

Open Space Preservation and New Jersey: The Economic Benefit for Municipalities

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Introduction

I was born and raised in Branchburg, New Jersey, a small exurb in Somerset County in North-Central New Jersey. Having gone to college in neighboring Pennsylvania, I constantly had to defend the nickname of New Jersey, “the Garden State.” My friends from all across the United States would ask “Why is it called that anyway, there are no farms in New Jersey,” or “New Jersey is just a large swamp and oil refineries.” I would always respond that New Jersey has a thriving agricultural sector and that in fact, there is a horse farm across the street from my home in Branchburg.

Unfortunately, that lone horse farm across the street is the last of many that used to surround my neighborhood. While some still remain, I have seen many farms in my area of the state succumb to development. Today, those former farms have been replaced by an elementary school, a strip mall, and countless housing developments. Fortunately, not all of the working farms that have disappeared in my area have been commercially developed. Some of them have been preserved as historic farmland, some have been converted to parks or nature preserves, and some have been converted to golf courses. The residents of New Jersey are particularly aware of the effects of rapid development and the loss of open space in our municipalities. New Jersey is the most densely populated state in the country, and the only state with the distinction of having each and every one of its counties classified as “urban” by the United States Census.¹ Because of this, New Jersey should also be at the forefront of open space preservation in the United States, and it will be the objective of this paper to formulate an economic argument, as

¹ U.S. Census Bureau. “Metropolitan Areas and Components, 1999, with FIPS Codes.” <http://www.census.gov/population/estimates/metro-city/99mfips.txt> (Accessed Feb 28, 2011).

well as the more traditional ecological arguments, for municipalities in New Jersey to preserve open space.

Open Space in New Jersey

New Jersey is 7,417.34 square miles and is the most densely populated state in the nation. There are 1,134.5 people per square mile, compared with a density of 79.6 persons per square mile for the country as a whole.² This past summer, a group of researchers from Rutgers University and Rowan University compiled a sobering report on land use in the state titled, “Changing Landscapes in the Garden State: Urban Growth and Open Space Loss in NJ 1986 thru 2007.” The report is an analysis of land use and land use change over that period. During that time, there was a seven percent increase in the development rate of 15,123 acres per year and over the 21-year period covered in the study, 323,256 acres (507 square miles) of land in New Jersey were urbanized, representing a 26.8 percent increase in the total amount of urbanized land in 1986. This rate increased nearly twice as fast as the state’s population.³

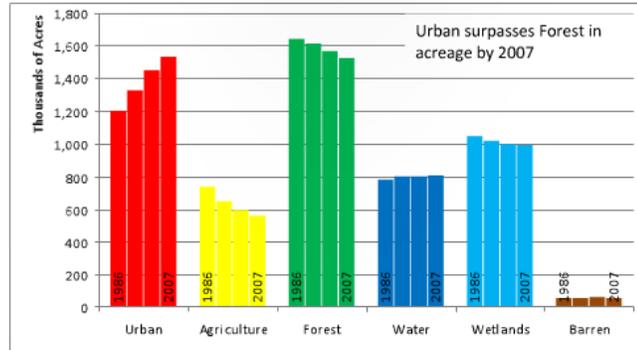
	1986 (acres)	1995 (acres)	2002 (acres)	2007 (acres)	21 year Change	21 yr % Change
Urban	1,208,553	1,334,542	1,452,503	1,532,809	324,256	26.8%
Agriculture	744,382	652,335	594,696	566,044	178,338	-24.0%
Forest	1,641,279	1,616,522	1,568,809	1,526,358	114,921	-7.0%
Water	783,260	800,610	803,185	810,095	26,835	3.4%
Wetlands	1,049,269	1,022,253	1,005,636	996,984	-52,285	-5.0%
Barren	57,223	56,698	59,138	51,678	-5,545	-9.7%

“Level 1 land use/land cover for 1986, 1995, 2002 and 2007 time periods.”⁴

² U.S. Census Bureau. “New Jersey.” <http://quickfacts.census.gov/qfd/states/34000.html> (Accessed Feb. 28, 2011).

³ Hasse, John E. and Richard G. Lathrop. “Changing Landscapes in the Garden State: Urban Growth and Open Space Loss in NJ 1986 thru 2007.” July 2010. <http://issuu.com/johnjreiser/docs/changinglandscapes> (Accessed Feb. 14, 2011): p. 6-7.

⁴ Table 2.1 from “Changing Landscapes in the Garden State,” p. 7.



