

Wetland Preservation

In Ohio, the Ohio Revised Code defines wetlands as those areas that are either covered with water or areas that can support the kind of vegetation typically adapted for life in water-saturated soil conditions.[200] Wetlands are critical ecosystems and function as flood control waterbodies.[201]

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[194] *See generally* § 1329(b).
[195] § 1329(a)(1)(C) & (D).
[196] *See generally* § 1329(h) *& specifically* § 1329(h)(3) (establishing that the "Federal share of the cost of each management program implemented with Federal assistance under this subsection in any fiscal year shall not exceed 60 percent of the cost incurred by the State in implementing such management program."). In addition to the award of grants for the purpose of reducing nonpoint source pollution, Section 319 carves out grants for the purpose of protecting groundwater quality. *See* § 1329(i)(1) & (3) (limiting the Federal share of the cost for groundwater quality protection activities to 50 percent with an upper limit of $150,000).
[197] USEPA, "Catalog of Federal Funding Sources for Watershed Protection." March 2003. http://cfpub.epa.gov/fedfund/ (accessed April 15, 2007).
[198] *See* 33 U.S.C. § 1342.
[199] *See* 40 Code Fed. Reg. 122.1 & 122.26; *see also* 55 Fed. Reg. 47990, Nov. 16, 1990. The USEPA defines "MS4" as "any pipe, ditch or gully, or system of pipes, ditches, or gullies, that is owned or operated by a governmental entity and used for collecting and conveying storm water." USEPA. "Clean Watersheds Needs Survey Report to Congress." 2000. http://www.epa.gov/owm/mtb/cwns/2000rtc/cwns2000-glossary.pdf (accessed April 9, 2007).
[200] Ohio Rev. Code Ann. § 6111.02 (2006).
[201] USEPA. "What are Wetlands." 2006. http://www.epa.gov/owow/wetlands/vital/nature.html (Wetlands provide critical habitat for plants and animals and play an important role in maintaining water quality. Wetlands also act as sponges, storing water after heavy rains or snowmelts.).

The Clean Water Act and the River and Harbor Act of 1899 address the specific issue of wetland preservation.[202] In Ohio, as in all other states, any activity that discharges dredged or fill materials into wetlands requires two permits, one issued by the Ohio EPA under Section 401 of the Clean Water Act for isolated wetlands, and the other issued by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Act for wetlands connected to streams.[203] These permit requirements include most development projects when construction occurs near a wetland.

Protection of Lake Erie and Coastal Management

Besides NPDES permits, construction activities in areas near Lake Erie are regulated under the so-called Lake Coastal Erosion Area Management policy. The policy identifies the boundaries of "Lake Erie coastal erosion areas."[204] Once identified, any construction or redevelopment within the boundaries of the erosion areas are subject to permits. The permits are approved by the Ohio Department of Natural Resources (ODNR) unless a municipality has adopted an ordinance modeled after the Lake Coastal Erosion Area Management policy. In addition, the policy assists Lake Erie coastal communities with flooding and coastal erosion by administering funds for the protection of Lake Erie's shore.[205]

The Lake Erie Protection Fund provides grants for the protection of Lake Erie's water quality. Additional funding comes from Section 309 of the Clean Water Act and the Nature's Work program administered by ODNR.

This is but a glimpse of the myriads of regulations and sources of funding available to counties, municipalities, or watershed groups. The complexity of the law is daunting. With such complexity, the question is whether the law effectively mitigates watershed degradation.

The Power of the Law to Mitigate Watershed Degradation in a Sustainable Way

Local sustainable land-use tools: riparian and wetland setbacks

Riparian and wetland setbacks are land-use tools available to local governments to manage storm water and to protect riparian and wetland functions.[206] These setbacks are implemented similar to front, side, and rear yard setbacks and keep development activities a certain distance from riparian corridors and wetlands.[207]

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[202] *See generally* Clean Water Act, 33 U.S.C. §§ 1341-44 (2006); *see also* River & Harbor Act, 33 U.S.C. § 403 (2006).

[203] *See* 33 U.S.C. § 1341 for the permit required by Ohio EPA (This permit is called Section 401 permit or certification); *see also* § 1344 for the permit required by the U.S. Army Corps of Engineers (This permit is called Section 404 permit).

[204] Ohio Rev. Code Ann. § 1506.06 (2006).

[205] § 1521.23.

[206] For an overview of current setback regulations across Ohio and the nation, *see*: Chagrin River Watershed Partners, Inc.'s *Summary of Riparian and Wetland Setback Regulations in Ohio and Nationwide*. http://www.crwp.org/pdf_files/riparian_regulation_summary_november_2006.pdf (accessed April 19, 2007)

[207] The term "buffer" has historically been used to describe agricultural areas not used for row crops and does not have a direct link to local zoning terminology and approach. The term "buffer" tends to imply an all out prohibition

The need for these setbacks arises from a combination of natural processes that accelerate in developing watersheds and wetlands.[208] Stream channels naturally change size, shape, and location over time, but these erosive processes speed up in developing urban watersheds. In urbanizing areas, the volume and velocity of storm water runoff increases because impervious surfaces, such as parking lots and rooftops, prevent water from absorbing into the ground. Riparian setbacks are a tool to protect and preserve natural riparian areas to allow storm water to slow down, collect, and filter into the ground. Wetland setbacks reduce degradation associated with development and allow the wetland to provide irreplaceable services to its surrounding community, such as flood control, erosion control, ground water protection, surface water protection, and protection of essential habitat for aquatic and terrestrial organisms.

Moreover, riparian and wetland setbacks are a means of complying with Ohio EPA's NPDES Phase II. Phase II requires operators of small municipal separate storm sewer systems (MS4s) to develop a storm water management program that employs six control measures. The fifth measure addresses permanent post-construction site runoff controls for new development and redevelopment projects that disturb one acre or more. This control measure requires the implementation of structural and non-structural Best Management Practices (BMPs) within the permit period.[209] Potential structural BMP controls include: wet ponds and extended-detention outlet structures, grassed swales, bioretention cells, infiltration basins and infiltration trenches. Since natural riparian and wetland areas filter pollutants from runoff; riparian and wetland setbacks are an appropriate non-structural BMP under Phase II requirements; the wider the vegetated setbacks, the greater the storage and filtration benefits.

Implementation of riparian and wetland setbacks can have a direct return in cost savings to communities and landowners for flood, erosion, and storm water management. Since natural vegetation and landforms slow, store, and filter storm and floodwaters, maintenance of these features as land is developed provides a low cost alternative to expensive remediation structures. Increasing the distance between development and water sources reduces both the amount of property damage as well as subsequent costs of remediation after a problem has developed.

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on a range of uses and does not imply flexibility for non-conforming uses to insure that land remains buildable and economically viable. By contrast, the term "setback" has strong historical ties to local zoning regulations and is a more precise and identifiable term to explain the purpose of riparian and wetland setbacks: to allow structures and land uses to exist on a piece of property, but to require that such structures and uses be kept back a certain distance from their neighboring wetland or watercourse. Schueler, Thomas R. 1995. The peculiarities of perviousness. *Watershed Protection Techniques* 2, 1: 233-238.

[208] Although state and federal wetland regulations restrict development on wetlands, wetland setbacks provide and enhanced level of wetland protection not currently afforded by these regulations. Castelle, A.J., C. Conolly, M. Emers, et al. Shorelands and Coastal Zone Management Program. 1992. *Wetland Buffers: Use and Effectiveness.* Washington Department of Ecology: Olympia. Pub. No. 92-10.

[209] BMPs for Control Measure 5 are to be completed by MS4s within five years or within three years if the MS4 is located in a designated "Rapidly Developing Watershed." Ohio Admin. Code tit. 3745, §33 (2006).

The Influence of Phase I and II Stormwater Programs on Development

In Ohio, Ohio EPA is responsible for the implementation of Phase I and II stormwater programs. The programs are much needed but do they have any influence on patterns of development, whether residential, retail, or industrial?

In 2004, four years after the implementation of Phase II stormwater regulations, Avon Lake was still experiencing an average of 14 sewage overflows a year draining directly into Lake Erie while Elyria experienced an average of 28 sewage overflows a year draining directly into the Black River. On the east side of Cleveland, the City of Euclid was experiencing the same problem: an average of 18 sewer overflows a year. These overflows have required the city to spend an estimated $24 million.[210]

These sewage overflows emphasize the importance of environmental regulation but the expenditures cities incur as a result of continuing sewage overflows point to a deeper issue. Going back to the Euclid example, sewage overflows have forced the city to spend $24 million. This is $24 million in revenue the city must set aside to address a recurring problem. And one way to raise that kind of revenue is to encourage new development. New development, however, only exacerbates the problem of sewage overflow, keeping the city in a typical situation of un-sustainability.

In short, by requiring new development projects of more than one acre to acquire permits before construction starts, Phase I and II stormwater programs mitigate the issue of industrial and municipal discharges, from both a point source and nonpoint source pollution standpoint, but they remain insufficient to really promote sustainability. A report establishes that "the regulations focus far more on how development occurs than on where it is located."[211] The fact that a development project is required to build retention structures or, in the best case scenario, infiltration areas or drainage swales, does not prevent the development itself from happening on greenfields. Less impervious surfaces per square feet of development does not mean less imperviousness. To the contrary, added square feet of development increases total imperviousness even if it is at a lesser rate per square feet.

In cities like Avon Lake or Avon, which are experiencing residential, retail, and industrial growth, the Phase II permit requirements mitigate the impact of new development but does not prevent the future development of undeveloped land. In fact, a report for the French Creek sub-watershed, which is part of the larger Black River watershed, establishes that the "French Creek is experiencing development pressure which is expected to continue in coming years."[212] The example of Avon Commons and proposed retail development on the I-90 corridor only confirms that development pressures in Avon are substantial. At the county level, with a retail growth of

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[210] This figure goes back to 2004. *See* The Great Lakes. "A National Treasure." 2004. http://www.blackriverwatershed.org/upphoto/OH_Fact_Sheet_FINAL.pdf (accessed April 21, 2007).

[211] James M. McElfish, Jr. & Susan Casey-Lefkowitz. "Smart Growth and the Clean Water Act, Northeast-Midwest Institute." 2001. http://www.nemw.org/SGCleanWater.pdf (accessed April 21, 2007): 20.

[212] *See* Lorain County Community Development Department. "Black River Watershed Nonpoint Source Pollution Control Program: French Creek Sub-Watershed." Dec. 2006. http://www.blackriverwatershed.org/upphoto/FC_Final.pdf (accessed April 22, 2007).

over 2.8 million square feet between 2000 and 2007, the daily sewage production has increased by more than 250,000 gallons.[213]

The Influence of Section 401 and 404 Permit Requirements on Development

Most of Section 401 and 404 applicants benefit from so-called general permits. General permits are not issued on a project basis but by categories of activities, wetland fills for minor road repairs or line backfills for instance. General permits are only issued for activities with "minimal" environmental impacts on wetlands. Few permit applications require an individual permit. Individual permits are issued on a project basis for project with serious environmental impacts on wetlands.

The difference between these two types of permit is significant. The law requires that wetland loss be mitigated but not all successful permit applicants are required to perform wetland mitigation if the permit is a general permit. In addition, when wetland mitigation is required, the restoration work is not always successful.[214] In other words, a new or restored wetland may never function the way a preserved wetland would. In fact, a report by Ohio EPA suggests that the replacement ratio in Ohio was 1 acre of functional new or restored wetland for 1.08 acre of lost wetland in 2002 and 2003.[215] A review by the National Research Institute shows that each year, between 1993 and 2000, 42,000 acres of wetland were created in the United States for a loss of 24,000 acres, yielding a net gain. The net gain, however, does not necessarily translate in functional gain. If, as is the case in Ohio, there is a yearly loss of 8% of functional wetland, the estimated loss of wetland services is somewhere around 40,000 acres, with 500,000 acres of wetland remaining in the state.[216] Back in 2002, a study for the State of Minnesota determined that the cost to replace the flood control function of 5,000 acres of drained wetland was found to be $1.5 million annually in flood water storage cost.[217] Based on the study, this is a total of nearly $12 million a year in flood water storage cost at a rate of 40,000 acres per year.

Policy Recommendations

APA Policy

The American Planning Association (APA) has taken a close look at the integral role water plays in our environment. As a nonprofit public interest and research organization for planners across the nation the APA's objective is to encourage planning that will meet the needs of people and society more effectively. In 2002 the APA drafted policy guides on both Wetlands

[213] Urban Land Institute. *Development Impact Assessment Handbook* (Washington, DC 1994): 263.
[214] Ohio EPA. "An Inventory of Ohio Wetland Compensatory Mitigation." Nov. 2003. http://www.epa.state.oh.us/dsw/wetlands/WetlandMitigationInventory_Nov2003.pdf (accessed April 22, 2007).
[215] Ibid.at 2.
[216] Great Lakes Directory. "C.P.R. for Wetlands: Conserve, Protect, and Restore." Jan. 2004. http://www.greatlakesdirectory.org/GLAHNF_wetlands_packet/wetlands_fact_sheets/OH_fact_sheet.htm (accessed April 11, 2007) (Despite their economic value and their importance to the health and integrity of watersheds, wetlands have been repeatedly dredged or filled over the years to make room for development. In Ohio, less than 500,000 acres of wetlands remain for an estimated 5 million acres at the end of the eighteenth century: This is a net loss of 90% in a little over two centuries.).
[217] Center for Watershed Protection. "Direct and Indirect Impacts of Urbanization on Wetlands" Dec. 2006. http://www.cwp.org/wetlands/articles.htm (accessed March 20, 2007): 12.

and Water Resources Management detailing their positions on how cities and communities should consider water as it relates to land use.

APA's Water Resources Management Policy Guide

Generally, the APA has written, "water should be treated as a collective public resource and managed in a sustainable manner."[218] They put forth eight policies to support their view on water management which can be found on the APA website www.planning.org. Their goal is to articulate a "Golden Rule" of water management that addresses both short and long term human needs. Their general policy guidelines are as follows:

Water should be treated as a collective public resource and managed in a sustainable manner.

- *Water should not be consumed to such an extent as to:*
  - *Interfere with its reasonable use by others;*
  - *Impair the ability of a water resource to be naturally replenished;*
  - *Impair its ecological, recreational or navigational functions.*
- *Water should not be discharged in such a manner as to:*
  - *Interfere with its reasonable use by others;*
  - *Create hazardous conditions (e.g. erosion, sedimentation, flooding and subsidence);*
  - *Impair its ecological, recreational or navigational functions.*
  - *Pollution and other manmade threats should be minimized.*

By requiring that water resources be used "sustainably," APA recognizes that there is a duty to manage water resources in such a way as to not impair their present and future utility and value.

First the APA supports legislation and funding to "establish a state comprehensive water resource and supply planning, based upon watersheds and other natural hydrological boundaries. What this does is help assess and project future growth and legislates the long-term sustainability of the water resources an area has. This policy also articulates the need for consumers of water to pay for the water they will use as well as project the costs and needs of communities before making new infrastructure investments.

Their third policy supports legislation requiring health regulations for source water protection to "…protect the existing water quality and capacity of aquifers and surface water resources." Policy four provides for conservation of these resources because today, as well as in the future, communities will want to provide protection for drinking water supplies and resources.

Lastly, policy eight calls for the promotion of "aquatic biodiversity and habitat recovery… regulatory development that emulates natural hydrologic and ecologic regimes in an increasingly robust fashion, including the restoration of degraded stream reaches and their riparian areas, including associated wetlands."

[218] American Planning Association. "Policy Guide on Water Resources Management." Adopted by Chapter Delegate Assembly, April 14, 2002. Chicago, IL. http://www.planning.org/policyguides/waterresources.htm (accessed April 12, 2007).

This is just a sampling of what the APA's Water Resources Management Policy guide touches on. As an advocate for planning the APA has seen the need for these guidelines to help inform communities of how to protect resources in ones own community.

APA's Wetlands Policy Guide

"Wetlands in their natural state perform ecological functions, which are vitally important to the environment and economic health of the nation and impossible or costly to replace… They are also sources of food, shelter, essential breeding, spawning, nesting and wintering habitats for fish and wildlife… Wetlands need to be recognized as part of a complex, interrelated hydrologic system."[219] The reasons the APA suggests to support the general policy of creating no overall net loss of the nations remaining wetland's resource base is 1) To add APA support to achieving a clearly defined goal for wetland preservation; 2) To indicate APA recognition of the importance of wetlands; and 3) To promote the inclusion of wetlands in the overall planning, which must recognize the hierarchy of protection techniques: avoidance and minimization of wetland impacts are considered before mitigation; 4) Large, public sector capital projects often result in significant adverse impacts to wetlands. A no net loss policy and adherence to avoid, minimize, compensate approach when planning such projects will lead to greater protection of the Nation's wetlands.

The Northeast Ohio Region's Economy: A Major Challenge to Sustainability

Our region is a no-growth area. In fact, the overall population decreased by 1% (**Table 4.2**). While most counties have experienced moderate growth, the most urbanized of them all, Cuyahoga County, has seen its population decline by 6% (**Table 4.2**).

