Durham Industrial Land Study

Durham City-County Planning Department

March 2013

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Table of Contents

Durham Industrial Land Use Study

Executive Summary

1. Durham County has approximately 17,200 acres of land designated for industrial uses on the (Zoning Map of the Unified Development Ordinance).

2. In 2012, approximately 5,300 acres, or approximately 31 percent, designated for industrial uses were used for industrial purposes. Therefore, a little under 12,000 acres of land, or 69 percent, designated for industrial uses were either vacant or were being used for other purposes.

3. Planning staff projects that by 2035, Durham will need 1,400 acres in addition to the 5,300 acres currently utilized for industrial uses.

4. Utilizing criteria defined in this study, not all land designated for industrial uses is likely to be marketable for those purposes.

5. Planning staff determined that approximately 1,600 acres of vacant land designated for industrial uses meet the criteria set forth in this study and are marketable for industrial uses.

6. A map of marketable industrial land would be a useful tool for planning staff, the Planning Commission, and the elected bodies when considering applications to change a FLUM designation from industrial to another land use category.

7. Planning staff concludes that Durham County has an adequate supply of vacant, marketable industrial land to meet demand though the year 2035. However, the absence of vacant, very large parcels of land (over 100 acres) may limit Durham's ability to attract some industrial employers.

Purpose

The purpose of the *Industrial Land Study* is to determine if Durham County has an adequate supply of land zoned Industrial and designated as Industrial on the Future land Use Map to meet demand through the year 2035, and if that land is suitable for industrial purposes. This project is directed by the following Durham Comprehensive Plan policies:

Policy 2.5.3a. Study of Industrial Land. The City-County Planning Department, in conjunction with the City of Durham Office of Economic and Workforce Development and the Durham Chamber of Commerce, shall conduct a study to determine the appropriate location, size, and qualities of industrial land in Durham. (See Policy 6.1.5c, Land Use Location and Availability).

Policy 6.1.5c. Land Use Location and Availability. The City-County Planning Department, in conjunction with the City Office of Economic and Workforce Development and the Chamber of Commerce, shall regularly evaluate the demand for land designated for economic activity, and the availability and location of land suited for economic development activities, and opportunities for revitalization and reuse. (See Policy 2.5.3a, Study of Industrial Land.)

Does Durham have an adequate supply of marketable industrial land?

Methodology for Calculating Industrial Land Use Demand

A projection of industrial employment in Durham County is the basis for determining industrial land demand. The employment projection utilizes historical employment data (1980-2010) available from the U.S. Department of Commerce, Bureau of Economic Analysis, to project an employment trend-line through the year 2035 (see Figure 1, Industrial Employment, 2015-2035).