“Figure 2.1 Change in each Level 1 category over the 1986, 1995, 2002 and 2007 time periods.”⁵

Over the 21-year period of the study, urbanized land increased by 324, 256 acres, while agricultural lands decreased by 24 percent, losing 178, 338 acres across the state. Additionally, it is important to note that forest is no longer the dominant type of land cover in the state of New Jersey, having been surpassed by urbanized lands in 2007. In this period, the state of New Jersey lost a quarter of its farmland. This is a testament to the rate at which the state is losing its non-urbanized lands to urbanization. This has important ecological and economic consequences that will be discussed later in this paper.

County	T1 (ac/yr)	T2 (ac/yr)	T3 (ac/yr)
Atlantic	683	838	1,104
Bergen	-26	325	284
Burlington	1,411	1,455	1,412
Camden	516	449	575
Cape May	448	325	351
Cumberland	574	376	524
Essex	-33	119	167
Gloucester	959	1,027	1,531
Hudson	60	42	90
Hunterdon	1,130	1,132	960
Mercer	866	863	693
Middlesex	848	1,131	1,128
Monmouth	1,373	1,934	1,754
Morris	903	1,219	930
Ocean	1,229	1,826	1,565
Passaic	94	230	191
Salem	425	278	327
Somerset	1,091	1,447	909
Sussex	782	928	875
Union	34	102	59
Warren	631	654	631

“Annualized rates of urban growth by county. Counties highlighted in red represent a greater than 10% increase in urban growth rate and counties highlighted in cyan represent a greater than 10% decrease in urban growth rate.”⁶

⁵ Table 7.2, from “Changing Landscapes in the Garden State,” p. 7.

⁶ Table taken from “Changing Landscapes in the Garden State,” p. 18.

The table above shows a county-level analysis of land change during the third stage of the time period covered by the Rutgers-Rowan report. Urban growth was highest in several coastal counties, including Monmouth and Atlantic counties, as well as Middlesex County. Agricultural land loss was greatest in Monmouth, Hunterdon, and Middlesex counties. However, this report did not only contain depressing news of open space loss in New Jersey. The report estimates that there is approximately 1.5 million acres preserved in one way or another in the state, which represents almost one-third of the state's total land mass. The report estimates that there are approximately 991,649 acres of open land remaining in the state, but also concludes that New Jersey is likely to be the first state in the union to reach build-out, and run out of open land.⁷ While this paper will not make normative judgments, this is not a distinction that most New Jersey residents would be proud of, and it is still possible to work together with municipalities in the state to preserve remaining open space in the Garden State.

Ecological Benefits of Open Space

Before I go into the economic benefits of open space preservation, I will briefly cover some of the ecological benefits that open space preservation provides, but it is equally important to note that the ecological benefits cannot be fully separated from the economic benefits that open space preservation provides. Open space provides vital habitat for a myriad of life, a fact that is often all too easy to forget, especially in more urbanized and densely populated areas.

⁷ Haase and Lathrope. "Changing Landscapes in the Garden State." p. 20-21.

Not only does open space provide habitat, which helps to preserve biodiversity, forests and wetlands provide important “services” for the residents of New Jersey, but wetlands filter water, help to prevent floods, and are home to one third of the endangered species that call New Jersey home. Forests provide habitat, as well as prevent soil erosion and filter air and water.⁸ When land becomes urbanized, it is usually covered with impervious surfaces such as concrete, which prevent the natural flow of water. This can increase proneness to flooding and prevents the natural refilling of aquifers and the filtration of water. This can have serious consequences to biodiversity and a negative effect on the drinking water supply in the state.⁹ While obviously this is just a brief overview of some of the ecological benefits associated with open space, it is an important aspect for arguments in favor of open space preservation; still, that is not the focus of this paper, which I will now turn to in the following section.

The Economic Benefit of Open Space Preservation

A good starting place is to define open space in economic terms. One such definition is that open space is a “non-depreciating, non-reproducible asset with increasing benefits over time.” Open space always has value because it maintains a potential for future use and it is a public benefit that solves collection action problems.¹⁰ There are many ways in which open space preservation can provide for economic benefit for New Jersey and individual municipalities. Some of these are directly related to the ecological benefits previously discussed, such as flood prevention and water filtration,

⁸ Kane, Richard P. “The Ecological and Biological Benefits of Open Space.” <http://www.greatswamp.org/Education/kane.htm> (Accessed Feb. 28, 2011).

⁹ Haase and Lathrop. “Changing Landscapes in the Garden State.” p. 15.