Table 4.2. Region's Population Growth Between 2000 and 2006

County	**Population**		**Population Change** (2000-06)
	2000	2006*	
Cuyahoga	1,393,978	1,314,241	-6.1%
Geauga	90,895	95,676	5%
Lake	227,511	232,892	2.3%
Lorain	284,664	301,993	5.7%
Medina	151,095	169,353	10.8%
Portage	152,061	155,012	1.9%
Summit	542,899	545,931	0.6%
Total	2,843,103	2,815,098	**-1%**

Source: U.S. Bureau of Census, American FactFinder, Population Estimate Program

* Population estimates

[219] American Planning Association. "Policy Guide on Wetlands." Adopted by Chapter Delegate Assembly, April 14, 2002. Chicago, IL. http://www.planning.org/policyguides/wetlands.htm (accessed April 12, 2007).

As a result of population stagnation, cities have been fighting for more retail, more industrial and office space: "Many cities, especially those that depend heavily on sales tax revenue, are caught up in this development contest, going to great length to lure massive new retail power centers that will pull shoppers from neighboring towns."[220] In this fight over new retail, the overall tendency is for retail to follow sprawl. In other words, retail tends to sprawl outward.[221] In her book, Stacy Mitchell writes that in 2003, "greater Cleveland added 2.7 million square feet of new stores and shopping centers," and concludes that there is no end in sight.[222] A few pages later, she writes that "Americans are retail gluttons."[223] The truth is that cities themselves are retail gluttons.

For example, Medina County, the fastest growing county in the region, added almost 1.4 million square feet of retail space between 2000 and 2007 from 2.8 to 4.2 million square feet.[224] This is a 33.3% growth. At the same time, population grew by 10.8%. In other words, retail space is growing three times as fast as population. There is a disproportion between retail growth and population growth. Another case in point, Lorain County added nearly 2.8 million square feet of retail space between 2000 and 2007. Adjusting for almost 350,000 square feet of added retail already vacant, the county shows an increase from 9.2 to 11.7 million square feet of retail space. This is a 21.4% retail growth. During the same time period, population in the county grew by 5.7%. Here again, retail space is growing more than three times as fast as population. These findings lead to two general observations: (1) The increase in retail space represents an increase in imperviousness, and even good management practices will not completely alleviate the increase in effective imperviousness; and (2) retail growth points to cities' willingness, in allowing for more retail, to embrace the trend big-box retailers have set over time, building bigger stores and building them further away from existing, aging development.

This development contest would have us think that the stakes are too high for cities in the region to really worry about the impact of new retail development on other communities and on the environment as a whole unless it becomes clear that the advantage of restoring watersheds overwhelms the pressure to build more retail. Because each community fights against all others for its own survival, the best argument against unleashing more development, particularly retail development, is to show that it is economically viable, (1) to build less of everything or to build in such a way as to remediate imperviousness; and (2) to start watershed planning at the city level and integrate watershed planning into city planning.

The challenge is great but the time may be ripe for watershed planning to make its way into local government: Could the oversupply of existing retail create an unprecedented opportunity for cities to engage in watershed planning? Could a community concern for its own survival ignite a new level of environmental planning? If the answer is yes, the remaining challenge is to educate city governments in the region and increase awareness to the economic advantages of watershed planning. Increasing awareness to the importance of watershed

[220] Mitchell, *supra* note 12: xv.
[221] Ibid.
[222] Ibid. at 104.
[223] Ibid. at 107.
[224] This figure only includes retail space over 5,000 square feet.

planning at the city level is the best means to promote sustainable development in the future and stronger partnerships between the cities and the existing watershed groups throughout the region. Many residents, watershed groups, regional and state agencies have already emphasized the need for watershed planning but what is still needed is a high level of coastal and watershed planning at the local level.[225]

The fact that there are laws and regulations requiring the state to reduce nonpoint source pollution and restore wetlands and watersheds is unfortunately not enough for watershed planning to become an integrated part of city planning. Once more, unless the region commits to increasing awareness to the economic advantages of watershed planning, watershed planning will remain on the periphery of city planning, an undertaking mandated by the law but not an undertaking fully integrated in a larger system of sustainable city planning, and certainly not a moral imperative.

Flooding in the Region: The Cost of Staying Above Water

The fact that wetlands act as flood storage points to their economic value. A recent report by the Center for Watershed Protection emphasizes that replacing the natural services of wetlands can be very expensive.[226] In 1992 dollars, the economic value of one acre of wetlands was estimated at $370,000. This is $540,200 per acre of wetland in 2007 dollars. As wetland capacity diminishes, the opportunity costs involved in retail development increase as well. Case in point, increased flood frequency and peak discharges result in increased property damage, increased flood insurance premiums, and increased public safety concerns.[227] And increased flood frequency calls for increased stormwater storage capacity. Wetland loss irremediably results in increased cost for taxpayers and households. Most of all, wetland loss engages cities in a very costly race against disasters, particularly when cities realize that the storm systems are poorly maintained or too old.[228] In short, the cost of retail development, especially on undeveloped land, involves tremendous opportunity costs. Replacing the natural services provided by a wetland or a forest is no easy task, and any engineered solution will age. This issue, in fact, is a critical financial issue for Northeast Ohio Regional Sewer District.[229]

The first step toward sustainability, as Part II emphasized, is to realize the tremendous environmental opportunity costs involved in retail development, both at the construction and post-construction levels. In order to measure these opportunity costs, further research would measure the value of forest land services in a watershed or the value of wetland services, and even farmland services. The next stage would be to compare the value of these watershed services to the cost associated with flood storage, not to mention the cost of damaged property or increased insurance premiums to the people and taxpayers.

Last year, several cities in the region experienced flood damages, including Brecksville, Strongsville, Broadview Heights, and North Royalton:

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[225] Wendy A. Kellogg et al. "The Current Coastal Resource Management Training Market in Ohio's Lake Erie Basin." *Coastal Management* 32 (2004): 273.
[226] Direct and Indirect Impacts of Urbanization on Wetlands, *supra* note 48: 3.
[227] Ibid.at 4.
[228] John C. Kuehner, Maggi Martin, and Michael Scott. "Flooded Cities Seek Solutions, Financing," *Plain Dealer* (Jan. 1, 2007): A1.
[229] NORSD. Linda Mack. In Class Presentation. March 20, 2007.

> Mayors Jerry Hruby of Brecksville, Cathy Luks of North Royalton and Glenn Goodwin of Broadview Heights agreed to appoint as many as 30 people to a panel to write a management plan for Chippewa Creek. With about $45,000 in state aid, the group will study rainfall patterns, historic flooding and residential and commercial development in the communities (…) Chippewa Creek flows about eight miles from North Royalton through Brecksville, Broadview Heights and part of Seven Hills to the Cuyahoga River. It drains 16 miles and drops about 600 feet, creating potentially fast water. Last month, at least 4,000 homes and businesses were damaged after a sudden rainstorm hit Greater Cleveland flooding Cuyahoga River and several tributaries, including Chippewa.[230]

The cost of repairing damaged property may only be the beginning of additional costs to the people of Brecksville, Strongsville, Broadview Heights, or North Royalton. The cost to taxpayers is indeed likely to rise.[231] In fact, North Royalton just raised its income tax to allow the city to put $5 million toward stormwater management projects.[232] The budget for storm and sewer management increases each year. To support the increase and pay for three workers Strongsville added to its sewer crew, the city "cut its Recreation Department budget."[233] In the meantime, Strongsville continues to add retail space: The city added more than 800,000 square feet of retail between 2000 and 2007, with 700,000 additional square feet in store.[234]

While part of the explanation lays in the fact that recent storms were heavy, the increase in impervious surfaces caused by retail growth is certainly a factor that puts properties located in floodplains at a higher and more frequent risk of flooding. Storms are a fact of nature but the recent storms, however heavy, were "far less intense that the storms of 1969 and 1975."[235] Blaming flooding on climate changes is one thing but realizing that under-managed regional sprawl and under-managed retail sprawl have consequences for watersheds is critical.[236] Last year's damages to homes in the Cuyahoga River watershed and the Grand River watershed are not solely caused by unusual flashy storms. While the heavy rain is a necessary event, these storms are flashy precisely because the peak water runoff is much higher on impervious surfaces than it is on pervious surfaces.

Because streams do not respect community boundaries, "intercommunity planning and cooperation is necessary in order to have effective stream stewardship," and work effectively toward sustainability.[237] And intercommunity planning can only become reality if municipalities

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[230] V. David Sartin. "Panel to Develop Management Plan for Flood-Prone Chippewa Creek." *Plain Dealer* (July 20, 2006): B2.
[231] Kuehner, Martin, and Scott, *supra* note 57.
[232] Joe Guillen. "Suburbs in Flood Regions Plan to Stay Above Water." *Plain Dealer* (Mar. 18, 2007): B6.
[233] Ibid.
[234] Survey conducted in Feb. 2007 for stores over 5,000 square feet.
[235] James White. "Predictable Disasters: Smart Planning Could Lessen and Prevent Flood Loss." *Plain Dealer* (Aug. 9, 2006): B9.
[236] Ibid.
[237] Ibid.

fully integrate watershed planning into city planning, as they do economic or community development.

Stormwater Management Best Practices

The following case studies were chosen from across the country. In most cases the policy guidelines have come down from the state level, providing both technical assistance and resources for communities to successfully implement stormwater management systems. The type of development examples given in each policy guide runs the gamut. From residential to retail, public university use to private landowners, there are many successful stories of remediation and increased awareness of watershed protection planning. Many of the tools used in each state are similar proving that there are many good ways to combat stormwater runoff caused by new and existing developments. For anyone interested in learning how to increase his or her local watershed's sustainability the dissemination of information is infinite.

Pennsylvania Stormwater Best Management Practices

The state of Pennsylvania has developed a "Best Management Practices" (BMP) manual the *Pennsylvania Stormwater Best Management Practices Manual* specifically to guide cities and townships in Pennsylvania in improving stormwater management. Pennsylvania has about 350 designated watersheds that are not "providing the water quantity and water quality performance that is essential for the protection of Pennsylvania's water resources."[238] Through their BMP Manual the state supports 1) the implementation of federal and state water quality programs and ordinances; 2) encourages onsite stormwater management practices; 3) provides for a mix of structural and nonstructural techniques; 4) stormwater reuse; 5) minimizing rates and volumes of surface water runoff; and 6) to limit the amount of surface pollutants that enter Pennsylvania's streams.

What is important about this guides is that it does not simply outline the laws and ordinances of their state, this is a comprehensive manual giving cities, developers, private citizens, engineers and consultants the "know how" to accomplish the goals that have been set forth. As stated in the guidebook's introduction a new comprehensive approach must be mounted because "new stormwater solutions must not only be technically understood, but these new solutions must also be considered necessary."[239] This guide is the handbook for any new or infill development that takes place in the State of Pennsylvania.

The manual breaks down practices for structural and road improvements in both urban and rural settings as well as other land use. Additionally the manual has a section on successful innovative case studies that they hope to build upon. "Many of the innovative project which have been undertaken have occurred in projects in southeastern and south central Pennsylvania, to some extent reflecting the greater amount of land development activity occurring in these parts of Pennsylvania." [240] The case study survey includes examples of stream bank restorations,

[238] Pennsylvania. Department of Environmental Protection Bureau of Watershed Management. "Pennsylvania Stormwater Best Management Practices Manual." January 2005. http://www.dep.state.pa.us/dep/subject/advcoun/Stormwater/stormwatercomm.htm (accessed April 15, 2007).
[239] Ibid.
[240] Ibid.

campus additions, residential developments and retail developments. By identifying key case studies and providing the knowledge base this manual sets forth an excellent reference for all.

An overarching concern for stormwater BMPs is the effects of parking. Parking lots are important to almost every business whether it is retail or office. Porous pavement can be substituted wherever parking lots are proposed. Promoting the use of porous materials in the creation and re-developing of parking lots can make a huge difference in the amount of stormwater runoff. Pennsylvania's case studies are exemplary of how porous parking lots can effectively discourage the concentration of stormwater runoff whereby "allowing the incident rainfall to pass directly thorough the parking bays, slowly percolating into the soil and recharging the aquifer system…"[241] Many of the new improvements to parking lots in the case studies are touted as having had virtually zero impact on regional water resources.

Permeable: Having pores or openings that permit liquids or gasses to pass through.
Pervious: Accessible or permeable.
Porous: Possessing of full of pores, permeable to liquids.

Pervious paver block systems
Concrete paver blocks with small gaps between them that allow stormwater to pass through to the sub-base and infiltrate into the underlying soils

Pervious concrete mixes
Concrete mixes that exclude fine particles (usually sand size and smaller) which results in a concrete that contains many mall void spaces that allow stormwater to pass thought the actual pavement section and into the sub-base.

Pervious Asphalt mixes
Asphalt mixes that exclude a percentage of the fine particles resulting in an asphalt layer with many small void spaces that allow stormwater to pass though the actual pavement section and into the sub-base, where it then infiltrates into underlying soil.

Figure 4.5

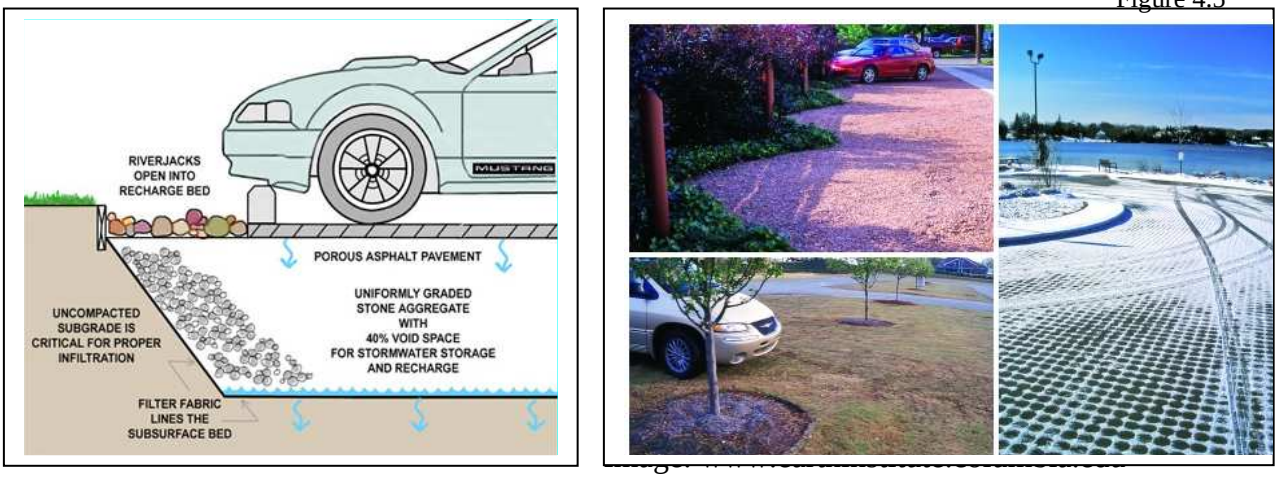

Image: Environmental Health Perspectives, www.ehponline.org

[241] Ibid.

Portland, Oregon

"Portland receives an average of 37 inches of precipitation annually. That creates about 10 billion gallons of stormwater runoff per year…"[242] One way to address this problem is to let nature take its course. Onsite surface stormwater management mimics natural conditions by allowing water to soak into the ground or through filtration systems. There are multiple benefits to onsite stormwater management, some of them are; improving urban wildlife habitat, improve neighborhood aesthetic, reducing heating and cooling costs, decreasing landscaping costs and water use, adds property value.

Arguably, Portland's first "green roof" was implemented in 1990 when a developer decided to replace a concrete court with a grassy sports court.[243] Since then vegetated roof systems, ecoroofs or roofgardens have become more commonplace in Portland, Oregon. The benefits of a green roof can range from a reduced heating and cooling bill to more advanced systems where rainwater is collected and used in place of city water.

In addition to green roofs, rain barrels and cisterns have been used in Portland to capture and store rainwater for reuse within a building. One example is the Armory in Portland, a performing arts center that is also a historic renovation that is attempting to attain LEED platinum status – the first of it's kind. They have plans to incorporate a rainwater collection system that will be anchored by a 30,000-gallon cistern. It is projected that this project will use 45% less power than a traditional building of its stature.[244] Even major retailers like Nike have incorporated roof greening techniques. If the motivation for greening retail is purely economic this is a win-win situation for the companies and the environment.

Watergardens are another means by which Portland is making a difference in impacted watersheds. "Watergarden" describes plantings that retain and filter water when there is a need but also exist as plantings on their own. Not only are watergardens functional but they are also aesthetically pleasing creating neighborhood amenities instead of eyesores. When used with pervious pavers and asphalts the reduction in toxins released into creeks and watersheds has been significantly reduced.[245]

The rooftop garden and watergarden landscaping are very applicable to retail complexes. These innovations are "a synergetic result of landscape, biology, architecture and engineering."[246] Not only do these innovative stormwater management techniques reduce pollutants they are ways to bring nature back into the community.