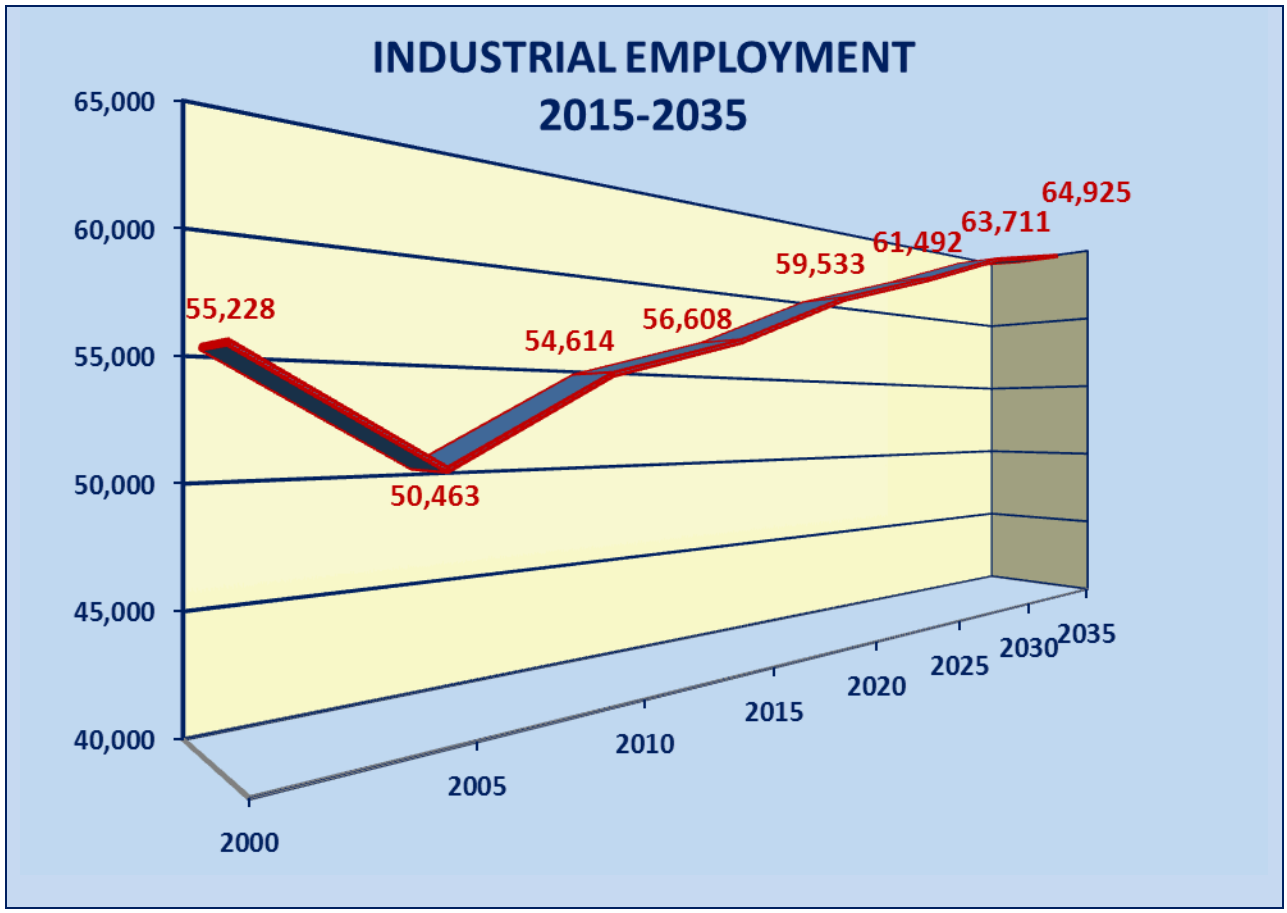

Figure 1. Projected Industrial Employment, 2015-2035. Note that the years 2000, 2005 and 2010 are shown for context. Sources: Projected employment by Durham City-County Planning Department, historic employment data from the U.S. Bureau of Economic Analysis.

As shown above, Durham's industrial employment is expected to rise approximately 19 percent from 2010 to 2035. If industrial jobs in 2035 require the same amount of land area in 2035 as in 2010, Durham will need a commensurate increase in the supply of industrial space.

Industrial building square feet were derived from 2010 Durham County Tax Assessor data. In 2010, Durham had approximately 12 million occupied industrial square feet of building space. Square feet of industrial space was divided by the number of industrial employees in 2010 to calculate an average

square feet per employee. Square feet demand per employee was determined to be 241 feet for most industrial uses, excepting warehousing. In the case of warehousing, the square feet per employee demand was 2,890 feet. The projected employment for 2015-2035 was then multiplied by the square feet per employee to derive a projection of space demand for 2035. A 20 percent market variability rate was also incorporated into the model. The market variability rate increased projected demand by 20 percent.

Industrial land demand in 2035 can be derived from the space demand by utilizing average floor-area ratio (FAR) for industrial uses. FAR is the ratio between building floor-area and the area of the parcel upon which the building sits. The average FAR for industrial uses in Durham County is 0.08. The base year used in this study was 2010. The FAR for each industrial property in Durham was calculated, then staff used that data to determine an average FAR for all industrial land. Because industrial land uses include warehousing, which tends to utilize a much higher percentage of a property than does manufacturing and other industrial uses, average FARs for warehousing and other types of industrial uses were calculated separately.