¹⁰ Miller, Stephen. “The Economic Benefits of Open Space.” <http://www.greatswamp.org/Education/miller.htm> (Accessed Feb. 28, 2011): p. 8.

which could keep down public works costs, and provide for habitat for eco-tourism and land for parks and outdoor enthusiasts. Other benefits come from increased property values and preventing municipal costs associated with development and investment. Costs for development often have high price tags, and towns are saddled with these costs for some time, whereas municipal investments for purchasing public lands for preservation are one-time costs that can be paid off over a set period of time.¹¹

Several case studies have shown that towns and municipalities will often save money in the long run or keep local taxes lower by investing in the purchasing of open land, using funds that it otherwise would have spent by allowing development. One such case is Mendham Township in Morris County. A 1993 study found that allowing for a development of 98 houses on a piece of land in the township would lead to a \$385 increase in property tax in the township, whereas the preservation of the land by the township would only lead to a \$104 increase.¹² This is just one such case that demonstrates that municipalities can save money in the long run and keep property taxes in the town lower by investing in open space preservation.¹³

As I noted earlier, the ecological benefits of open space preservation cannot be separated from the economic benefits, and this is an area that should be of particular concern for towns and municipalities in New Jersey. Wetlands filter and purify water that can be used as drinking water and recharge underground aquifers. Wetlands and open plains also act as a floodplain and absorbs overflow from rivers. These “services”

¹¹ Association of New Jersey Environmental Commissions (ANJEC). “Open Space is a Good Investment: The Financial Argument for Open Space Preservation.” <http://www.greatswamp.org/Education/anjec.htm> (Accessed Feb 28, 2011): p. 2.

¹² Citizens for Controlled Development, Fariello, Leonardo A. and Rich Lagman. “Economic Analysis for the Schiff Reservation in Mendham.” 1993: p. 3.

¹³ More case studies can be found at <http://www.greatswamp.org/Education/anjec.htm>.

prevent the costs associated with public costs of flood prevention and damages caused by flooding, as well as preventing the need for water purification plants. Often, the cost of securing these lands by municipalities would be far cheaper than the infrastructure required for providing these services and are one-time costs, as opposed to a water treatment plant, which would require operating costs.¹⁴ A recent report by the NJ Keep it Green coalition found that ecological benefits earn a \$10 return for every \$1 invested in open spaces through natural processes such as water filtration and flood control, as well as revenue from recreational activities on preserved open space.¹⁵ A study conducted in 2002 found that “for every 10 percent increase in forest cover in a municipal water system’s watershed, costs of water treatment decreased by 20 percent.”¹⁶ An Army Corps of Engineers study in 2002 in Massachusetts estimated that it would cost up to \$100 million for flood control along the Charles River, but only \$10 million to acquire 8,500 acres of wetlands bordering the river that would act as a flood control.¹⁷ The office of the Comptroller of Texas found that benefits from urban parks in Texas “freed up enough capital for private investment to contribute 2,906 jobs, \$233.6 million in gross state product and \$153.7 million in personal income annually.”¹⁸ Other industries are closely tied to open space, including tourism and outdoor recreation, which could be a positive revenue stream for New Jersey municipalities. Tourism, which is the second largest industry in the state of New Jersey, brings in over \$4 billion dollars a year and

¹⁴ AJNEC. “Open Space is a Good Investment.” p. 7-8.

¹⁵ Ogden, Maureen B. and Bradley M. Campbell. “NJ Open Space Bond Issue a Smart Choice for Our Future.” *Newark Star Ledger*. November 1, 2009.

¹⁶ DiNapoli, Thoms P. “Economic Benefits of Open Space Preservation.” Office of the State Comptroller. March 2010: p. 4.

¹⁷ Ibid, p. 5.

¹⁸ Ibid.

open space preservation can lead to more revenue and jobs for individual towns and municipalities.¹⁹

Open space can increase property values and keep taxes lower. AJNEC performed a comparison of towns in New Jersey between 1970 and 1990 and found that per capita tax increases were “significantly lower in towns with sizable percentages of protected lands and substantial farmlands.”²⁰ Proximity to parks, outdoor recreation facilities, greenways, and hiking and biking trails can often increase the valuation of a home and property. A study from Salem, Oregon found that property “adjacent to open space was worth approximately \$1,200 more per acre than urban land 1,000 feet away from the green belt.” The National Association of Homebuilders has shown that the proximity to a park in an urban area can account for as much as fifteen to twenty percent of a property’s value, an astounding amount that is even more important for the citizens of New Jersey, who have witnessed the rapid urbanization of their state.²¹

As I have shown, there is a compelling economic argument for the preservation of open space. Municipalities can save money by reducing the costs of some public services and the long-term, indefinite costs associated with development and higher property taxes. They can add open space, which can provide jobs and revenue, increase property value, and keep local taxes low. What needs to happen now is for this argument to be presented to towns in New Jersey and for people to work together to preserve the open space that we have left in the Garden State.

¹⁹ AJNEC. “The Benefits of Open Space.” p. 9.