Salem, Massachusetts

In Massachusetts, the Metropolitan Area Planning Council has put together a Low Impact Development Toolkit.[247] This toolkit outlines the importance of stormwater bylaws as a way for

[242] Portland Bureau of Environmental Services. "Stormwater Management" Created February 26, 2000. http://www.portlandonline.com/BES/index.cfm?c=31892 (accessed April 12, 2007).
[243] Culverwell, Wendy. "Developers Cultivate a Taste for Green." *Portland Business Journal*. March 17, 2006.
[244] Ibid.
[245] France, Robert L. *Handbook of Water Sensitive Planning and Design*. Boca Raton: Lewis Publishers, 2002.
[246] Ibid.
[247] Metropolitan Area Planning Council. "Massachusetts Low Impact Development Toolkit." http://www.mapc.org/LID.html (accessed April 13, 2007).

communities to promote Low Impact Development. A stormwater bylaw works by establishing a Stormwater Authority whereby eliminating the patchwork of stormwater regulations that exist across municipal boundaries.

The city of Salem, Massachusetts has put together an Urban Stormwater Management Guidebook (USMG). Much like Pennsylvania BMP Manual, Salem's USMG clearly defines the roles and authority of their Planning Board and Engineering Department. In addition to this guidebook The State of Massachusetts has a technical guidebook that lays out design details for communities. Some of the innovative techniques that Salem has outlined include: vegetated swales, vegetated filter strips, constructed wetlands, bio-retention areas (rain gardens), cisterns & rain barrels, infiltration trenches and dry wells, infiltration drainfields, pervious paving surfaces, roof gardens, retention basins, detention basins, Underground Detention, and catch basins and drain pipes.[248]

Center for Watershed Protection, Maryland

There are numerous examples of local and national nonprofits that can help find the right solution to integrating water and retail development. The Center for Watershed Protection is one of those resources. A nonprofit organization that provides technical tools and written resources helping to protect our nation's rivers, lakes and streams they have multiple resources to draw upon. Located in Ellicott City, Maryland they have published guidebooks on how to design watershed friendly developments and how to teach watershed protection whether it be for the individual, community or the classroom.

One of the key decisions an organization will need to determine is what the primary stormwater objectives for a subwatershed are. These goals will govern the selection, design and location of stormwater management practices at individual sites. According to the Center for Watershed Protection the general goals for stormwater management practices usually include the following:

- Maintain groundwater recharge and quality
- Reduce stormwater pollutant loads
- Protect stream channels
- Prevent increased overbank flooding
- Safely convey extreme floods

The Center for Watershed Protection has also put together a list of key questions that need to be asked when figuring out the right mix of management techniques:[249]

- What is the most effective mix of structural v. non-structural stormwater management practices that can meet my subwatershed goals?
- Which hydrologic variables do we want to manage in the subwatershed (recharge, channel protection, flood reduction, etc.)?
- What are the primary stormwater pollutants of concern (phosphorus, bacteria, sediment, metals, hydrocarbons, or trash and debris)?

[248] The Massachusetts Department of Environmental Protection. "Stormwater Policies & Guidance." Created March 1997. http://www.mass.gov/dep/water/laws/policies.htm (accessed April 13, 2007).
[249] Center for Watershed Protection. *An Introduction to Better Site Design* ; Article 45 from *Watershed Protection Techniques* (PDF) Center for Watershed Protection; 2000.

- Which stormwater management practices should be used or avoided in the subwatershed because of their environmental impacts?
- What is the most economical way to provide stormwater management?
- Which stormwater management practices are the least burdensome to maintain within local budgets?

For more information contact:
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www.cwp.org
8390 Main Street, Second Floor (get directions)
Ellicott City, MD 21043-4605
Phone: (410) 461-8323

Case Studies in Northeast Ohio
Old Retail Development Case Study: *West Creek watershed, Parma, Ohio*
Parma, Ohio and its watershed

The West Creek watershed is located in the south central section of Cuyahoga County. West Creek itself goes through Parma, Seven Hills, Brooklyn Heights, Independence, part of Cleveland and Broadview Heights, Ohio, the creek is about nine miles long. It is a tributary to both the Cuyahoga River and Lake Erie. The West Creek watershed encompasses about 14 square miles of land.[250] As we will see in this case study, watersheds with older retail development tend to have better advocates for the mitigation of any potentially new damaging effects of retail and other development. This is partly due in fact that these communities have already seen the effects of urbanization on their watersheds.

Parma's retail development took off from the 1950s through the 1970s. At this time it was considered innovative to have an indoor mall where there was lots of convenience parking right outside. Today indoor malls with parking surrounding them are the norm. Being an older community, many of the environmental impacts that were outlined in the original Northeast Ohio Regional Retail Analysis (NORRA) existed in Parma. Problems like airborne pollutants and stormwater runoff were already negatively impacting the West Creek watershed. Problems that can be partially blamed on the South-central region of Cuyahoga County's[251] having a surplus in excess of a million square feet of retail convenience and shopping development. This development has created a variety of water quality issues. The three main problems identified in the West Creek Watershed Action Plan are nutrient enrichment, aquatic habitat modification, and stream channel/riparian degradation.[252]

The retail strip center located at the northwest corner of the intersection at Broadview Road and Snow Road is what the watershed group has identified as our "Old" retail development. There are a variety of business located at this center including an Office Max, a grocery store, Dollar Store, the Fashion Bug, and others. When this strip center was developed, little or no effort was made to preserve the West Creek running behind the development. Much

[250] West Creek Preservation Committee. "West Creek Watershed Action Plan." (2005): 1-254.
[251] The South-central Region of Cuyahoga County, as defined in the Northeast Ohio Regional Retail Analysis, includes Brooklyn, North Royalton, Parma and Parma Heights.
[252] West Creek Preservation Committee. "West Creek Watershed Action Plan." (2005): 1-254.

of West Creek was culverted to make the land easier to develop. Leading to the disintegration of the watershed, "non-point source pollution through failed septic systems, stream and riparian modification, and suburban run-off constitute the primary degradation issues."[253] Today development continues. Parma has seen a fair increase in retail shopping over 5,000 square feet. Approximately 40,000 new square feet of retail resides in Parma as determined by our class' examination. However, the city of Parma hopes to move away from retail development to light industrial in the future. The current zoning within the watershed is primarily single-family residential, comprising of 69% of the total land area.[254]

Current watershed policy in the West Creek watershed

The West Creek Preservation Committee (WCPC) has led the effort to preserve and redevelop the West Creek watershed. The West Creek Watershed Action Plan presents a clear vision for the watershed complete with goals and timelines. It should be looked to not simply as a retroactive guide for what to do after retail development has occurred but as a tool to learn from past mistakes that urbanization brings with it. West Creek has great potential for recovery if the appropriate strategies are implemented.[255]

[253] Ibid.
[254] Ibid.
[255] Ibid.

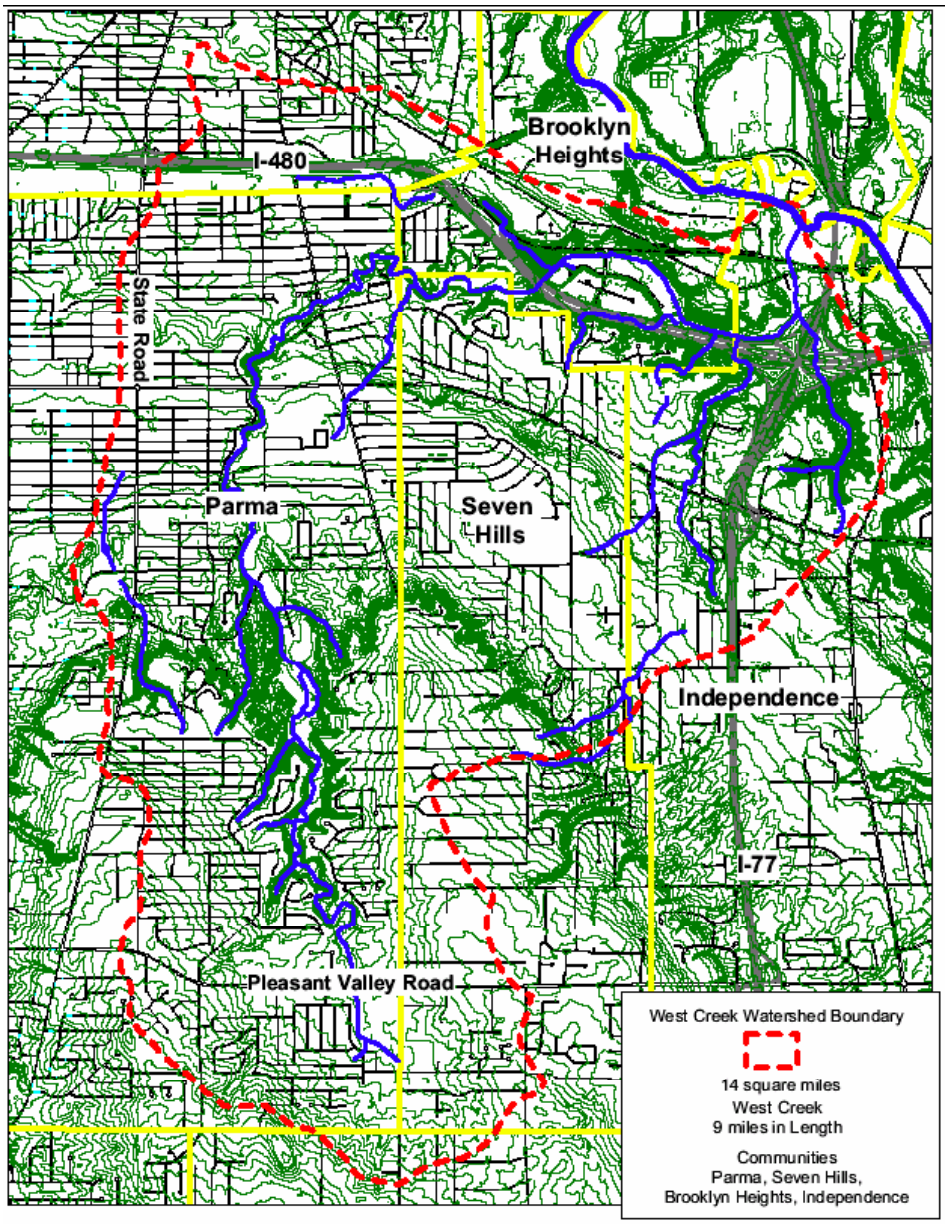

Brooklyn Heights
I-480
State Road
Parma
Seven Hills
Independence
I-77
Pleasant Valley Road
West Creek Watershed Boundary
14 square miles
West Creek
9 miles in Length
Communities
Parma, Seven Hills,
Brooklyn Heights, Independence

Figure 4.6

In our regions older suburbs economic redevelopment is always a top issue for these communities. Local governments seek to increase their tax base to continue to be economically viable and desirable places to live. In planning for the future, older cities attempt to re-create themselves as economic hubs that will attract businesses, consumers, and residents. The West Creek Watershed Action Plan projects that the number of employees who work in the region to grow and therefore WCPC is hoping to provide more points of access to the West Creek Valley and the Cuyahoga Valley National Park system. "The West Creek watershed is included in this trend… As attention begins to focus on West Creek, and the proposed West Creek Main Trail becomes reality, new opportunities will become available to use these resources as focal points for green economic redevelopment, utilizing the natural environment to everyone's continuing benefit rather than exploiting it for shortsighted gain."[256]

The West Creek's Watershed Action Plan identifies two main areas of study that are primarily retail that could benefit from more sustainable watershed planning. In their first focus area urban impact is most apparent near Broadview Road and Snow Road intersection where development is situated adjacent to the stream. There is a large concrete retaining wall on the south side of the stream just east of Broadview Road. The wall is intended to prevent erosion and stabilize the parking lot above; however, the wall also increases the velocity of the water, and the parking area is beginning to subside[257]. We will be taking a closer look at *Focus Area 1* as an organized example of how to go about beginning to redevelop and reintegrate the development the "right" way.

> *Focus Area 1 is in the vicinity of the Broadview Road and Snow Road Intersection. This area is a mixed-use environment consisting of the Midtown Shopping Center, office space, apartments, single-family homes, library, and the historic Henninger House. The existing uses, however, do not connect with each other in a defined manner and do not take advantage of West Creek as a highlight of the area.*

After identifying an area of concern, the WCPC described what they would like to see changed and how this could realistically happen with a clear short-, mid- and long-term plan.

[256] Ibid.
[257] Ibid.

Figure 4.7

This first alternative identifies three main areas for the community to focus on. These are concise and attainable short-term goals.

Alternative A: Near Term

As a result of interest from the local community, a proposal has been presented to make physical improvements and establish an image, which begin to visually unify the area. The focal points of efforts would be to:

- *restore and showcase the already preserved Henninger House and begin to re-design the streetscape into a defined corridor*
- *create a local business association to address further complimentary development, public improvements, and business retention and attraction within the district…*
- *The development of design guidelines is recommended for the district, in order to create a consistent design approach for elements such as streetscaping, building facades, and signage.*

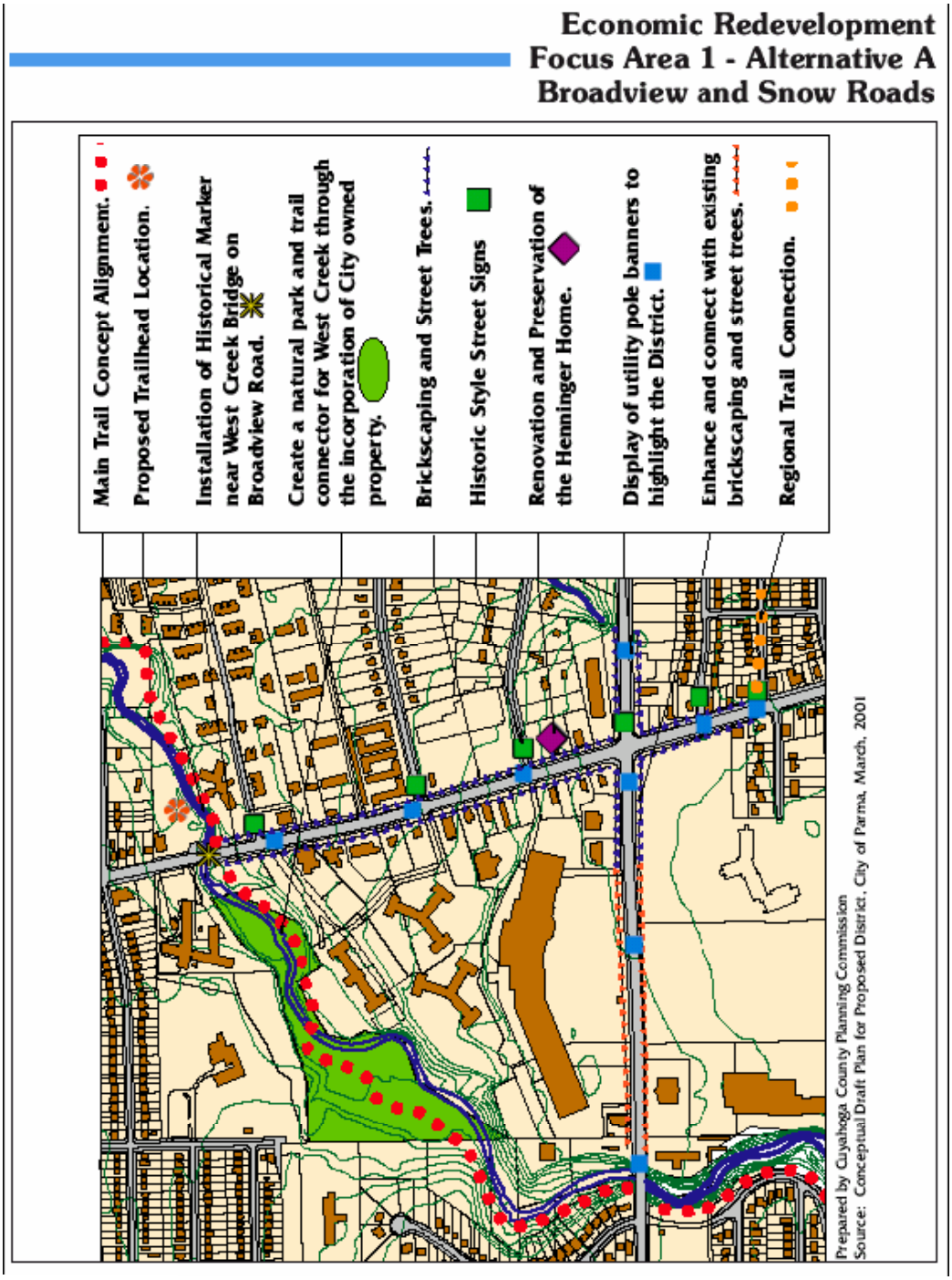


Figure 4.8

Secondly, the action plan looks at some mid-range goals, which include innovative pavers as well as other innovative stormwater management systems, which include filtering systems like swales and watergardens.

Alternative B: Intermediate Term

Improved definition of existing property spaces and expansion of connections among the variety of uses is the goal of this phase. This could be accomplished by incorporating various design elements into the existing space, such as the addition of landscaping and paving materials to define vehicular and pedestrian circulation, the utilization of parking

islands as filter strips, other drainage mechanisms, greenspace expansion, trail linkage to shopping and residential areas, and the introduction of entryway plazas to create gathering areas. It is recommended to have design guidelines in place in order to create a consistent and attractive area for shoppers, businesses, and residents.

