

the office/industrial

LAND DILEMMA

By Zenia Kotval and John Mullin



Newer industrial parks show less density.

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INTRODUCTION

To encourage a balanced economy and make place for office/industrial activities in our regions, one needs to look at both retrofitting older buildings and brownfield sites as well as creating suitable space for modern industrial facilities. Modern office/industrial parks have a campus feel with the designated purpose of attracting office/industrial users. Densities are often less than those found in older industrial areas and larger tracts of land, with suitable access, are required.

Increasingly, planners and developers are becom-

ing aware of the mismatch between land zoned for industry and that which is *suitable* for industrial development. This is true for both brownfield and greenfield sites in the Blackstone Valley along the Rt. 146 corridor in Massachusetts.

Older areas are constrained by issues of compatibility, access, parking, and often environmental and flood plain issues. Greenfield sites are constrained by physical site characteristics such as wetlands and slope, access and transportation networks, development pressures from other land uses such as residential or commercial/retail users and public perceptions and concerns surrounding industrial uses. The premise of this article is that, unless these issues are addressed, there will be a shortage of developable office/industrial lands along the corridor. Communities need to do more than just designate or zone land for industrial purposes. They need to study the suitability of this land for industrial purposes.

The article begins with a brief overview of the Blackstone Valley and its Rt. 146 corridor. It then examines 1) current problems with industrial lands, 2) applies industrial land suitability criteria to six communities along the Rt. 146 corridor, and 3) discusses implications and recommendations to address these concerns.

THE BLACKSTONE VALLEY AND ITS RT. 146 CORRIDOR

The Rt. 146 corridor is a well constructed divided highway that serves as a direct connector between Worcester and Providence through the Blackstone Valley. Upgraded in the 1980s, the highway was connected to I-90, the Massachusetts Turnpike in the 1990s. A final high-speed link to Worcester from the Pike is now under construction. The Valley is in the midst of a renaissance. The

A STUDY OF THE BLACKSTONE RIVER CORRIDOR IN MASSACHUSETTS

Local planners have often neglected their industrial resources and are therefore jeopardizing their economic base. There is clearly a mismatch between land zoned for industry and that which is suitable for development. Older areas are constrained by issues of compatibility, access, and environmental and flood plain issues. Greenfield sites are constrained by physical site characteristics, such as wetlands and slope, transportation networks, development pressures from other land uses and public perceptions and concerns surrounding industrial uses. Through this case study, this article analyzes the key factors that are influencing industrial land use decisions and provides recommendations that may be of assistance to local officials throughout the country.

expansion of the highway, the creation of the Chafee National Heritage Corridor, and the westerly spread outward from Boston of jobs and people have stimulated extensive investment. In years past, one could hear references to the Blackstone as the "Lost Valley." This is no longer the case.

The region is highly diverse in terms of demographic characteristics, labor characteristics, and educational attributes. It is the home of both blue-collar workers and high technology employees. The former will probably be far fewer in the future. At the same time, they are expected to be higher skilled, more computer literate, and more highly educated in a formal sense. Indeed, over time, the assembly line is likely to be increasingly populated by workers who have some post-secondary education. (There is anecdotal evidence which suggests that 10-20 percent of assembly line workers have at least one year of community college education). The criticality of this training can be perhaps best noted in Worcester County where the plastics industry is so prominent: The lack of skilled plastic mold operators is so severe that companies commonly provide extensive bonuses to older workers to keep them on the job.

In terms of demographics, the region is increasingly reliant on women and immigrants to fill jobs. Women, in fact, are increasingly close to an 80 percent participation in the workforce. This, according to the Census Bureau, is the maximum expected participation. The good news is that they have been able to enter the workforce. The less good news is that there is no longer a large scale, untapped workforce in the corridor. Concerning immigrants, it is clear that the corridor would have lost population without the entry of foreigners. The region is increasingly attracting Haitians, Brazilians, Portuguese, Russians, and Asians/Chinese. How they will be assimilated, educated, and trained is important to the corridor's workforce.