The formula used to estimate the amount of land Durham needs to accommodate industrial uses in a given year was:

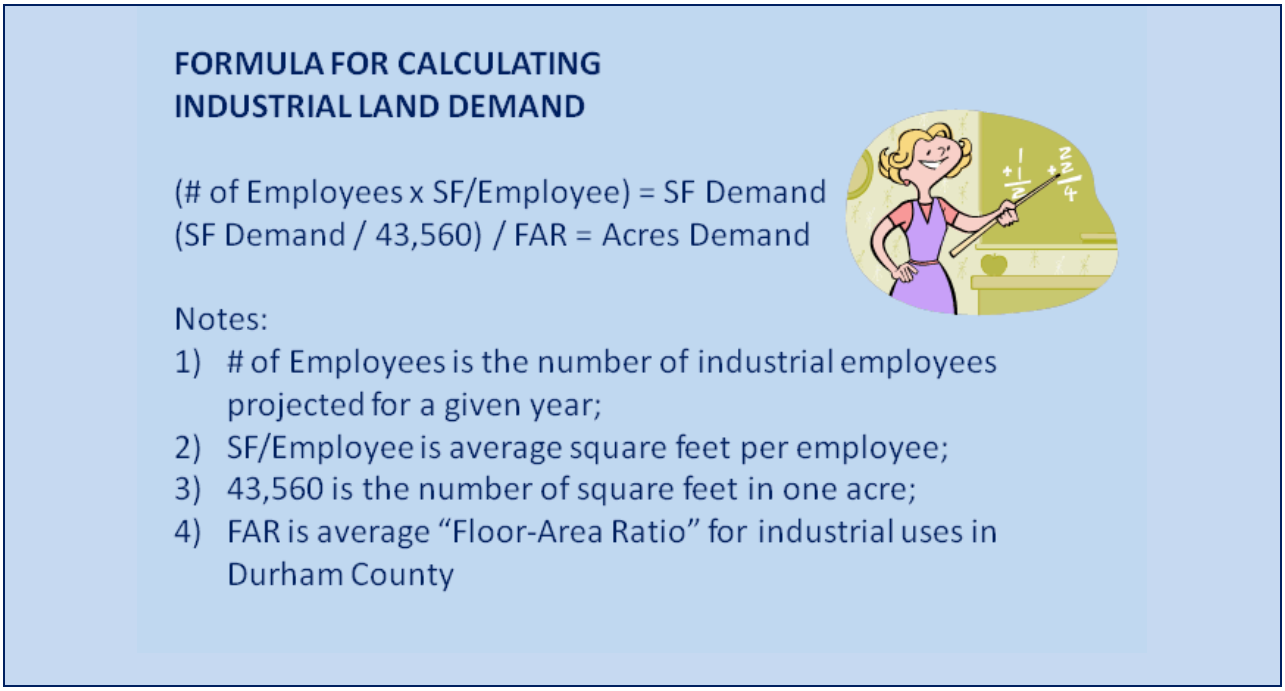

Figure 2. Multipliers used in the calculations were derived from parcel data provided by the Durham County Tax Assessor and employment data from the U.S. Bureau of Economic Analysis.

Using this methodology, staff determined that 1,400 acres will be needed to accommodate growth in industrial uses in Durham County by 2035. Approximately 17,170 acres are currently zoned for industrial uses:

INDUSTRIAL DESIGNATION	ACRES
INDUSTRIAL (I)	1,166
INDUSTRIAL LIGHT (IL)	9,408
INDUSTRIAL PARK (IP)	1,153
SCIENCE RESEARCH PARK (SRP)	5,444
TOTAL	**17,171**

Of these 17,171 acres, Durham County currently has about 11,580 acres of vacant industrially zoned land. However, there are questions concerning the marketability of some of the vacant industrial land. Staff determined that the following location criteria were crucial to marketability:

1) Proximity to major roadways;
2) Access to public water and sewer services;
3) Sufficient acreage to accommodate the proposed use;
4) Lack of environmental constraints; and
5) Appropriate distance from residential uses.