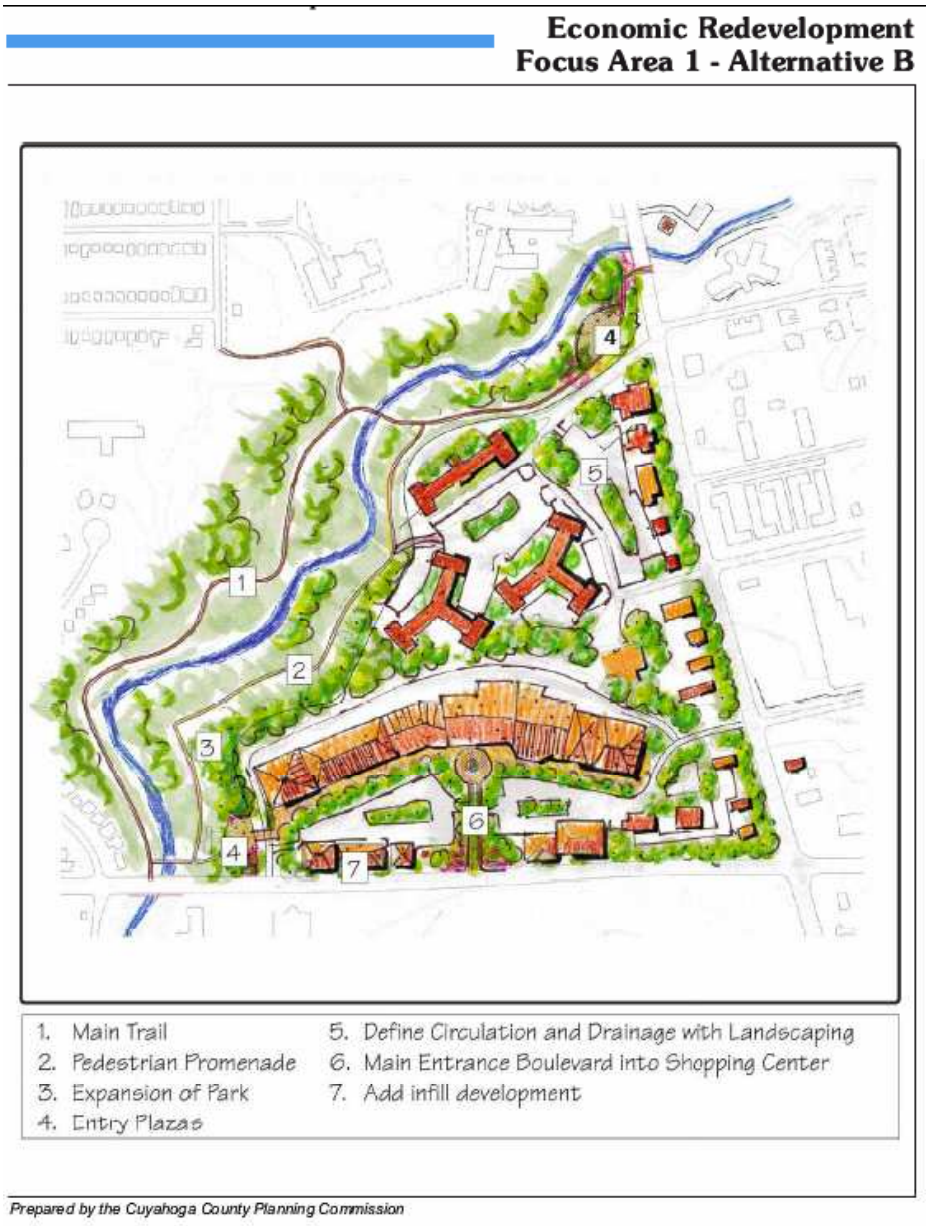


Figure 4.9

Lastly WCPC looks at the long-term and the possibility of what could happen if there is a new viable retail market at this intersection. It explains how they would like it to look and whom it would be for. A key feature of the long-term plan is that they haven't begun the planning preemptively, they are waiting until the market conditions are right for the community. If the long-term vision comes sooner than expected they have a written plan to guide to interested parties in new development.

Alternative C: Long Term

When it is economically feasible, the community should explore a new urban design for the area, focusing on West Creek as the unifying context for development and community life. The area would retain a diverse mix of uses, providing shopping, entertainment, recreation, housing, and public space for the community. Rather than a site that is visually dominated by parking spaces, the priority would be the relationships of buildings and the activity they generate to the natural setting of West Creek. Appropriate combinations of uses could be selected from elements that would include offices, retail (specialty and neighborhood services), restaurants, a hotel, townhomes, apartments, walking paths, a gathering place for community events, plazas and overlooks, and connection to the West Creek Trail.

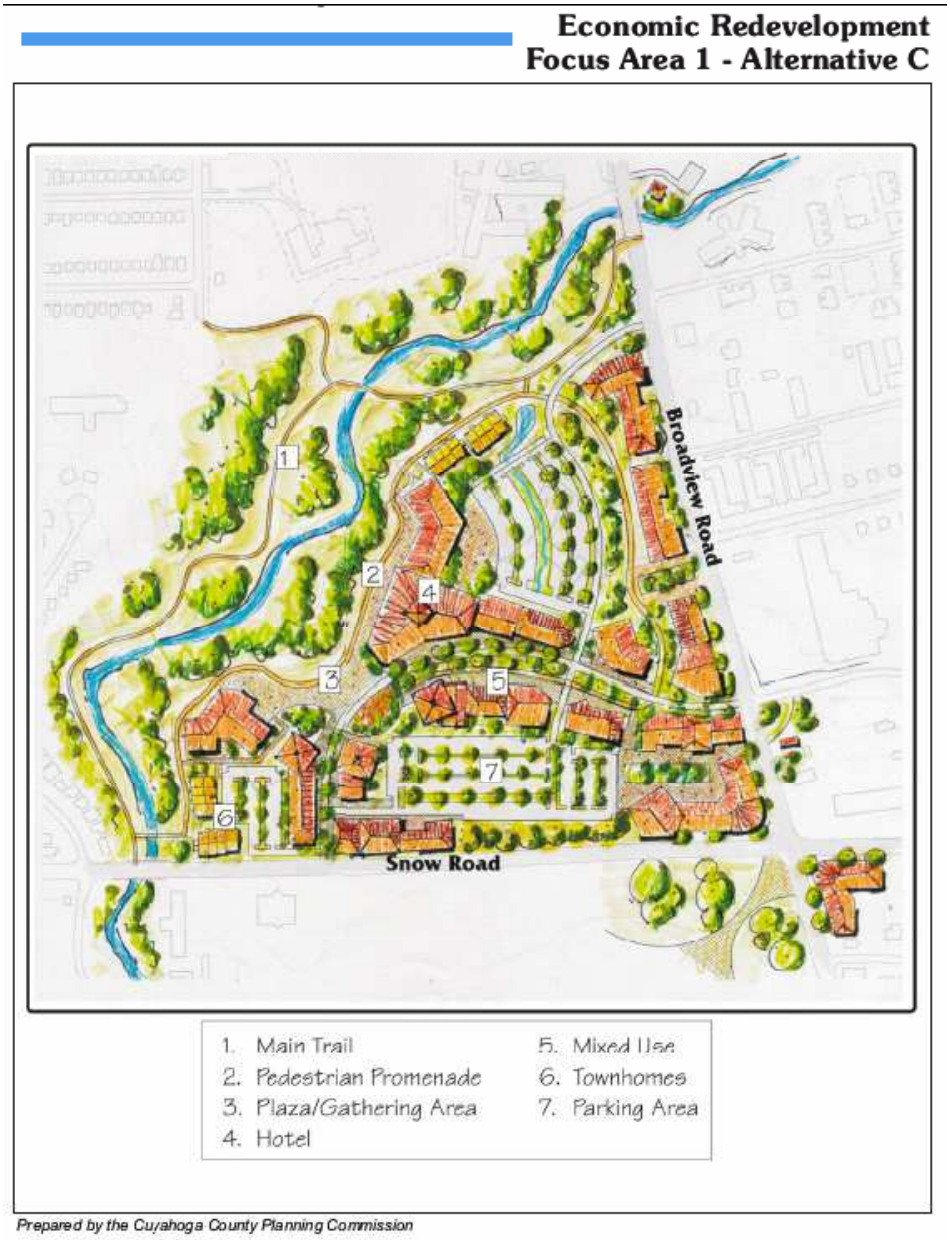


Figure 4.10

Lessons Learned from WCPC

The Center for Watershed Protection cites that a key determinant in any watershed planning is identifying the priority areas in order for a project to move forward. The West Creek Preservation Committee has done just that. Their action plan is comprehensive including all the current and potential partners they will need to accomplish their plan.

WCPC is very proactive in their preservation approach. Their vision of the future of West Creek is always at the forefront of their work. Many of the cities included in the watershed have riparian setback ordinances but there are still some that don't. In addition to riparian setbacks the City of Parma also has a wetland setback ordinance. The body of work that this community based organization is looking to accomplish is immense. Here is just a sampling of what they hope to accomplish:

> *The riparian protection goal is to have 90 percent of the riparian land along the West Creek main stem and 70 percent of riparian land along tributaries to West Creek protected under conservation easement by 2020.*
>
> *Enact riparian and wetland setback ordinances in each of the communities within the watershed are on going with a completion goal of 2009.*
>
> *By June 2006 all culverted and impaired areas of the West Creek headwaters and their tributaries should be field identified.*
>
> *The long-term goal is to have all segments of the West Creek main stem restored to as natural a state as feasible by the year 2018.*
>
> *The immediate and ongoing wetlands goal is to create or restore one wetland area within the watershed each year. One wetland restoration (the West Creek Preserve Washout Project) project has already been completed in 2005.*
>
> *The ultimate goal is for the enactment of a statewide riparian and wetland setback as a part of the Ohio Administrative Code. A statewide mandate would require the cooperation and diligent work of all watershed and grassroots groups throughout the State.*

The comprehensive action plan that WCPC has set forth is the most important step. The detailed explanation of the watershed presents answers to any future development proposals that may arise. Legally enforceable ordinances are the next step. Lastly, spreading the word about the importance of watersheds is a very important piece to preservation. West Creek is presently planning for a Stewardship Center in 2009-2010. This Center will be a learning center for "clean water and environmental stewardship" for both citizens and environmental professionals.[258]

Advocating an outright ban on new development in sensitive watershed areas will probably never be a solution to watershed protection but creating ordinances and guidelines as

[258] Hess, Neil, "Notes from West Creek." West Creek Preservation Committee Newsletter. Issue number 1: (2007): 1-8.

seen in Pennsylvania, Portland and Massachusetts can only help. Future regional retail developments can learn from WCPCs experience and not develop irresponsibly. Providing low impact development assistance and incentives to developers can mitigate future water problems. Most importantly quantifying a perceived problem will give communities an upper hand in future preservation and remediation.

Recent Retail Development Case Study: *Legacy Village in Lyndhurst, Ohio*

Recent retail developments in the Northeast Ohio region have worked to mitigate issues related to storm water management and watershed health as they were built, and these developments can serve as examples for other similar endeavors. Legacy Village in Lyndurst, Ohio was built in an area with older homes and existing large retail developments that already contributed to storm water management issues such as sewer backup during major storm events. Citizens living in the area feared that another large retail development would make the situation much worse[259]. In order to calm citizen fears and ensure that storm water management problems did not increase, the Legacy Village developer, First Interstate, collaborated with city engineers in the area to plan for storm water management improvements. First Interstate spearheaded and funded a project that increased the capacity of sanitary sewers in the area, and worked to secure local citizen approval for the project[260].

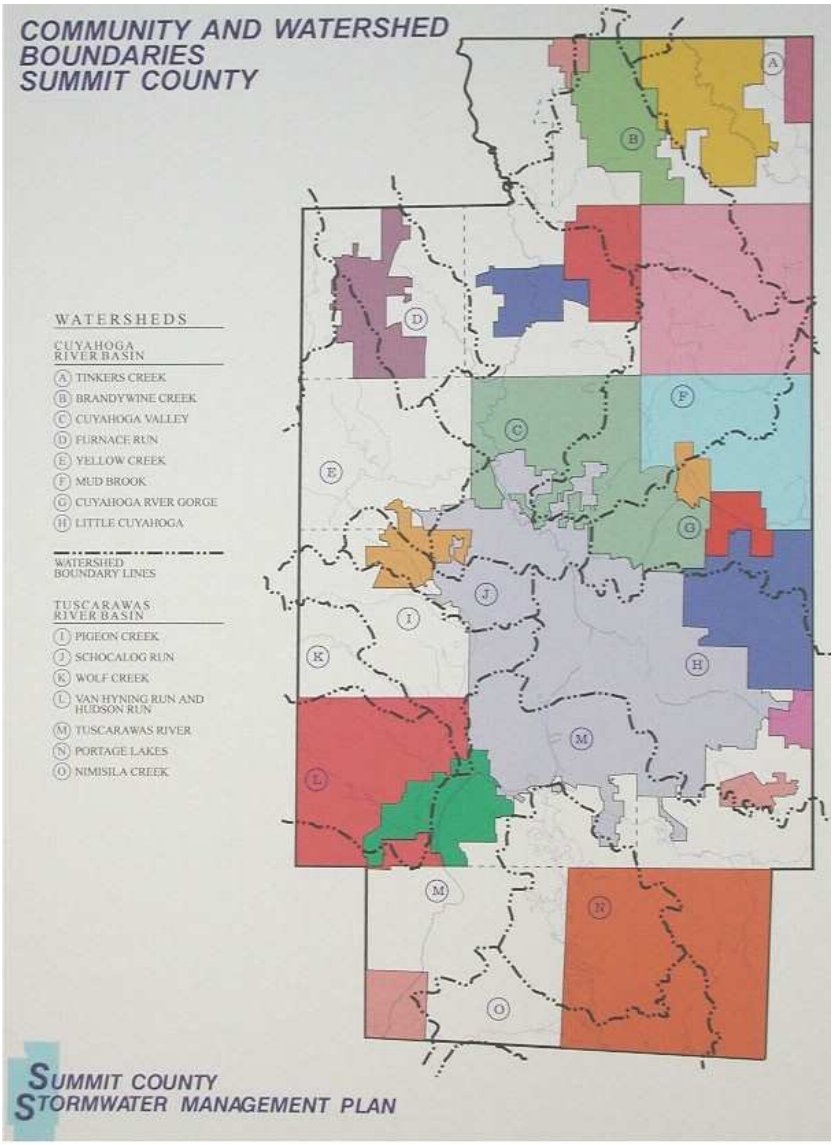
Legacy Village itself contains retention and detention basins for storm water that include separators for oil and debris that prevent some pollutants from entering the surface waters of the watershed. In addition, a conservation easement on site protects wetland areas near the development. Approximately 1 acre of wetland area was lost when Legacy Village was built, and government regulations mandate that these areas must be mitigated and new wetlands created or restored. In order to recreate wetlands lost during construction of the shopping center, nearby culverted streams were reconstructed to regain their natural sinuosity and cascading flow. Legacy Village is an example of developers collaborating with nearby municipalities to save a watershed from damage during the development of a large retail center.

Proposed Retail Development Case Study: Brandywine Creek Watershed, Boston Heights, Ohio
Boston Heights, Ohio and its watershed

Boston Heights is a village of approximately 400 households and 6.90 square miles, 28% of which is urbanized.[261] Boston Heights' population density is about one-fifth the density of its neighbor, the city of Hudson, due to the fact that Cuyahoga Valley National Park encompasses over one-third of Boston Village, nearly 2.5 square miles **(see Figure 4.11)**.[262] The village is attractive to developers because of its proximity to several major interstates and the Ohio Turnpike. The upgrade and expansion of State Route 8 will attract even more traffic from the region.

[259] Carlisle, Richard. 2007. Interview by Rosemary Giesser of Mr. Carlisle of First Interstate Development Corporation on 23 April 2007.
[260] See Carlisle.
[261] Based on Census 2000 figures. http://factfinder.census.gov (accessed April 15, 2007).
[262] Boston Heights has a density of 172 persons per square mile. http://factfinder.census.gov (accessed April 15, 2007).

Figure 4.11



Boston Heights is located within the Brandywine Creek watershed (see **Figure 4.12 Source: Summit County Engineer).**[263] From its headwaters in Hudson, Brandywine Creek flows westward and joins the Cuyahoga in Sagamore Hills within the Cuyahoga Valley National Park. There are approximately twenty-six square miles of drainage.