The corridor still has affordable housing. It is still most apt to be found in the center cities. There are still "pockets" of such housing in mill villages such as Whitinsville. The positive news is that this housing exists. The less positive fact is that the housing is in increasing demand, prices are rising, and in most cases will be beyond the means of lower middle income workers in the years to come.

The corridor is still largely the home of traditional industries. Indeed, the direct legacy of the Slater stimulated (small village scale) industrial revolution can be found throughout both the Massachusetts and Rhode Island sides of the corridor. In these communities, people still "make things" from abrasives to high precision medical instruments. While the labor needs of such industries have been in decline, the majority of remaining firms are still profitable. Along with manufacturing, the corridor is attracting some warehousing, biotechnology, and a sprinkling of growth industries. It will become increasingly diverse over the next decade as companies move out from core cities and into the smaller towns.

The most striking points that emerge relate to transportation. The entire corridor, with the completion of the I-90 – Rt. 146 Connector, will have one of the best transportation networks in the

nation. With four interstates and three major state highways, truck traffic has quick, efficient access in all four directions. With fast passenger and increasingly efficient freight rail service, the corridor is well on its way to serving distant points. And with three increasingly popular commercial airports within 60 miles of each other, it is one of the best served regions in the nation. If there are transportation problems, they relate to "regional" east-west options. Still, on the whole, this corridor has tremendous transportation advantages.

In a final analysis, the corridor has several tremendous assets that will serve it well in the future. These include its quality of life, manufacturing legacy, highly trained workforce, location, and highway infrastructure. There are still major weaknesses.

The region has no regional strategic plan, the towns have been slow to invest in infrastructure, and there has been a propensity to accept any type of industrial development as being in the town's best interests. These factors emerged as a result of a study of land suitability of all industrially zoned land along the corridor between Providence and Worcester. For this article, data are extracted for the six Massachusetts towns that touch the Rt. 146 corridor. They are Douglas, Grafton, Millbury, Northbridge, Sutton, and Uxbridge.



Redevelopment at the Fisherville site in South Grafton is currently underway. The old mill burnt to the ground in 1999.

Despite the historical and illustrious role of the Blackstone Valley in America's Industrial Revolution, it has slowly and steadily moved away from welcoming new industrial uses. This is noted through the towns' zoning regulations, perceptions toward industry and the emerging disconnection between local citizens and local jobs and an unwillingness to invest in local infrastructure.

Concerning zoning problems, towns still tend to place industrial land last in their typical pyramidal hierarchy of zoning uses. This typically means agricultural uses can be placed anywhere and that the majority of land is dedicated to residential activities. One then finds a small band of commercial land (where agricultural and residential activities could also be placed) and finally a very narrow band of industrial land – the space not suitable for anything else. That is, if land is unsuitable for agricultural, residential, and commercial use, then it could be used for industry – or so goes local logic. Given the deep fear concerning industry, this phenomenon is understandable. However, this "garbage land" is rarely prime for industrial uses. One Massachusetts community zoned 700 acres for industry. After wetlands, steep slopes, roads, and setbacks were subtracted, the town had 40 scattered acres that were usable. As will be noted in detail later in this article, a large amount of the Blackstone Valley towns have zoned land that is unsuitable for development.

The second key reason is that there has been growing distrust over industry of all types. This has occurred as a result of popular reaction to news coverage concerning incidents such as Love Canal, Three Mile Island, and General Electric's Pittsfield Plant. Moreover, the U.S. Environmental Protection Agency's Superfund list, coupled with state lists, has detailed more than 600,000 polluted industrial sites nationwide.

The third reason is that there is now a disconnect between the location of industry and the people who work in the mill, factory, or plant. In previous generations, one typically found local people working within their home communities. Today, we are more apt to travel to a distant job in another community or region. In Central Massachusetts, for example, 79 percent of all resident adults worked in the region in 1980. Today, it is approximately 72 percent. In Massachusetts, as a whole, the typical worker travels 27 minutes to work each day. As late as 10 years ago, we could promote industry as a means of expanding the local tax base and local job opportunities. We no longer can use the latter. There is little sense of connectedness between the mill and local residents. Moreover, the plants themselves are less likely to be a part of the local culture. The speed with which they come and go has only increased, so we are all subject to job churning. For example, one 1,000,000-square-foot facility in the region changed from being the home of a plastics

company to paper to electronics to computers to software service firms. (The plastics firm employed five percent of the town's workers while today's service firms employ only one percent).