Suitability of Industrial Land

Staff determined that a small number of industrial uses are not subject to the criteria above. For that reason, the following industrial uses were excluded from this analysis: mining, quarries, and salvage yards. The analysis focused primarily on certain industrial high-employment generators:

- Manufacturing/processing
- Environmental science
- Materials science
- Information technology/Communications
- Microelectronics
- Pharmaceutical science
- Biological technology/biological pharmacology
- Miscellaneous research

Proximity to Major Roadways

Major industrial employers were mapped and the distance from their locations to major roadways was determined (see Figure 3, Major Roads). The analysis revealed that approximately 70 percent of major industrial employers are located within ½ mile of major roads. The average distance is approximately ¼ mile from major roads.

The first criterion that affects marketability of industrial land is proximity to major roadways

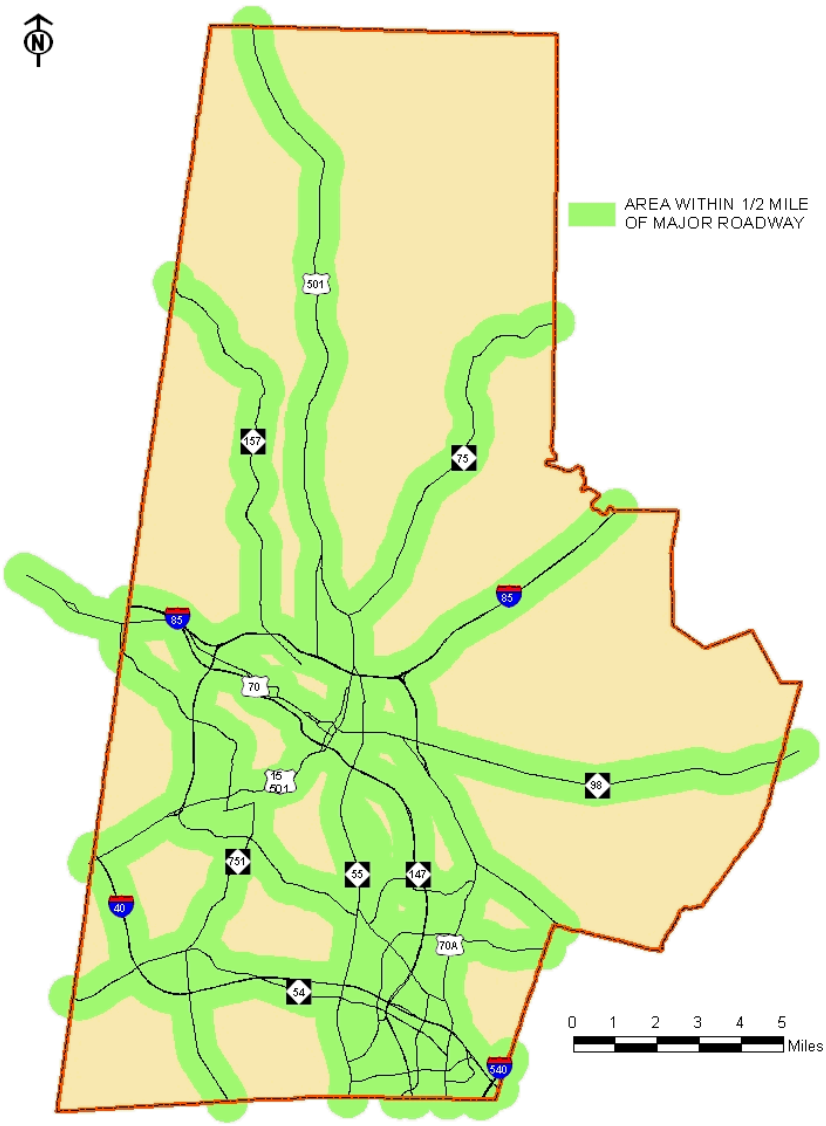

Figure 3. Major Roadways used in this study.