The watershed is experiencing increasing rates of urbanization; over the last thirty years, the combined growth rate of the communities within the Brandywine watershed has exceeded the growth rate of the entire county.[264] This increased urbanization is attributable to a variety of factors, including the area's suburban appeal, as well as the fact that some of the region's busiest transportation routes pass through the Brandywine Creek watershed. Development of the Route8/I-271/ I-80 corridors places enormous stress of the existing natural systems and reduces the natural infrastructure's ability to manage storm-water and water quality. The creek downstream of Hudson has been channelized to move water from the community more quickly, and further downstream in the Cuyahoga Valley National Park, the stream suffers from heavy sediment loads and bank erosion. The amount of impervious surfaces such as paved parking lots, roofs, and hard-packed lawns has increased significantly in the past twenty years. In 2001, over twenty-two percent of the watershed's land-cover was impervious, but it has fairly good forest cover. When a watershed's land-cover is twenty-five percent impervious, it is considered permanently damaged, and it is extremely difficult for such watershed to recover.[265]

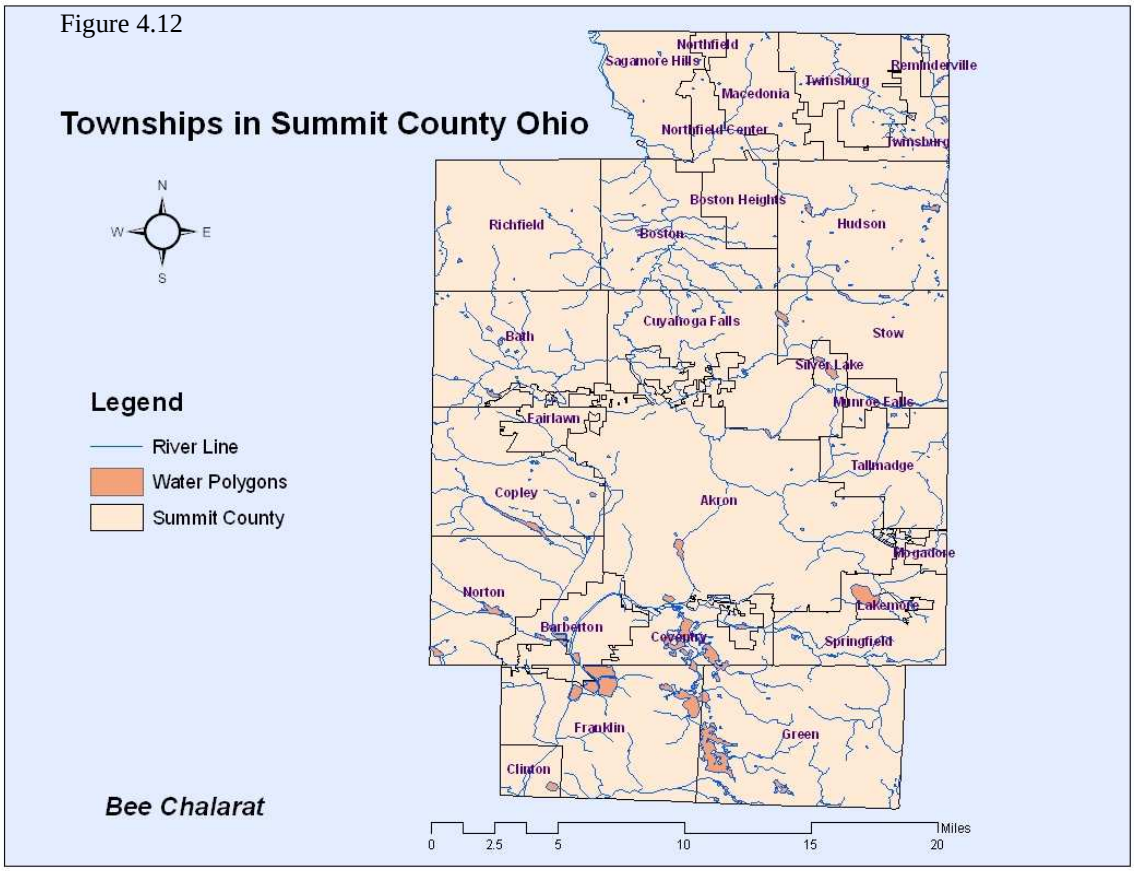
[263] Communities within the Brandywine Creek watershed include: Boston Heights Village, Boston Township, Hudson, Macedonia, Northfield Center Township, Sagamore Hills Township, Twinsburg Township, and a small portion of Oakwood Village in Cuyahoga County.

[264] Summit County Engineer's Office. 2003. *Summit County Countywide Stormwater Management Program*. http://engineer.co.summit.oh.us/cgi-bin/displayContent.pl?type=section&id=649 (accessed April 15, 2007).

[265] There is a direct inverse correlation between water quality and impervious surface. http://www.cuyahogariverrap.org/Brandywine.htm (accessed April 15, 2007).

With numerous large-scale retail developments being proposed, the Brandywine watershed is in a critical position.

Figure 4.12



Proposed Development in Boston Heights

In Boston Heights alone, there are three major proposed retail projects affecting over 800 acres of land, not to mention the State Rout 8 expansion, rumors of the sporting goods outfitter, Cabela's (which typically boasts a 225,000 sq.ft. showroom), locating on Route 8, and the proposed Wolstein Sports and Entertainment Group LLC major-league soccer complex. The soccer complex includes a 450,000 square foot retail village and is proposed to sit on 450 acres straddling Northfield Center Township and Macedonia near the other Boston Heights proposed development. These projects, in combination with other nearby big-box retail,[266] will all place an increased burden on Brandywine Creek watershed; the significant increases in impervious surface will further degrade stream and watershed health and contribute to increased flooding, erosion, habitat segregation, and diminished quality of native species. Moreover, all proposed projects are either located on or near wetlands that are already showing effects of existing development.

In a January 2007 Boston Heights planning commission meeting, American Dream Productions LLC proposed a 1.3 million-square-foot shopping mall and hotel complex northeast of Ohio 8 and Hines Hill Road. The complex would be mostly in Boston Heights, but 51.32 acres

[266] For example, Macedonia Commons, with stores such as Wal-Mart and Kohl's, is a five minute car ride from the proposed developments in Boston Heights; Cuyahoga Heights shopping is an eight minute car ride away.

sit in Northfield Center Township **(see Figure 4.13).** Brandywine Creek runs through the proposed property.

Figure 4.13

Source: http://www.bostonheights.org/ (accessed on April 15, 2007).

Although no action has been taken by the Boston Heights planning commission on this matter, Northfield Center already rejected a rezoning request for the small part of the American Dream development that would be within the township.[267] The Summit County Planning Commission recommended that the development request be denied because the acreage in Northfield Center is in Brandywine Creek's floodplain. This area is currently zoned as residential (R-1).[268] American Dream Productions may ask Boston Heights to annex the contested acreage and has suggested donating 4.3 acres for use as a park and pay for a new bike and hike path along Brandywine Creek.

Boston Crossings Ltd. and Omni Realty LLC are currently seeking to rezone 77 acres north of Boston Mills Road from Office and General Business to Retail Business.[269] In July of 2005, these developers obtained the major rezoning they requested, which allowed a 50+ acres shopping center in Boston Heights. The zoning changed from Office/Professional to General Business (GB).[270] These developers are now planning to build a more intensive retail

[267] Salemi, Pat. 2007. Trustees deny rezoning request. *Nordonia Hills Sun.* Thursday January 11, 2007.
[268] *Ibid.*
[269] The developer proposes to build a 400,000 square foot shopping center, similar to the one proposed, but ultimately denied, in Hudson in 2004. Planning Commission and Board of Zoning Appeals Agenda. December 6, 2006: Village of Boston Heights, OH. http://www.bostonheights.org/Village/PCBZA/ (accessed on April 15, 2007).
[270] GB retail allows retail development up to 30,000 sq. ft. Boston Heights, Ohio, Municipal Code art. 11 §1159.02 (2005).

development with much larger buildings than the 30,000 square feet currently permitted in the GB District.[271]

On April 11, 2007, Boston Heights Council voted to rezone to retail 65 acres of the former Boston Hills Country Club and golf course located at Route 8 and Hines Hill Road. [272] The property was previously zoned as residential and required single-family homes on minimum 1.5 acre lots.[273] The development belongs to Boston Hill Property Investment LLC/Sam Petros, and includes 100 new homes.

Petros plans to attract big-box anchors such as Costco and Dick's Sporting Goods (a Wal-Mart is not planned because one is nearby in Macedonia).[274] If the land continues to be zoned as Retail Business, and maximum square footage remains 50,000 square feet, the developer would either be restricted to drawing much smaller tenants or abandoning the retail portion of the project. In response, Petros submitted a proposed code for a new "Shopping Center Zoning District." This requested new district is similar to Boston Heights' existing Retail Business district but has essentially open-ended permitted uses and virtually no limit on building floor area.[275]

Current watershed policy in the Brandywine Creek watershed

Boston Heights is a co-permittee of the Summit County Countywide Stormwater Management Plan (SWMP), which was filed by Summit County Engineer's Office on March 10, 2003. Other Brandywine watershed communities participating in the SWMP include: Boston Township, Northfield Center, Twinsburg, and Northfield. Both the City of Hudson and the City of Macedonia choose not to participate.[276] To comply with the stormwater Best Management Practices (BMPs) the SWMP chose for its jurisdiction, Boston Heights implemented a riparian setback ordinance in 2006 (**see Figure 4.14 Source: County of Summit Department of Community and Economic Development (2006**).

[271] Retail business zones allow retail development up to 50,000 sq.ft. Boston Heights, Ohio, Municipal Code art. 11 §1160.07(d) (2005).
[272] http://www.bostonheights.org/ (accessed April 14, 2007).
[273] Planning Commission and Board of Zoning Appeals Agenda. August 2, 2006: Village of Boston Heights, OH. http://www.bostonheights.org/Village/PCBZA/ (accessed on April 15, 2007).
[274]The average Costco is 140,000 sq.ft; Dick's Sporting Goods averages 57,800 sq.ft. per store, and an average Wal-Mart SuperCenter is about 187,000 sq.ft (Costco: http://phx.corporate-ir.net/phoenix.zhtml?c=83830&p=irol-homeprofile Dick's: 16-Aug-2006 Quarterly Report: http://biz.yahoo.com/e/060816/dks10-q.html; Walmart's 2006 Annual Report (http://walmartstores.com/Files/2006_annual_report.pdf) (all websites accessed April 15, 2007)).

[275] Village of Boston Heights Planning Commission & Board of Zoning Appeals. http://www.bostonheights.org/Village/PCBZA/index.html (accessed on April 15, 2007).
[276] Summit County Engineer's Office. 2003. *Summit County Countywide Stormwater Management Program*. http://engineer.co.summit.oh.us/cgi-bin/displayContent.pl?type=section&id=649 (accessed April 15, 2007).

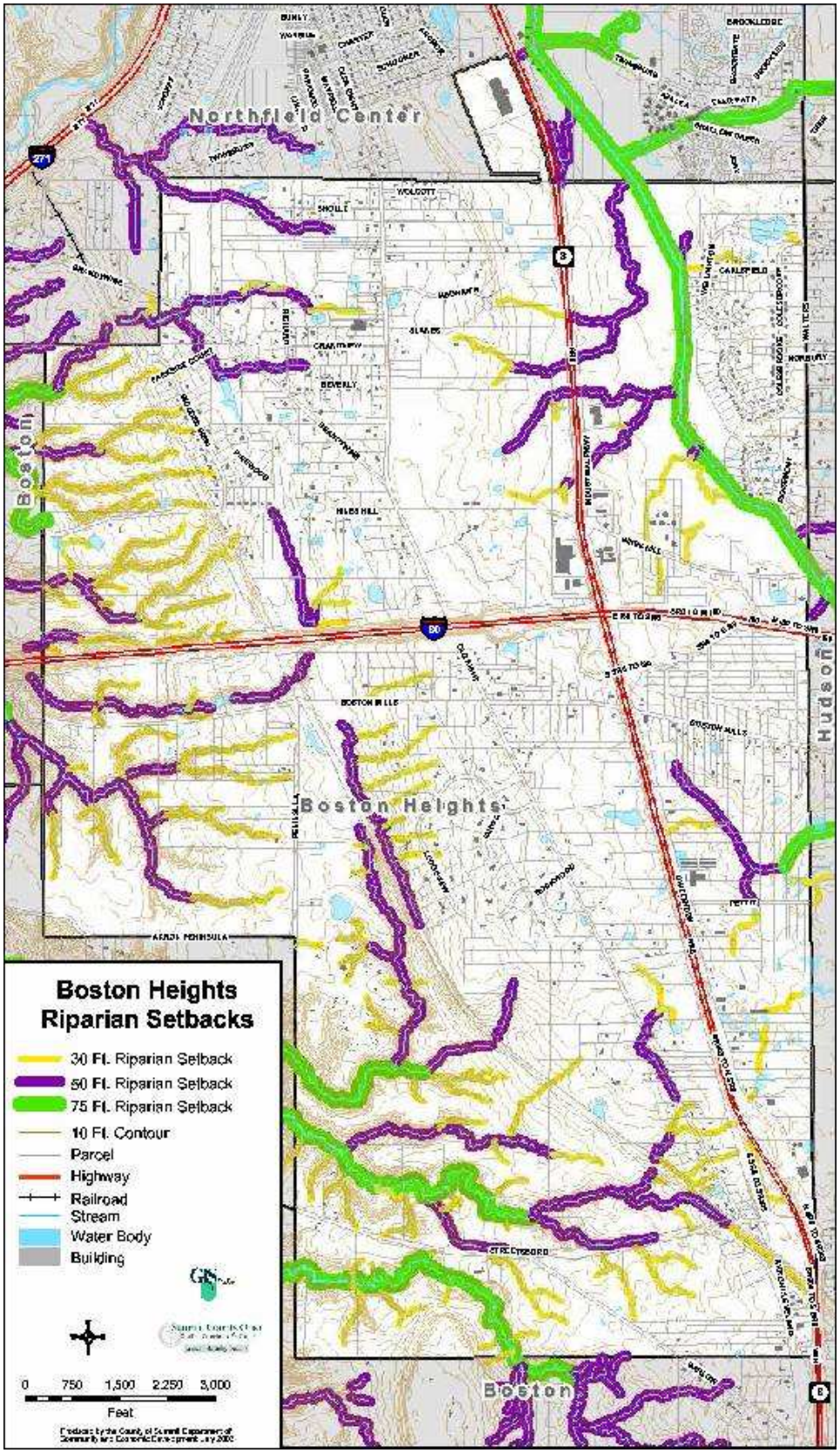

Northfield Center
Boston Heights
Boston
Hudson
Boston Heights
Riparian Setbacks
30 Ft. Riparian Setback
50 Ft. Riparian Setback
75 Ft. Riparian Setback
10 Ft. Contour
Parcel
Highway
Railroad
Stream
Water Body
Building
0 750 1,500 2,250 3,000
Feet

Figure 4.14

Widths of setbacks are measured as horizontal map distance outward from the ordinary high water mark on each side of a stream, and are established as follows: [277]

> (1) A minimum of 300 feet on each side of all streams draining an area greater than 300 square miles.
>
> (2) A minimum of 100 feet on each side of all streams draining an area greater than 20 square miles and up to 300 square miles.
>
> (3) A minimum of 75 feet on each side of all streams draining an area greater than 0.5 square miles (320 acres) and up to 20 square miles.
>
> (4) A minimum of 50 feet on each side of all streams draining an area greater than 0.05 square miles (32 acres) and up to 0.5 square miles (320 acres).
>
> (5) A minimum of 30 feet on each side of all streams draining an area less than 0.05 square miles (32 acres).

This riparian setback ordinance is an important step towards maintaining local watershed health while promoting economic competitiveness, but other effective tools have yet to be implemented. For example, since the Petros development is likely to be built, Boston Heights Council could implement transferable development rights (TDRs) and require that Petros offset the burden his retail development imposes on Brandywine watershed. Existing commercial or retail zoning acreage equal to the Petros development's acreage would be rezoned to recreational or residential consistent with the new conservation development code. However, Boston Heights is a small village and lacks the financial resources and political leverage to implement such tools without support from and cooperation with surrounding communities.

To accomplish the needed cooperation between Brandywine watershed communities, a watershed partnership group needs to be established. The community watershed group is an important tool to educate local politicians on the importance of integrating watershed sustainability practices into the local government's land use policy. Not only does the Brandywine watershed currently lack a community watershed group, but it also does not have a coordinated effort among the local governments within the watershed. Conversely, on the other side of the Cuyahoga Valley in a similarly sized watershed, the communities of Brecksville, Broadview Heights, and North Royalton have recently joined together to address the impacts development has had on stormwater management and flood frequency.[278] A coordinated effort to protect the Brandywine watershed's wetlands, floodplains, headwater streams, to minimize impervious surfaces, and to implement best stormwater management practices needs to be adopted by the Brandywine Creek watershed communities in anticipation of the proposed development, and recent meetings between the Cuyahoga River RAP organization and local officials look promising; a community watershed partnership is expected to be formed by the end of 2007, and numerous workshops for both local officials and residents are planned for the near future.

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[277] Boston Heights, Ohio, Municipal Code art. 11 §1181.04 (2006).

[278] Chippewa Creek Watershed Planning Partnership obtained a grant from Cuyahoga River Community Planning Organization to develop a plan to manage development, restore and protect natural resources, and to enhance economic competitiveness. http://www.crcpo.org/ABOUTCRCPO.html (accessed on April 15, 2007).