Finally, there is the question of infrastructure. Throughout the 1990s and early 2000, reinvestment in infrastructure systems became a highly contentious issue. With declining federal and state assistance, many communities refused to upgrade or improve their systems. The net result is that systems are increasingly operating at capacity and are requiring major maintenance. Citizens are also being asked to fully fund water and sewer expenses. The electorate has not been inclined to provide special assistance to industrial users. Ironically, this is resulting in many places developing package treatment plants for sewage disposal. Such is the case in Uxbridge, Massachusetts, where a 40-acre parcel is now being developed with private septic and private water systems. In essence, such places are free of any necessity to tie into town systems. This is positive in communities where expansion of such systems would be costly. However, given the need to have ample space to place such systems, they can frequently contribute to sprawl.

DETERMINING LAND SUITABILITY

When assessing the locational attributes of any industrial site, there are two distinct aspects that one would look at. The first set of criteria deals with the *physical locational suitability* of a site. These include topography, access, location, environmental, and natural features as well as site condition. The second set of criteria comes into effect when a site is deemed suitable in terms of the physical locational attributes. This set of criteria deals with the *amenities* provided on site such as landscaping, design, and architectural standards; use amenities such as on-site hotels, fitness and recreational facilities; utility amenities such as on site water, sewer, gas, telecommunication networks; and organizational management structure.

It is this second set of criteria that classifies an industrial, office and/or research park. A "Class A" Park would be one that has optimal amenities in place. A "Class B" Park is one that has the potential of being a Class A park with improvement to existing amenities and/or incorporating additional amenities. A "Class C" Park is a utilitarian park that serves a basic function well without indulging in "nice to have" amenities. The same classification system would apply to office or industrial space in existing buildings. Well designed and maintained space in close proximity to desired amenities would rank higher than inexpensive space for incubator or starter industries.

There is a need for different classes of space for successful economic development. Not all industry desires (or can afford) "Class A" space. A diversi-

fied economy is certainly a healthy economy. The region has a unique advantage of being able to offer a wide range of properties for industrial development. And yet, it has been slow to create spaces that would be attractive to high end users.

The most common site location factors that need to be addressed are as follows:

- **Fair Market Land and Construction Costs:** Estimating costs accurately is a vital element in the site selection process. The land acquisition, or base price, is the single largest element. Other costs would include site engineering, utilities and infrastructure, construction materials and labor, maintenance costs, and taxes.

corridor with this growth capacity, Geographic Information Systems (GIS) were used to map and assess all lands available for industrial and commercial purposes and their potential environmental constraints represented by key factors such as steep slopes, wetlands, floodplains, protected open space, and prime agricultural lands.

The Central Massachusetts Regional Planning Commission created the following sets of maps for the corridor:

- Base Map: Political boundaries, highways, local roads, active rail lines, hydrography;
- Zoning Map 1: Actual zoning district designations, displayed on base map;

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- **Infrastructure, Transportation, and Utilities:** One of the key factors would be the proximity to acceptable transportation services. Quick and easy access to raw materials and suppliers is important. Other considerations would include highway frontage, accessibility, visibility, drainage capacity as well as power, sewer and water availability at reasonable rates.
- **Current Land Use and Compatibility with Adjacent Areas:** Evaluation of the suitability of specific park sites is influenced by the nature of the current use of the land and the compatibility of the prospective park activities with those in adjoining areas.
- **Environmental Issues:** Industrial/business sites must conform to a wide range of federally and locally mandated restrictions designed to maintain a healthy environment. Sites with few or no environmental constraints are at a distinct advantage.

Given the above factors and trends, it is clear that office, industrial, and commercial growth is likely to occur in communities that have the capacity to absorb new development either in existing brown-field sites or in areas slated for new development. In an effort to identify the communities within the



Older industrial sites along the Blackstone River are very close to the water and difficult to reuse.