²⁰ DiNapoli, Thoms P. “Economic Benefits of Open Space Preservation.” Office of the State Comptroller. March 2010: p. 5.

²¹ Miller, Stephen. “The Economic Benefits of Open Space.” <http://www.greatswamp.org/Education/miller.htm> (Accessed Feb. 28, 2011): p. 8.

Discussion

I started this paper off by telling a story, a story of the town in north-central New Jersey in which I grew up and still call “home.” So far, this story includes far too many open spaces being turned into residential developments and strip malls. I would like to change the future of this story and include more preserved farms kept open and operational, forests being protected and turned into nature reserves and parks that people can enjoy, and river systems and wetlands retaining their natural biodiversity and performing their essential functions of a thriving ecosystem.

What needs to happen now is a discussion about the future of the Garden State. People who are not persuaded by the ecological benefits of open space preservation might be amenable to hearing that open space preservation could actually cut down on their property taxes, create jobs, and increase the value of their homes. The Association of New Jersey Environmental Commissions has adapted an “Economic Analysis Worksheet” that municipalities and individuals alike can use to gauge the associated costs and weigh the benefits of development and open space preservation.²²

The citizens of New Jersey have repeatedly indicated that they are genuinely interested in protecting the open space left in the state and are willing to contribute to those efforts. Thirteen statewide referenda have passed since 1961, the most recent in 2009, which authorizes the state to sell bonds to raise upwards of \$400 million to go towards identifying and acquiring open space in the state. There are statewide programs, such as the Green Acres Program, which can help to identify target lands for preservation

²² Please see the appendix.

and for loans for municipalities to help pay for acquisition.²³ The will and the need are there for open space preservation in the Garden State. All that is required now is open dialogue and communication between taxpayers, local government, the state government, and interest groups to identify land that could be preserved and work towards telling the rest of the tale that I started at the outset of this paper, and to ensure that it has the ending that the people of New Jersey deserve.

²³ Visit <http://www.nj.gov/dep/greenacres/>.

Appendix

ECONOMIC ANALYSIS WORKSHEET

Certain general information is necessary for making the analysis. Local permutations abound. Discuss figures with local administrators and be sure that all assumptions are acceptable. A word of caution, a fiscal impact analysis doesn't address secondary or long-term impacts. The following is based on the work of David Nissen (Rutgers University). ANJEC's Resource Center has his analysis for Cranbury, NJ, with notes, comments, assumptions and uncertainties.

Basic Demography

* Number of households (Source: recent tax information)

a. _____

* Number of students currently in public schools (Source: School Board)

b. _____

* Number of students school system can accommodate before new facilities are needed (Source: School Board)

c. _____

Assumptions

* Number of students generated by each housing unit:

d. _____

(Source: School or planning board figures. A large single family house generally produces 1.0-1.5 school children; a townhouse produces 0.3 school children; senior citizen housing, none; modify planning estimates using your town's actual data.)

* Cost per student:

e. _____

(Source: School budget. Add capital budget and operating budget; divide by the number of student in the system.)

* New facility cost:

f. _____

(Once the threshold is passed, this figure comes into play. Capital outlay is roughly estimated-- Nissen's figures follow: State requires 100 square feet of school space per student; approximate cost per square foot = \$100; capital cost per student (100 X \$100) = \$10,000; capital charge factor based on 40 year mortgage at 8 percent - if inflation occurs, this charge factor will rise. This produces an annual cost per student of \$420. Since new facilities are built with room to spare, a more accurate figure can be estimated after conversation with school administrators. Nissen uses a figure of \$1500.)

* Average cost of municipal services per household:

g. _____

(Source: Municipal Budget. Subtract non-property tax revenues from total outlay and divide by the number of households. This number may be modified to reflect discussions with fire and police regarding at what point new facilities or equipment might be needed. Recognize that not all portions of the municipal budget vary directly with population increase or decrease.)

* Average market values of new housing unit

h. _____

(Source: tax information from other recent new units; real estate estimates)

* Effective municipal assessment rate:

i. _____

(Source: local tax assessor)

* Municipal tax rate:

j. _____

Method

* Educational outlay: students per housing unit (d)_____ X cost per student (e)_____ = \$ _____

PLUS

new facility cost per unit (f)_____ X students per housing unit (d)_____ = \$ _____

total 1. _____

* Cost of municipal services per house

(g): 2. _____

* Total municipal cost of one new housing unit

(line 1 + line 2) 3. _____

* Municipal tax revenue for one new unit: Calculate by multiplying average market value (h) X effective assessment rate (i)

X municipal tax rate (j) 4. _____

* Net annual burden or revenue of an additional new unit: Subtract line 4 from line 3 5. _____

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