Local Practices for Communities in Brandywine Creek Watershed to Follow: Lake County, Ohio and Chagrin River Watershed Partnership

The communities in the Brandywine Creek watershed need to act fast. The large-scale proposed retail developments will most likely increase the area's impervious surface by more than three percent and permanently damage the watershed. The magnitude of the State Route 8 expansion will give these communities some leeway and an opportunity to implement effective sustainable policies and practices. Several local examples from the Northeast Ohio region highlight successes in the implementation of watershed preservation and planning goals.

Lake County, Ohio

In Lake County, two important aspects of watershed protection have been addressed: 1) backing watershed planning goals with the force of law, and 2) emphasizing the importance of scientific data when working to preserve watershed ecosystem services. Too often, poor storm water management goes unnoticed or fails to be enforced, leading to problems with flooding and the degradation of water quality. To combat this problem, the Lake County Commissioners have given the Lake County Soil and Water Conservation District (LCSWCD) the authority to grant storm water violations to irresponsible residential and retail land owners[279]. This authority sets the stage for the remedy of mismanagement of storm water where it occurs, and may help to discourage future irresponsible handling of storm water.

In order to encourage siting of retail and residential development in sections of watersheds that will do the least harm to the environment, the LCSWCD has also partnered with the Northeast Ohio EPA to create an inventory of headwater streams, which are crucial parts of watershed ecosystems which filter water and create healthy flows of water downstream throughout the drainage basin. The idea for this database came about in the late 1990s when a major piece of property in the county containing vital headwater streams was going through the development process[280]. The LCSWCD felt that by gathering sound biological data (using indicator species such as insects and salamanders) about the health of headwaters and other minor streams, policy decisions made on the municipal and county level regarding siting of development could be made in more informed ways[281]. The LCSWCD uses the headwaters data to show municipalities the potential future impacts of development such as increased flooding and storm water runoff, and can make maps of townships and municipalities delineating headwater areas to make further recommendations aimed at preventing future water management problems. The LCSWCD-Northeast Ohio EPA partnership is an example of the use of data about ecosystem services to affect the policy decisions made by governmental entities within a watershed.

Chagrin River Watershed Partnership

The Chagrin River Watershed Partnership is an example of an organization that fosters collaboration between various organizations and governmental entities within a watershed to implement its planning goals. Part of the Chagrin River Watershed is located in Lake County,

[279] Kastelic, Jim. 2007. Conversation between Rosemary Giesser and Mr. Kastelic of the Cleveland Metroparks on 17 April 2007.
[280] See Edgar.
[281] See Edgar.

and the Partnership also uses the LCSWCD data to help communities make informed policy decisions about land use within the watershed. However, the hallmark of the Partnership's work is its encouragement of communities within the watershed to become paying members of the organization in exchange for policy guidance on many land use planning issues that relate to watersheds.

The Partnership works with communities in the Chagrin River Watershed to create appropriate zoning to conserve sensitive areas, set aside areas for conservation subdivisions, acquire grant monies, and delineate riparian setbacks where retail or residential development would be inappropriate[282]. The Partnership creates ordinances and resolutions for riparian setbacks and watershed-friendly subdivision codes that are then adopted at the municipality or county level (at least where townships, which have less governing authority, are concerned). Many of the communities within the watershed are very receptive to the Partnership's guidance -- approximately 90 percent of the land area within the basin is part of jurisdictions that are members of the Partnership[283]. The Partnership has also secured grants for low impact development (LID) storm water management techniques for retail and municipal developments that include rain gardens, pervious pavers, and other innovative practices. The projects funded by these grants serve as demonstration projects aimed at attracting development to be built with similar sensitivities to watershed health[284]. The Chagrin River Watershed Partnership is an example of the ways in which a watershed management organization with no governmental authority can work to affect the policies of the political entities within the boundaries of a watershed.

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Conclusion

Throughout our research on watersheds and local retail development, we found examples of communities that have embraced their place in the environment by working in harmony with their respective watersheds. National model ordinances and best practices have been implemented across the country, and are relatively easy to adopt. Municipalities are realizing that it is not only environmentally responsible but it is also fiscally advantageous incorporate water-based policies and practices. Success is dependant on local governments fully understanding their place within the environment, specifically within their local watershed. It is

[282] Holthouse, Amy. 2007. Interview by Rosemary Giesser of Ms. Holthouse of the Chagrin River Watershed Partnership on 23 April 2007.
[283] Ibid.
[284] Ibid.

only through a change in mindset that we can accomplish a greater integration within the environment.

Chapter V: Transportation

Introduction

The original NORRA study showed that the large majority of municipalities in Northeastern Ohio were oversaturated with retail space. In addition, the most recent findings show that in spite of this result the amount of retail space has continued to grow. Clearly there is a need to start thinking about the impacts that continued retail growth will have on the environment, economy, and overall quality of life for residents.

To serve the ever-growing supply of retail space in Northeast Ohio, transportation systems must be built. Current state and federal policies have funneled nearly all available funding into automobile-oriented construction, which has led to a proliferation of highways, roads and parking lots. The following section will examine the impacts of this auto-centric development pattern on the economy, public health and the environment. It will also recommend policies that mitigate these impacts.

Sustainability

Retail Development and Land Use

By developing additional land and replacing natural areas with buildings, roads, and parking lots there is a cost to the environment and in turn the quality of life for future residents of Northeast Ohio. One question that residents should ask is how much consideration is given to the future impacts of big box retail developments, shopping malls, and other forms of sprawl. While it may seem that the leasing and sale of property to retail establishments will generate tax revenue and jobs to the community, it is highly unlikely that these benefits will be sustainable over the long-term.

The most obvious impact that results from retail development is the degradation of natural ecosystems such as wetlands, meadows, forests, and fertile farmland. The sprawl development that is taking place in the area either fragments or completely destroys these natural habitats. While it is true that the majority of the study area in Northeast Ohio has already lost these sensitive lands, there is still the opportunity to preserve natural places on the urban fringe. Restoration practices are also an option for communities that are able to fund such projects and find experienced persons to manage the development of these sites.

By clearing or fragmenting land, the wildlife that is dependent upon these very specific niches is also threatened. Oftentimes the land that is cleared is regarded solely for its monetary value. This can be problematic, because without giving value to wildlife there is no incentive to investigate the numbers or species inhabiting the land. In addition, there is pressure stemming from competition between neighboring municipalities. A town that has the opportunity to preserve these lands cannot make a strong enough argument when an adjacent town is booming with development – making it seem progressive. What results is an overall loss of habitat and precious resources, which could be in demand in the future.

In terms of human impact, there can be damage to one's psychological, physiological, and spiritual health. The fact that humans have evolved over hundreds of years within natural areas should not be underestimated. It is hard to say how the current disconnect with nature

impacts our overall health. In another portion of this report the physiological impacts will be examined. There are also fundamental psychological and spiritual connections that humans should maintain in order to achieve optimum health. The field of ecopsychology seeks to determine the relationship between humans and nature. Ecopsychologists argue that the connection between humans and nature is beneficial for both. When this relationship is fostered, damage to the environment (ecological devastation) and to humans (grief, despair, and alienation) can be avoided.[285]

One other cost to the community, in the long-term, is a decreased opportunity for developing alternative land uses. After land has been cleared and paved, the option of maintaining the space as a preserve or recreation area becomes far out of reach. Restoration is an option, but this can be expensive and it is hard for humans to recreate an ecosystem that had naturally developed over a long period of time. One may think that it would be easy to convert the space for other uses if the retail store does not succeed. However, this is not always the case, especially when many chain retail stores have a specific and recognizable design for their buildings.

Strategies to Prevent Future Degradation of Land

What options do cities have to preserve natural lands given the seemingly insurmountable pressure of increased development? It seems as though for Northeastern Ohio the primary objective should be to not only preserve what land is left, but to do so through collaboration on a regional scale to diminish the pressure of continued growth that the less developed communities have. Moreover, partnership between the public and private landowners is essential in order to find the optimum strategy for managing land use.

Preservation Strategies

Conservation Easements and Working with Land Trusts

According to the Land Trust Alliance (LTA) there are currently more than 1,600 non-profit land trusts.[286] Through arduous efforts they have protected more than 37 million acres of land combined.[287] Land trusts operate to help individual land owners sell, donate, or set up conservation easements on their property. A conservation easement is a legally binding agreement between a landowner and municipality that spells out the ways in which a particular piece of land is to be managed. Currently there are four LTA member land trusts operating within the seven county study area. They are the Gates Mills Land Conservancy, Western Reserve Land Conservancy, Grand River Partners Inc. and Waite Hill Land Conservancy.

The Cleveland Museum of Natural History has also made efforts to preserve habitat through their Natural Areas Program. The overall mission of the program is to acquire a system of nature preserves that represent the biodiversity that can be found in Northern Ohio. Currently three of their preserves are open to the public: Mentor Marsh, Scheele Preserve and North Kingsville Sand Barrens.

[285] John Davis. "What is Ecopsychology?" http://www.johndavis.com/ep/epdef.com (April 2007)
[286] Land Trust Alliance. "2005 Land Trust Census Report." http://www.lta.org/aboutlt/census.shtml (April 2007)
[287] Ibid.

Volunteerism and Civic Involvement

Here it is appropriate to quote the famous line proclaimed by Margaret Mead: "Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has." One essential piece of land conservation is citizen demand and involvement. By showing interest and getting involved in an effort to protect remaining parcels of land, residents can show that their need for open spaces is greater than their need for another big box or strip mall development.

The other option would be for residents to become involved in restoration efforts. However, communities should not overdevelop the land in their neighborhoods thinking that restoration would be feasible in the future. A workshop conducted by Building the Livable Urban Edge (BLUE) asked the question, "If ecological restoration were a primary goal for Cleveland's lakefront, what should we do?" The study concluded that Cleveland might not be ready for such a task due to operational, funding and land use issues.[288] This conclusion emphasizes the reality that once an area has been developed it is hard to go back.

Public Land Acquisition and Preservation

Government entities can make a huge impact on conservation efforts because they have the power to acquire land on a larger scale. One example is the "Land Acquisition Program" established by the Northwest Florida Water Management District." Thus far, more than 179,000 acres of wetlands and recharge areas have been acquired since 1984.[289] The primary funding sources for the program are a statewide documentary stamp tax on real estate and through the sale of bonds.

Increase Density and Encourage Infill

Local municipalities can encourage infill development by targeting and restructuring the obstacles that make these sites undesirable. This would include improving infrastructure, shortening the permit process, making it easier to assemble parcels, and updating zoning provisions.

Reasons for Saving Land

Why is it important to save land? Would it be fair to ask the counties that have not been completely developed (areas of Portage, Lorain, Medina, and Geauga) to set aside land considering the other counties have relentlessly gobbled up all of their available land? It seems necessary to develop a regional consortium which would create specific strategies to provide revenues to municipalities making a conscious decision to preserve land for all of the residents in the seven county area. After this has been accomplished we can begin to think in terms of the benefits that would be realized through preservation of existing spaces: educational value, aesthetics, spiritual reasons, ethical considerations, human need for natural areas, ecosystem services and goods and economic benefit.

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[288] Ecocity Cleveland and the Cleveland Waterfront Coalition, Building the Livable Urban Edge (BLUE). "Ecological Restoration Opportunities for Cleveland's Lakefront." http://www.ecocitycleveland.org/ecologicaldesign/blue/eco-restoration.html (April 2007)

[289] Northwest Florida Water Management District. "Land Acquisition Program." http://www.nwfwmd.state.fl.us/lands/lands.htm#funding (April 2007)

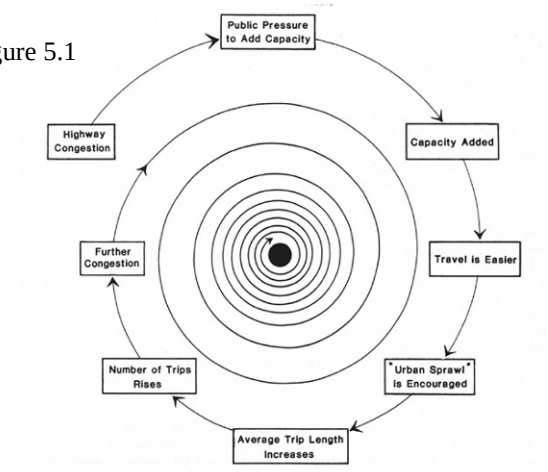
ODOT Policies and Retail Sprawl

Retail and office space are among the most transportation-intensive land uses. Euclidean zoning – which separates residential, industrial, retail and office uses – means that few people in communities developed after the 1920s can walk to shopping areas or to work. Instead, they must drive or take public transit. As will be discussed in detail below, current federal and state policies heavily favor automobile-centric development over transit-oriented development. This leads to an ever-growing need for highways, roads and parking lots to serve shopping centers.

An amendment to the Ohio Constitution, dating to 1947, requires the Ohio Department of Transportation (ODOT) to spend all passenger vehicle license fees and gas tax revenue exclusively on highways – construction, reconstruction, maintenance and repair. In 2006, that translated to $3.04 billion, or 49 percent of the department's budget, spent directly on highways. By comparison, ODOT spent just $92 million on transit – or 1.5% of its budget. (The remainder of the department's funding goes to research and planning, railroads and airports, rest area upgrades and other projects.)[290]

Much of Ohio's spending on public transit comes from federal sources. The amount of state money spent on transit has fallen precipitously in recent years due to rising opposition to transit projects in the state legislature, which has been controlled by suburban and rural Republican interests. Only $16.3 million in state money goes to mass-transit trains and buses, down from $43 million in 2001. This translates to $1.58 per capita, far lower than nearby states with comparable populations. For example, Michigan spends $20.73 per person, while Pennsylvania spends $63.29 and Illinois spends $61.25.[291]

Figure 5.1



This pattern of funding highways over transit by a 33:1 ratio has played a major role in promoting residential and retail sprawl. It has led to what some planners have termed "The Black Hole Theory of Highway Investment," in which congestion leads to new construction, which in turn leads to additional land consumption and eventually more congestion.[292] (See to left).

The department's coffers are growing, but there has been little push for additional transit funding. ODOT raised the state gas tax 6 cents (27%) in 2003. Most of the new money was earmarked to help fund a 10-year, $5 billion highway construction program. Because the hike was heavily supported by the Ohio Contractors Association and construction industry allies, critics have accused ODOT of being unduly influenced by campaign contributions and by the clout of asphalt and construction contractors.[293]

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[290] Kellogg, Wendy. "The State Role in Guiding Land Use Change in the Ohio Lake Erie Basin." Prepared for EcoCity Cleveland (March 26, 2007).

[291] Tuscano, Mark. "Laketran may seek dedicated funding." *News-Herald* (Willoughby, Ohio), 19 October 2006.

[292] Hanson, Susan, ed. *The Geography of Urban Transportation.* (New York: Guilford Press, 1986).

[293] Wendling, Ted and T.C. Brown. "Gas-tax increase fuels ODOT building boom." *Plain Dealer*, 31 December 2006, sec. A, p. 1.

The outcome of these automobile-centric policies is readily apparent in Northeast Ohio. Cleveland, once confined to a dense core of 77 square miles served entirely by streetcars and buses, now sprawls across five counties and more than 70 suburbs, even as the metropolitan area has seen minimal population growth for decades. Many communities in this sprawling metropolis – particularly those in outlying counties – have little or no access to public transportation. New retail in these areas is similarly ill-served by public transit, making it difficult for residents of the city and older suburbs to shop there without a private automobile.

This continued dependence on automobile-oriented development forces people to spend an ever-greater share of their income on gasoline, motor oil, car insurance and maintenance. In 2003, the average Cleveland-area household spent just over 20 percent of its income on transportation – the second-highest proportion among the nation's 28 largest metropolitan areas, after Houston. This fuel dependency puts a heavy financial burden on households – particularly low-income households – and diverts money out of the local economy.[294] The more Ohio invests in highways, the more it discourages population density. Correspondingly, it has become increasingly impractical to build effective mass transit systems because public transit requires relatively high densities to be well-used.[295]

Even in the area of road improvements – ODOT's bread and butter – older areas and inner cities tend to take a back seat to projects on the fringes. This can be attributed to a scoring system ODOT has used since 1997 to determine which highway projects it will fund. A group called the Transportation Review Advisory Council (TRAC) evaluates proposed projects, usually submitted by a regional transportation organization (such as NOACA in Northeast Ohio). It grades each project on several criteria, each weighted differently. The criterion weighted most heavily is "increased capacity," which automatically puts urban projects at a disadvantage because many built-out cities have no room to widen roads or add new ones. Thus, projects in suburban and rural areas win out. In fact, ODOT's "Access Ohio" program aims to place "94 percent of Ohio's population … within a 15-minute commuting distance of an efficient corridor which can attract economic development."[296] These policies push people – and thus stores – ever farther from the center.

ODOT Policy Outlook

Gov. Ted Strickland, Ohio's first Democratic governor in 16 years, has taken aim at some of ODOT's current policies and initiated major staff changes. Since his election, all the department's district directors – who coordinate transportation plans in different sections of the state – have either stepped down or been fired. In February 2007, Strickland said the pace of road construction projects would slow because ODOT had overcommitted itself by some $1.2 billion.[297]

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[294] Bernstein, Scott et al. "Driven to Spend: Pumping Dollars Out of Our Households and Communities." Center for Neighborhood Technology and Surface Transportation Policy Project (June 2005).