- Zoning Map 2: Industrial and commercial districts that permit industrial and warehousing activities including table showing relevant dimensional requirements;
- Environmental Constraints Map: Wetlands, flood plains, slopes greater than 15 percent, rivers, river protection act buffers, protected open space, and adopted water supply protection districts;
- Readiness Map: Water lines, sewer lines, gas lines, and electric distribution lines with industrial and commercial zoning districts displayed; and
- Land Use Map: Developed lands and approved subdivisions.

The maps each show important pieces of the analyses of land suitability. The Base Maps show community boundaries, hydrology, major transportation routes, and the rail line. The Land Use



Old mill converted to housing.

maps show developed and undeveloped lands. Infrastructure maps show existing and potential water, sewer, and electricity lines. It should be noted that data on the availability of fiberoptic lines were not consistently available. The Environmental Constraints maps show floodplains, steep slopes or poor soils, wetlands, and protected open space as limits to industrial and office development. The Generalized Zoning map combines the zoning maps of the communities into categories with similar uses. Finally, the Readiness maps show the industrial and light industrial lands that could be developed based on suitable infrastructure and lack of significant environmental constraints.

INTERPRETATION AND ANALYSIS

A minimum contiguous tract size of 50 developable acres is the standard for readiness used here. This size parcel would allow for development of adequate building space and the required area for parking and infrastructure.

Industrial land availability and capacity for each community along the corridor were determined through the use of Geographic Information System analysis and data available from the Central Massachusetts Regional Planning Commission.

These maps and data take into account environmental constraints, zoning, and land that has been previously developed.

The table on page 21 shows the number of industrially zoned acres in each community that are developable.

IN SUMMARY

The industrial land suitability study highlights several important issues related to industrial land. Approximately 23 percent of the land zoned for industry has already been developed. Perhaps more significantly, 32 percent of the land zoned for industry has significant physical constraints such as steep slopes, wetlands, and ledge. As such, only 45 percent of the zoned land is available for new industrial growth. This represents approximately 2,500 acres. Few communities offer over 200 acres of developable land. Even fewer communities have large contiguous tracts of land.

From a policy perspective, three key points emerge. First, given the increasing resistance to industrial development, those large parcels currently designated for industrial use must remain as such. This means that every effort must be taken to insure that residential or commercial incursions do not occur. Moreover, these areas should have primacy in terms of grants or capital improvement projects to provide or expand infrastructure improvements. The importance of protecting these lands cannot be understated: If the corridor is to attract first class industry, its few remaining large parcels must become first class lands.

Secondly, the corridor is becoming increasingly attractive for warehousing uses. Nowhere can this better be noted than in Sutton, where the South Sutton Commerce Park has attracted several warehouse and distribution companies within sight of Rt. 146. Among these companies are Carquest, Champion Container, and Ross Express. In the same town, Burnap Industrial Park is advertising for warehouse condo users. While these uses pay full property taxes, they are not large employment generators. As well, they typically do not require skilled labor. For this reason, they should be excluded, as much as possible, from prime industrial parks. Such uses should be placed on smaller, free standing parcels near interstate or major state highways where there is minimal need to upgrade infrastructure systems. This will not be an easy task.



Thirdly, the lack of regional cooperation will only hurt the six towns in the coming years. All of the indicators point toward a need for high-end industrial/office facilities. And yet, most of the towns appear to be bent on attracting low-end occupants for their vacant spaces. The irony is that there is a concentration of high end users, including EMC and Waters Inc less than 15 miles from the corridor. The communities need to come together and develop a common plan to develop the corridor. Otherwise, the region's ability to become more prosperous in the coming years will not happen.

OBSERVATIONS AND RECOMMENDATIONS

At the most fundamental level, communities need to address both industrialization (office, research, and manufacturing on new sites) and reindustrialization (the revitalization of existing industrial sites) in their master plans. By so doing, the public will know that this is a direction that the community desires and will not be surprised, and the various agencies (planning, conservation, public works) can also begin to focus their actions in a coordinated manner. Moreover, the plan will (or should) have a series of recommendations for general areas where industry can and should be located. It cannot be emphasized more strongly that, if the placing of industry is a surprise to the public, it is likely to be the subject of citizen protest.