[295] Kellogg, Wendy. "The State Role in Guiding Land Use Change in the Ohio Lake Erie Basin." Prepared for EcoCity Cleveland (March 26, 2007).

[296] Ibid.

[297] Nash, James. "Project slowdown; Governor: Road Work Too Costly." *Columbus Dispatch* 16 February 2007, sec. A, p. 1.

Strickland also named a new director, James Beasley. Beasley has given mixed signals about his transportation philosophies. On the one hand, he has accused the TRAC system of favoring urban areas over rural ones because it considers accident rates, congestion and average daily traffic in deciding which projects to fund.[298] This could be read as an endorsement of new road-building in rural areas, which could promote sprawl. Yet during budget hearings in April 2007, he said Ohio's transportation policies must embrace more than just the private automobile. "A multi-modal approach targets the headache of all motorists: congestion and roadway wear-and-tear. By putting more people in buses and more freight on trains, we ease traffic congestion and preserve our highway conditions," Beasley said.[299] He and Strickland have also proposed a modest increase in transit spending. Time will tell whether these steps lead to substantive change in state transportation policy.

Meanwhile, Northeast Ohio's own transportation planning agency, NOACA, has adopted a set of transportation priorities that take a slightly tougher stance against sprawl than ODOT's TRAC system. Its nine criteria for scoring projects include relieving congestion and improving safety – like ODOT – but also include urban core reinvestment, multimodal and intermodal considerations and planning. If ODOT's policies were revised to include some of these criteria, the pace of sprawl throughout the state might slow.

The tension between ODOT and NOACA policies reached a potential tipping point in the debate over a proposed new interchange off Interstate 90 in Lorain County. Officials in the city of Avon, the growing exurb where the new exit would be located, want the interchange to relieve traffic congestion and spur new development. Hoping for higher property values, private developers and landowners have offered to pay for as much as 70% of the $15 million project. NOACA must approve the project in order for it to proceed. In February 2007, the agency announced that its decision would be based in part on an economic impact study that would explore whether the interchange would siphon business and people away from older suburbs in western Cuyahoga County. The study would be the first of its kind to consider impacts beyond a new interchange's immediate community. It was viewed by some as a sign of Northeast Ohio's growing interest in stemming sprawl.[300]

Parking Lot Design

Parking lots are level areas paved with permeable or non-permeable materials intended for parking vehicles. The largest examples of parking lots are found surrounding large shopping centers such as regional malls. City ordinances and retailer preferences have driven parking lots size to reach epic proportions. Everything from small, grocery-anchored centers to regional malls commonly contain six spaces per 1,000 square feet of gross leasable area (GLA). Assuming shopping centers have between 150,000 and 2.5 million square feet of GLA, they could contain 900 to 15,000 spaces.

[298] Ibid.
[299] Gongwer News Service, "Transit Systems Seek Study of Dedicated Funding Source to Avert 'Crisis in Public Transportation.'" Vol. 76, no. 67 (April 5, 2007).
[300] Hollander, Sarah. "Agency plans first regional impact study." *Plain Dealer* 10 February 2007, sec. B, p. 1.

Paving Materials and Environmental Impacts

Traditional retail surface parking lots are paved in asphalt or concrete, which are impermeable. They tend to deflect water instead of allowing it to absorb into the ground. How a parking lot handles water from rain or snow varies greatly. Like roads, they might have extensive sewer systems capable of handling large amounts of water. However, parking lots often do not have their own drainage systems. Consequently, each time it rains almost all of the water, excluding evaporation, becomes runoff. Traditionally, runoff ends up in city storm sewers which in turn feed into rivers and lakes. Yet this leads to frequent overflows. Today, many communities require builders to construct detention basins in their parking lots to help slow runoff, thereby mitigating stress to the sewer system during peak flows.

Parking lots can also affect water systems in other ways. When cars and trucks park on lots they often drip motor oil, radiator fluid, brake dust and rust. In small amounts, drips from cars have minimal impacts. But the problem is multiplied by the number of cars and the overall size of the parking lot. Detention ponds, again, can allow sediment to settle out. Effectively the sediment remains in the basin without allowing the oil and other particles to trickle into the streams and waterways.

Parking lots constructed of brick and paving blocks are friendlier to the environment. These materials allow water to absorb into the ground after being filtered by the paving block. This also reduces the total amount of water which would otherwise flow into the system.

Parking Management

The typical response to parking problems is simply to create more parking. This is not a viable long-term solution. The growing supply of parking dilutes proximity among businesses, leading to increased automobile use and other problems such as traffic pollution, congestion and sprawl. [301]

Strategies to encourage businesses to share parking aim to increase efficiency and lessen environmental impacts. Under a district parking plan, for example, parking could be shared among businesses that have different operating hours. [302]. Patrons visiting a jazz club or bar would use the parking lot at night; the same lot could be used by patrons of a breakfast restaurant in the morning. Since the two businesses have different operating schedules, each business would have ample parking available during their respective peek hours of operation. Often times, there is sufficient parking in an area but it is so poorly allocated between buildings that some spaces on individual lots can go empty while drivers compete for spaces at other lots.

Another approach to effective and efficient parking management is called “fee in lieu of parking” [303] which allows cities to plan district parking while the developers pay for the cost – essentially an impact fee for development. The city uses the fees, which would be paid by all

[301] Krieger, Alex. “Rules for Designing Cities.” In *The Mayors’ Institute: Excellence in City Design*, pp. 105-111. Washington: Princeton Architectural Press, 2002.
[302] Litman, Todd. “Parking Management Best Practices.” *Planning*, October 2006, 40-45.
[303] Mukhija, Vinit and Donald Shoup. “Quantity Versus Quality in Off-Street Parking Requirements.” *Journal of the American Planning Association* (Summer 2006): 296-308.

buildings in a district, to construct shared parking. This approach would make it easier and more affordable to redevelop buildings where on-site parking is not feasible or available.

Overview: Health Issues and Policies

The effects on human health due to transport and land-use strategies are increasingly recognized. While injuries and annoyance from traffic have long been identified as important consequences of certain patterns of transport activities, evidence of the effect of air pollutants on health – including respiratory and cardiovascular diseases – has emerged only in the last few years. Global warming, thought to be caused in part by carbon dioxide emissions from private automobiles, will also likely have devastating public health impacts.

Further, sedentary lifestyle is associated with the use of motor vehicles. Half the adult population in developed countries is sedentary or does minimal physical activity. The contribution of sedentary lifestyle to heart disease is similar to that of tobacco. Obesity can also result from non-active lifestyles, which can in turn cause diabetes and other diseases. Strategies to address sedentary lifestyle include physical activity to accomplish daily chores, notably through walking and cycling for transport.

Each of these transport-related risks imposes a considerable burden on public health. Most human exposure from air pollutants comes from traffic, and evidence is emerging of a direct link between respiratory problems and residence near busy roads, or roads with very heavy-vehicle traffic. (Air pollution will be discussed in further detail below.) Noise pollution can also affect people's health, through sleep disturbance, speech interference and general annoyance.[304] "Road rage," meanwhile, has become an increasingly common stressor as roads become more congested with traffic. Traffic congestion, long commutes, chauffeuring children and others to sports practices, events, appointments – all add to the stress of daily living[305].

In sum:

- More driving means more automobile crashes
- Driving spawns road rage
- Poor road design can be lethal for pedestrians and cyclists
- Older neighborhood designs encourage walking and newer urban forms discourage walking

Strategies for Change

In designing new transport policies, a holistic approach is crucial. Some strategies may be beneficial for one health element but not others, for health as a whole but not for the environment, or for the short but not the long term. For example, higher speeds over certain ranges reduce pollution but increase accident risks. New desulfurized fuels improve the particulate situation but generate more environmentally damaging carbon dioxide.

Governments should adopt two important related strategies to address these issues. They must internalize health externalities, which involves establishing policies to regulate or encourage more optimal use of existing transport systems; and make decisions concerning

[304] Sandberg, U., ed. The effects of regulations on road vehicle noise. *Noise news international*, 6: 85–113 (1995).
[305] Transportation Research Board Paper on Transportation and Health Issues

transport infrastructure and urban development that take appropriate account of the health implications.[306]

Making such decisions means establishing systems that routinely, accurately and comprehensively identify the health consequences of transport and land-use strategies. It also means developing and applying methods to measure the economic impact of these health consequences. Governments should pay special attention to groups at greater risk of transport-related health effects. This includes women, elderly people, children, the ill or disabled, the poor and people living in areas with greater traffic exposure, and those using vulnerable transport modes (e.g., bicycling).

Finally, local, state and federal cooperation and coordination are needed to fill the gaps in knowledge on the health effects of transport.

Impacts

In Focus: Transportation-Related Air Pollution

Despite the United States' abundant resources, air quality is an issue even here. The six most common air pollutants in the United States are classified by the EPA as *criteria air pollutants*: Carbon Monoxide (CO); Lead; Nitrous Oxides (NO_x); Volatile Organic Compounds (VOC's) , also known as hydrocarbons, (which interact with NO_x to form ground-level Ozone (O_3) also known as smog); Particulate Matter (PM); and Sulfur Dioxide (SO_2). These pollutants can cause health issues, environmental problems, and property damage. The EPA sets National Ambient Air Quality Standards (NAAQS) for each criteria pollutant. These standards set the maximum concentration allowed in the air. If the NAAQS for a pollutant is exceeded, human health can be impacted. These pollutants are monitored, and areas that routinely exceed the NAAQS are classified as non-attainment areas.

Of the six criteria pollutants, four are directly related to transportation issues: CO, NO_x, VOC's, and PM. In addition, there is another air emission relevant to transportation and the environment, this being the greenhouse gas Carbon Dioxide (CO_2). According to 2006 U.S. Environmental Protection Agency data, 158 million people live in areas of non-attainment for eight hour O_3; over 29 million people live in areas of non-attainment for PM_{10}; 15 million people live in non-attainment areas for CO.[307] Ohio is not immune from the air pollution issue, and Northeast Ohio is especially not without problems. The seven counties covered in this retail study are almost always found among the top twenty-five counties in Ohio for mobile emissions of criteria air pollutants.[308] It is no coincidence that these counties are also the ones currently included in Ohio's Vehicle Emissions Testing Program (ECheck). The area is in non-attainment for both eight hour ozone and PM.

Hydrocarbons, or Volatile Organic Compounds, are gases emitted by certain solids and liquids. VOC's come from a variety of sources, including transportation emissions. VOC's react with NO_x to form ground-level ozone, otherwise known as smog. Because of the number

[306] Center for Sustainability (2004) www.c4s.info, Transportation Research Laboratory, www.trl.co.uk.
[307] U.S. Environmental Protection Agency, "Nonattainment Areas for Criteria Pollutants." December 6, 2006. http://www.epa.gov/air/oaqps/greenbk/ (accessed April 10, 2007).
[308] Scorecard, "Pollution in Your Community." 2005. http://www.scorecard.org/index.tcl (accessed April 10, 2007).

of compounds that qualify as VOC's, their environmental and health impacts from eye and throat irritation, to organ damage, to cancer in some animals.[309] This area is a non-attainment area for ground-level ozone. NOACA currently has a variety of programs that address the ground-level ozone problem, such as Ozone Action Days. In addition, the EPA's 8 Hour Ozone NAAQS addressing the issue is currently being litigated.

Carbon Monoxide is a nearly odorless, colorless gas created by the incomplete oxidation of carbon in combustion. The largest source of CO emissions is vehicle emissions, 77% of national CO emissions are a result of transportation sources.[310] At low concentrations, CO may cause fatigue in healthy people and exacerbate heart conditions.[311] At higher concentrations it will cause flu-like symptoms, impaired vision and coordination, and it may be fatal in certain concentrations.[312]

Nitrous Oxide refers to a variety of compounds made up of nitrogen and oxygen in varying amounts. While normally colorless and odorless, one form, NO_2 can combine with air particles in urban areas to form a reddish-brown substance.[313] Motor vehicles accounted for 55% of NO_x emissions in 2003.[314] The NO_x compounds contribute to a variety of environmental problems. NO_x reacts with VOC's to form ground level ozone; in other forms it also contributes to acid rain, while in another form (N_20) it's a greenhouse gas, and it can react to form toxic materials as well.[315]

Initially, Carbon Dioxide was not considered a pollutant by the EPA; however, a recent Supreme Court decision has held that CO_2 is an air pollutant under the Clean Air Act.[316] While it does not directly impact human health, it is a primary greenhouse gas. Greenhouse gases trap heat close to the earth and contribute to global warming. Carbon dioxide is another component of automobile emissions that need to be addressed. Given the recent Supreme Court decision holding that the EPA can, in fact, regulate heat trapping emissions under its Clean Air Act authority perhaps a change may be coming to CO_2 regulation in the United States.

When it comes to sources of air pollution, retail is not the first thought that springs to mind, that distinction is reserved for factories and power plants. However, retail is almost exclusively reliant on mobile sources (automobiles) to deliver its customers. The automobile emissions generated by trips to retail destinations are a significant source of air pollutant emissions.

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[309] U.S. Environmental Protection Agency, "Organic Gases (Volatile Organic Compounds – VOCs)." September 27, 2006. http://www.epa.gov/iaq/voc.html (accessed April 17, 2007).
[310] Scorecard, "Pollution in Your Community." 2005. http://www.scorecard.org/env-releases/cap/pollutant-desc.tcl (accessed April 10, 2007).
[311] U.S. Environmental Protection Agency, "Basic Information Carbon Monoxide." April 17, 2007. http://www.epa.gov/iaq/co.html (accessed April 17, 2007).
[312] Ibid.
[313] U.S. Environmental Protection Agency, "NOx: What is it? Where does it come from?" March 6, 2007. http://www.epa.gov/iaq/co.html (accessed April 17, 2007).
[314] Ibid.
[315] U.S. Environmental Protection Agency, "Health and Environmental Impacts of NOx" March 6, 2007. http://www.epa.gov/air/urbanair/nox/hlth.html (accessed April 17, 2007).
[316] See *Massachusetts v. EPA*, 127 S. Ct. 1438, (2007).

Tables 5.1 and 5.2 detail the amount of emissions of VOC's, CO, NO_x, and CO_2 generated annually by passenger cars and light trucks traveling to retail establishments.

Passenger Cars

Type of Shopping Center	**Cumulative Annual Vehicle Miles Generated**	**Annual VOC Emissions (lbs)**	**Annual CO Emissions (lbs)**	**Annual NO_x Emissions (lbs)**	**Annual CO_2 Emissions (lbs)**
Large Super Regional Center	70,638,750	435,657.49	3,251,871.97	216,272.82	64,705,095.00
Small Super Regional Center	51,358,499	316,748.45	2,364,300.95	157,242.98	47,044,385.08
Regional Center	22,042,231	135,943.27	1,014,719.44	67,486.13	20,190,683.60
Community Center	8,404,578	51,834.40	386,906.78	25,732.08	7,698,593.45
Neighborhood Center	1,426,511	8,797.87	65,669.78	4,367.51	1,306,684.08
Convenience Center	472,410	2,913.54	21,747.51	1,446.37	432,727.56
Power Center	28,846,272	177,906.52	1,327,945.12	88,317.88	26,423,185.15
Big Box Retailer	10,024,065	61,822.43	461,460.26	30,690.42	9,182,043.54
Large Drug Store	115,525	712.49	5,318.22	353.70	105,820.90

Table 5.1

Sources: Urban Land Institute, *Dollars and Cents of Shopping Centers*, 1998; Institute of Traffic Engineers, *Trip Generation*, 6th Ed. 1997; U.S. Environmental Protection Agency National Vehicle and Fuel Emission Laboratory, 2000.

Light Trucks

Type of Shopping Center	**Cumulative Annual Vehicle Miles Generated**	**Annual VOC Emissions (lbs)**	**Annual CO Emissions (lbs)**	**Annual NO_x Emissions (lbs)**	**Annual CO_2 Emissions (lbs)**
Large Super Regional Center	70,638,750	546,127.78	4,309,897.30	281,621.45	81,234,562.50
Small Super	51,358,499				59,062,273.85

Regional Center		397,066.81	3,133,547.19	204,755.25	
Regional Center	22,042,231	170,414.61	1,344,867.40	87,877.62	25,348,565.65
Community Center	8,404,578	64,978.13	512,790.33	33,507.24	9,665,264.70
Neighborhood Center	1,426,511	11,028.75	87,036.02	5,687.19	1,640,487.65
Convenience Center	472,410	3,652.33	28,823.25	1,883.40	543,271.50
Power Center	28,846,272	223,018.53	1,760,003.82	115,003.86	33,173,212.80
Big Box Retailer	10,024,065	77,498.83	611,600.44	39,963.78	11,527,674.75
Large Drug Store	115,525	893.16	7,048.55	460.57	132,853.75
Table 5.2					
Sources: Urban Land Institute, *Dollars and Cents of Shopping Centers*, 1998; Institute of Traffic Engineers, *Trip Generation*, 6th Ed. 1997; U.S. Environmental Protection Agency National Vehicle and Fuel Emission Laboratory, 2000.					