Planners typically face four choices in industrial zoning. The first starts with a definition of industry. Harvey Moskowitz and Carl Lindblom, in their *New Illustrated Book of Development Definitions* (New Brunswick, N.J.: Center for Urban Policy Research, 1993), describe industry as "Those fields of economic activity including forestry, fishing, hunting, and trapping; mining; construction; manufacturing; transportation; communication; electric, gas, and sanitary services; and wholesale trade". The problem is not with this basic definition but with what happens when we try to break industry into light and heavy categories. These categories overlap and are confusing. Communities need to stay with a basic definition and to use performance standards to control what actually occurs.

There can sometimes be a problem in selling this idea at first with people asking: "You mean anything can be sited if it meets these standards"? However, once people see that performance standards are quite controlling, they more readily accept them.

The second choice is whether to have industrial districts by right or special permit. It is best to create districts by right if there are clear areas where it can work. Doing so sends a message to the community that industry will come and is wanted. It also tells industrial developers that they are wanted and tells abutters that they must expect industry in their backyards. However, many communities will want the safety net provided by the special permit process, whereby the developer must defend a project in terms of environmental, fiscal, traffic, infrastructure, and character impacts. When there is any doubt about a site or when a community desires some room to maneuver (for example, a choice between industry or commercial uses), the use of special permitting is appropriate. But remember the use of special permitting does slow down the building process, tends to cost the developer more money, and frequently creates heated political environments where decisions are based upon emotion and political considerations rather than sound planning.

The third centers upon the location of various types of industry. There needs to be room for traditional manufacturing (that is, brownfields), industrial subdivisions, and even industrial parks. Interestingly, there can be more success in revising zoning for brownfields (typically the highest density) and industrial parks (the lowest density) than for the mid-range industrial subdivision.

The fourth relates to what should be allowed in an industrial district. The simple answer is that it depends. In all cases, a community should allow manufacturing that is governed by performance standards. Beyond this, the range of options runs the whole gamut of land-use categories. As a rule of thumb, arguments can be made against allowing housing in industrial districts because residential uses are more apt to be built first and take away

	Industrially Zoned Land in Acres	Developed	Vacant	Constrained	Vacant High Potential for Development
Douglas	1,778	356	1,422	637	785
Grafton	1009	182	827	286	541
Millbury	470	69	401	166	235
Northbridge	622	129	493	241	252
Sutton	920	322	598	305	293
Uxbridge	755	207	548	157	391
Totals	5,554	1,265	4,289	1,792	2,497

This data has been compiled from the 2000 Statewide Buildouts in Massachusetts

prime industrial land and, later, there are often issues of compatibility. Having said this, residential uses can work where there are specific master-planned districts with strict controls and large areas of land between uses. Artist lofts, apartments, shops, offices, and even light manufacturing have intermingled nicely in such areas. On the whole, however, planners should keep residential uses out of prime industrial districts.

Elements of this case study can be seen throughout older industrialized areas. This corridor, like many other similar areas, is literally at a crossroads. It can continue as it is and become little more than a center for warehousing and distribution. Corridors such as these can be improved by careful planning, investing in infrastructure, improving amenities and being patient. These places are too special to continue as it is. They must embrace a new tomorrow.

There are no problems with mingling office, finance, research and development, and industrial uses. However, caution should be used when considering the placing of commercial uses in industrial districts. Commercial uses can be land eaters, the traffic flow can be disruptive, and they tend to move into newly designated districts more rapidly than industry.

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CONCLUSION

As one travels across the country and notes the plethora of real estate signs advertising, "industrially zoned land for sale," one might question the premise of this article. However, it is important to take a closer look and carefully evaluate the land in question. Most lands zoned for industrial uses will never be suitable as such. A single flaw (e.g., wetlands, surrounding residential uses, lack of water or sewer systems) can virtually eliminate a parcel from consideration for industrial development. It is clear that planners must reevaluate the lands designated for industrial use in their communities to ensure that there is high-quality space available for the long term. 



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