Since the 1960's automobile emissions have improved a good deal. However, both the number of automobiles on the road, and the number of miles driven, continues to increase often off-setting gains made through emission improvements. According to 2004 data obtained from the Bureau of Transportation Statistics, there were 243,023,485 registered passenger vehicles in the United States. Passenger cars accounted for 56% of the 243 million, while trucks accounted for another 38%.[317] Comparing the emissions figures with the number of vehicles on the road and the drawing power of larger retail centers creates the picture of unpleasant air quality consequences. Being a non-attainment area is not without consequences. Without an improvement in our situation, the area will face consequences such as the loss of federal transportation funding or stigmatism from business and industry looking to relocate or expand operations.

Since the initial study many additional retail projects have been built and proposed. As retail continues to move outward in the region, it only increases the miles driven and the emissions generated. Furthermore, larger retail developments draw from larger markets areas – also creating more miles driven and subsequent emissions. Two examples of new developments can illustrate the impact. Avon Commons is an 800,000 square foot retail center in Lorain County that came online in 2001. This qualifies as a Large Super Regional Center under the original study. In addition, there is also a proposed retail center in North Royalton that will consist of 400,000 to 500,000 square feet of new retail – which qualifies as a Small Super Regional Center under the original study criteria. Referring back to the tables above, that is an

[317] Bureau of Transportation Statics, "Table 1-11: Number of U.S. Aircraft, Vehicles, Vessels, and Other Conveyances." September 2006.
http://www.bts.gov/publications/national_transportation_statistics/html/table_01_11.html (accessed April 16, 2007).

additional 71 million in annual vehicle miles generated by Avon Commons and another potential 51 million miles that could be generated in North Royalton.

There are several possible solutions that could be adopted in Northeast Ohio to curb the air pollution problem. A 2004 study by Mark Southerland suggests several options for mitigating environmental impacts of development.[318] Among Southerland's suggestions are: development impact fees; development of concentrated activity nodes to center projects around; permitting mixed land uses; use of transportation management areas; and incentives for location-efficient development.[319] Each of these solutions requires participation of all stakeholders in order to implement, fund, or enable. Changes are being to occur, for example, in 2006 the San Joaquin Valley Air Pollution Control District instituted an assessment fee to curb their air pollution problem. The District's Indirect Source Review Program targets the developers and assesses fees for projects that will generate more traffic.[320] The money generated from the fees will be used to purchase cleaner school buses and city vehicles as well as pave roads. Impact fees are not a popular option, but they are beginning to receive consideration in other areas of the country. While perhaps not the likely in Northeast Ohio's situation, something must be done. The consequences of continuing in non-attainment could be worse on the local economy.

Policy Recommendations

Transit Oriented Development

A Transit Oriented Development (TOD) project is mixed use, dense development in close proximity to a transit stop. A core commercial area, such as a commercial main street, office, and a dense residential area should be within a short (5 minute) walk of the transit stop. The development should be pedestrian friendly, and there should be a diversity of residents (encompassing various incomes, ages, races and cultures) and housing types. Mass transit options should exist around the clock, and riders should not have to wait more than 15 minutes for a bus or train.[321]

A TOD incorporates many sustainable ideas. It promotes healthy behavior and helps to lessen the impacts of sprawl and the automobile. Denser neighborhoods lead to more easily maintained infrastructure and a tax base that is not spread thin. Diverse neighborhoods allow people to remain in the neighborhood throughout their lifetime, as they age, or as their income fluctuates. Less infrastructure is needed and the automobile is a luxury more than a necessity.

By being more pedestrian and transit friendly, a TOD encourages a healthier lifestyle through activities such as walking and bicycling. Decreased (and slower) driving leads to less air pollution, fewer (and less severe) accidents and less time wasted idling in traffic. The increased density and walkability makes a TOD neighborhood a good place for people to get to know each

[318] Southerland, Mark T. "Environmental Impacts of Dispersed Development from Federal Infrastructure Projects." *Environmental Monitoring and Assessment* 94, no. (2004): 163-178.
[319] Ibid.
[320] San Joaquin Valley Air Pollution Control District, "Indirect Source Review Program." February 12, 2007. http://www.valleyair.org/General_Info/ISRLoader.htm (accessed April 1, 2007).
[321] Tumlin, J. and A. Millard-Ball. How to Make Transit Oriented Development Work. 2003. *Planning*. May: 14-17.

other, as neighbors sit on their porches, walk in the neighborhood, commute together, and grow old in the same neighborhood.

Financially, the developer should see increased returns, as more people buy denser living space. The project is also more financially sustainable to the municipality, which can support more people on a smaller amount of infrastructure. This could lead to less maintenance, better maintained infrastructure and possibly lower taxes or increased services. Retail opportunities will exist at transit nodes. As TODs become more common, a real opportunity also exists for car sharing and bike stations. Increased density brings down the cost of housing.[322]

Rail transit ridership increases with coordinated land use policies near stations. (Boarnet 1999) Those who live in a TOD are also up to five times more likely to choose rail for their commute when compared to people in the surrounding community. This will improve financial conditions for public transit departments, reduce the impact of transportation on the environment and slow sprawl (preserving forest and farmland). TOD should lead to less air pollution per capita as fewer automobile trips are made. The decreased demand for parking could lead to improved drainage and less surface runoff and flooding.

The impact on community health should also be positive, as people spend more time walking and bicycling, and less time sitting in their cars. People will have more incentive to get outside, where there are other people and places to eat and shop within walking distance of their home. This will likely lead to increased interaction with neighbors and a strengthened community identity. The diversity of housing types may keep the elderly from becoming isolated, as they will live in the same neighborhood as young people, couples, families, and empty nesters.[323]

The following policy shifts at the federal, state and local levels could help support TODs:

1. Put a moratorium on new road construction and expansion, or at least fund improvements to existing infrastructure before creating new infrastructure.[324]
2. Increase funding for Amtrak, local transit organizations, and specific transit projects, including development projects along transit corridors. For example, in California, a percentage of highway funds are used on rail projects in San Diego County.[325]
3. Create reliable, fast, high speed train service (>75 mph) between urban areas in multi-city regions (i.e. Cleveland, Akron).
4. Create a national network of high speed trains. This can be accompanied with a moratorium on new airports and expansions of airports.[326]
5. Use form-based zoning, pedestrian overlay districts, re-zoning opportunities and other tools to increase density and decrease parking (especially within a five to 10 minute walk) near transit stops. Peter Calthorpe recommends average residential densities of 10

[322] Ibid
[323] Ibid
[324] www.transitorienteddevelopment.org
[325] Boarnet, and N.S. Compin. 1999. Transit Oriented Development in San Diego County: The Incremental Implementation of a Planning Idea. *Journal of the American Planning Association*. 65(1).
[326] www.transitorienteddevelopment.org

housing units per acre (15 in more urban developments).[327] Density should be highest closest to the transit stop.

6. Eliminate (or at least decrease) minimum parking requirements. In Alma Place in Palo Alto, California, a TOD where parking is free, peak hour demand is at four tenths of a space per housing unit.[328]
7. Encourage wider sidewalks, bike lanes, calmer traffic, and street trees.
8. Incorporate local smart growth initiatives into publicly funded plans and projects.
9. Use tax (or other) incentives to encourage TOD.
10. Increase the cost of parking.
11. Create and expand partnerships between public transportation departments and employers and schools to provide discounts and free ridership.
12. Provide public art opportunities in the pedestrian space.
13. Hide parking garages, so they do not dominate the landscape.

Fuel Cells

Beside TODs, alternative fuels can lessen the transportation-related environmental impacts of retail development. There are several types of alternative fuels. Some examples are: Diesel, ethanol, hydrogen, electric and biogas. However, the alternative fuel of focus here is fuel cells because of its assuredness in production, cleanliness and automobile manufacturers' interest in its use.

In March 2007, Ohio Lt. Governor Lee Fisher announced that more than $9 million in grants would be awarded to 13 entities for the advancement of fuel cell research and production in Ohio.[329] Nine companies and research collaborations received awards to assist in the research, development and commercialization projects of fuel cell technologies.

A fuel cell is an electrochemical energy conversion device. It produces electricity from external supplies of fuel and oxidant. These react in the presence of an electrolyte. Generally, the reactants flow in and reaction products flow out while the electrolyte remains in the cell. Fuel cells can operate as long as the necessary flows are maintained. The materials used in fuel cells differ in type.

[327] Boarnet, and N.S. Compin. 1999. Transit Oriented Development in San Diego County: The Incremental Implementation of a Planning Idea. *Journal of the American Planning Association*. 65(1).
[328] Tumlin, J. and A. Millard-Ball. How to Make Transit Oriented Development Work. 2003. *Planning*. May: 14-17.
[329] US State News, Columbus, OH, "State Awards $9 million for Fuel Cell Development", March 28, 2007. http://www.ulib.csuohio.edu/research/databases/index.html.

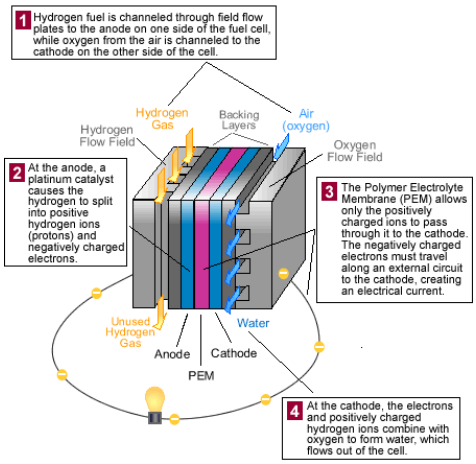

Figure 5.2

Cleveland's role in fuel cells is bringing companies in to produce and distribute the product. As the country moves from demonstrations to a commercially viable fuel cell product for the automotive sector, there are three key challenges to overcome in development: reducing the cost of production, increasing the durability of fuel cell use and ensuring reliable startup of the automobiles in freezing temperatures (there's no better place for testing that than Cleveland). In other words, one of the concepts for fueling Cleveland's economy is through research, development and distribution of fuel cells which will provide a local, national and international sustainable energy future. It is significant to mention that the funds from the $9 million grants mentioned above will result in the creation of 617 jobs.

In 2002, typical fuel cells had a catalyst content of $1,000 per kilowatt of electric power output. However, it is pertinent to remember that the high cost of fuel cell development is not unlike the development in the computer industry. In 1956, a gigabyte of memory cost $10 million. By 1980, the cost had been reduced to $193,000 per gigabyte. Today the cost is approximately $1.15.

Methods to manage the challenges in fuel cells are being developed by companies like Wellman Products Group (Solon), Contained Energy, Inc. (Shaker Heights) and in academic research labs like Case Western Reserve University, the University of Akron and even Cuyahoga Community College. The intolerance of carbon monoxide emissions is one of the greatest challenges to fuel cell production. (Vehicle emissions of carbon monoxide are greater when the weather is cold.) Ohio's inclement weather could help position the state as a national leader in the growing fuel cell industry.

The fuel cell initiative is an integral part of the Third Frontier Project, a $1.6 billion high-tech research program designed to create jobs and bring new products to market. To date, more than $62 million in funds have been awarded to fuel cell projects across the state. Cleveland is very capable of receiving a piece of the pie with its ability to accommodate alternative fuel/fuel cell companies with suitable facilities for research and development and affordable housing for the researchers, chemists and developers.

Silicon Valley achieved its title by the high concentration of semiconductor and computer-related industries in the area. Cleveland could transform itself from a blue collar town to a research and development central city—working toward a greener ecosystem.

More and more automobile manufacturers are coming out with models that run on greener fuels like fuel cell energy—Ford, Honda, Toyota, and Volkswagen. A company out of Connecticut called UTC Power (a United Technologies Company) is the sole supplier of fuel cells to NASA for use in space vehicles. The company is also developing fuel cells for automobiles and buses. It has been the first company to demonstrate automotive fuel cell start-up under freezing conditions. Companies like UTC could be persuaded to locate/relocate to Cleveland receiving the benefits of a city that is adept in production and manufacturing.

The impact of more automobiles on the roads results in residential streets becoming alternate routes as drivers attempt to avoid main road congestion. In turn, residents experience increased traffic noise and emissions pollution.[330] Alternative fuel vehicles are less noisy and emit fewer fumes than traditional vehicles, therefore making them less of a nuisance in residential areas.

If alternative fuels were used, fuel would cost less and the polluting emissions and noise would decrease. Jobs would be created and people would have more money to spend in the shopping malls of Cleveland and the surrounding suburbs. Most important, Cleveland would achieve a positive reputation of contributing to the improvement of a greener atmosphere.

[330] Northeast Ohio Regional Retail Analysis, "General Retail Development Impacts", Chapter 7, pages 156-159, August 2000

Conclusion

Retail development can no longer be viewed solely through the lens of developer profits or municipal tax revenues. Whereas retail may have historically been looked at as a separate entity or only mildly related to things such as buildings, economic development, municipal finance, watersheds, and transportation policy, it has become increasingly evident that these things are all interconnected in an incredibly complex manner.

As suburbia and the automobile became a dominant force in the U.S. and the Cleveland region, it must have seemed like incredible progress, as people were able to escape urban pollution and congestion, to live in a big house on a plot of their own land. The personal freedoms granted by the automobile allowed people greater mobility, allowing retail to locate further from the urban core (and away from transit routes).

As time has passed, it has become apparent there are real costs to this pattern of development and that this pace cannot be maintained over time. The global population continues to grow and demand for resources is at an all time high. Land necessary to grow crops, provide habitat for wildlife, and naturally absorb rainfall is being turned into parking lots, shopping malls, and other impervious surfaces. The United States, a country that has historically seemed to have an infinite amount of land, now must come to terms with the fact that land is a finite resource. This has brought into light the concept of sustainability.

The Northeast Ohio region, despite seeing little or no population growth, has not been immune. Unchecked retail development on the region's periphery has continued at the expense of the core. Aging infrastructure goes without maintenance, surface runoff creates flooding and other problems, old retail facilities sit vacant, and Clevelanders spend more time idling in their cars, increasing physical health problems and polluting the air. In fact, the Cleveland-Akron-Elyria area was named the nation's sixth worst air pollution problem among the nation's metropolitan areas in a study done by the American Lung Association (using 2003-2005 data).[331]

It has been stated above that retail must "grow, morph, or die". Northeast Ohio finds itself in a similar predicament, in a rapidly changing world, at a time when the world must find a way to exist in a sustainable manner, Northeast Ohio must find a way to "grow" or "morph" itself into a sustainable region, or it will die.

This means making changes, including enacting some of the policies and practices found in this paper. This means involving the federal government, state government, regional organizations, local governments, businesses, households, and individuals. A more holistic approach that takes into account retail's effect on more than just a retailer's bottom line or municipality's tax base

[331] Schwartz, Noaki. May 2, 2007. L.A. tops list of nation's most polluted. Yahoo News! via the Associated Press AP, Yahoo! News, May 2, 2007. http://news.yahoo.com/s/ap/20070501/ap_on_sc/polluted_cities_11 (accessed May 3, 2007).

must be taken. This means coordinated and improved planning that takes into account environmental, health, and economic concerns every step of the way.

The bulk of the effort will fall to municipalities in Northeast Ohio, as regional government entities in the area have little political power, and the federal and state governments have a much wider scope. Municipalities should use zoning to encourage density, place controls on retail, and encourage LEED certified, pedestrian friendly and aesthetically pleasing buildings. Zoning can also be used in the form of Pedestrian Overlay Districts and Planned Unit Developments (PUDs) to create a more sustainable land use pattern. Wetland setback ordinances should be enacted. Land can also be zoned for agricultural use or as open space. Local officials should also work to remove parking minimums, create Community Benefits Agreements, charge development fees, and stick clawbacks into projects that use public money. Efforts should be made to widen sidewalks, create bike lanes, calm traffic, and plant street trees. Local officials should also make a firm commitment to regional planning initiatives and consider their neighboring jurisdictions and the region as a whole when considering projects.

County government can use its funding to force municipalities to participate in regional initiatives. For instance, the county could make municipalities who refuse to participate in a countywide tax sharing agreement ineligible to receive county funds. Partnerships between counties could be used to set up a regional retail land bank or something similar. Watershed planning could be done at a regional level, including the purchasing of easements. Watershed planning goals must be backed by the force of law (and enforced).

At the state level, ODOT should increase funding for transit, and focus on maintaining older infrastructure over building new. NOACA should follow suit.

The federal government should increase funding for Amtrak and set up a national network of high speed trains. Federal funding (and state in some instances) can also be used to support alternative fuel development, high performance building practices, brownfield remediation, The Storefront Renovation Program, and innovative local initiatives. Land conservation and blight elimination should be priorities. Tax incentives should continue to encourage the renovation of historic buildings and re-use of “functionally obsolete” retail locations, such as the Euclid Square Mall. This should include turning some former retail sites to their natural state.

All levels of government should enact policies such as demanding that all buildings purchased with tax payer money be LEED certified. All levels of government, along with citizens, organizations, and businesses must also begin to think about the effects of the current state of regional retail development and begin to work to make it more sustainable in Northeast Ohio.