Access to Water and Sewer Services

Major industrial employers require access to public water and sewer services for a variety of reasons. Many manufacturing processes require large amounts of water, and the effluent from those processes cannot always be accommodated through on-site wastewater systems (See Figure 4).

The second criterion is availability of public water and sewer services

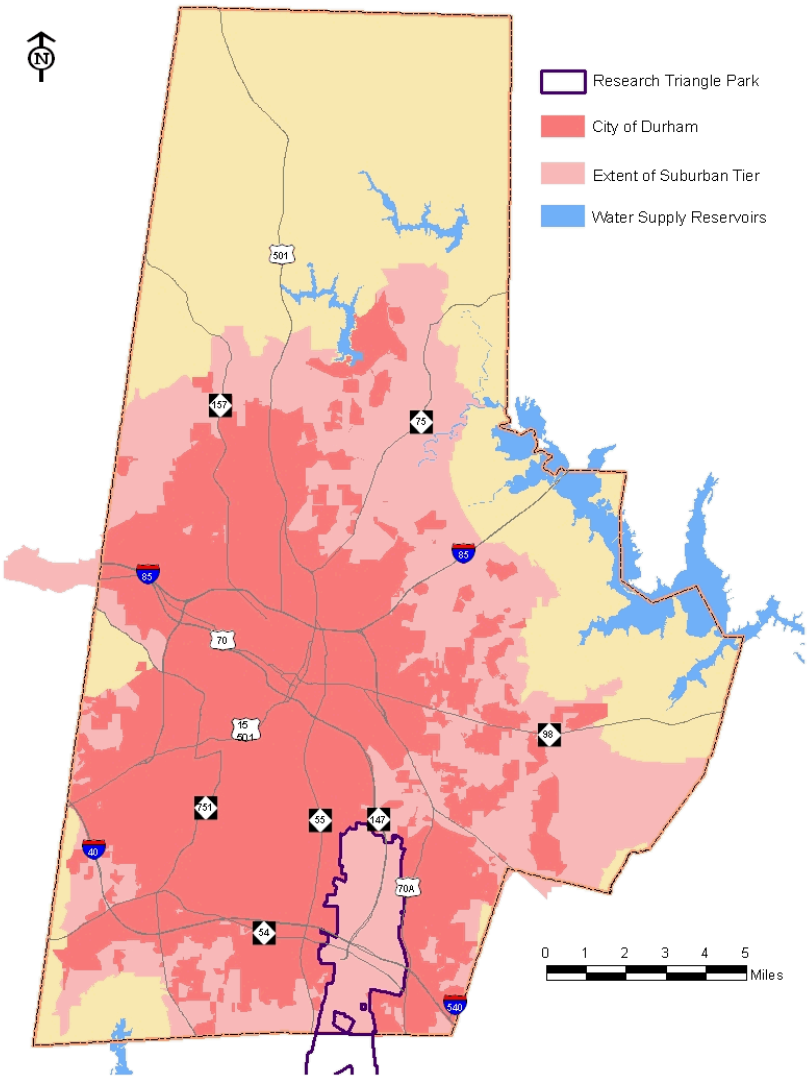

Figure 4. Approximate extent of City of Durham water and sewer.

In addition, major manufacturing facilities often want fire suppression capabilities, or may be required to have such systems through building codes, that are only available through the water pressure provided by a public water entity. Throughout the majority of Durham County, the City of Durham is the only provider of public water and sewer services. All vacant industrial land that met the criteria used in this analysis fell within Durham's present water and sewer service areas.

Sufficient Acreage and Lack of Environmental Constraints

A third factor in marketability is the size of available parcels. Industrial uses tend to have a larger building footprint than other uses. Industrial uses also tend to require sites that are less constrained by environmental concerns, primarily steep slopes and floodplain. Staff therefore subtracted Special Flood Hazard Areas (SFHA) and areas of steep slope as part of the analysis. Subtraction of floodplain and steep slopes reduced the amount of vacant industrial lands that meet all criteria to 2,140 acres. Figure 5 shows the locations of those parcels.

The third and fourth criteria are available property of sufficient size, and lack of environmental constraints

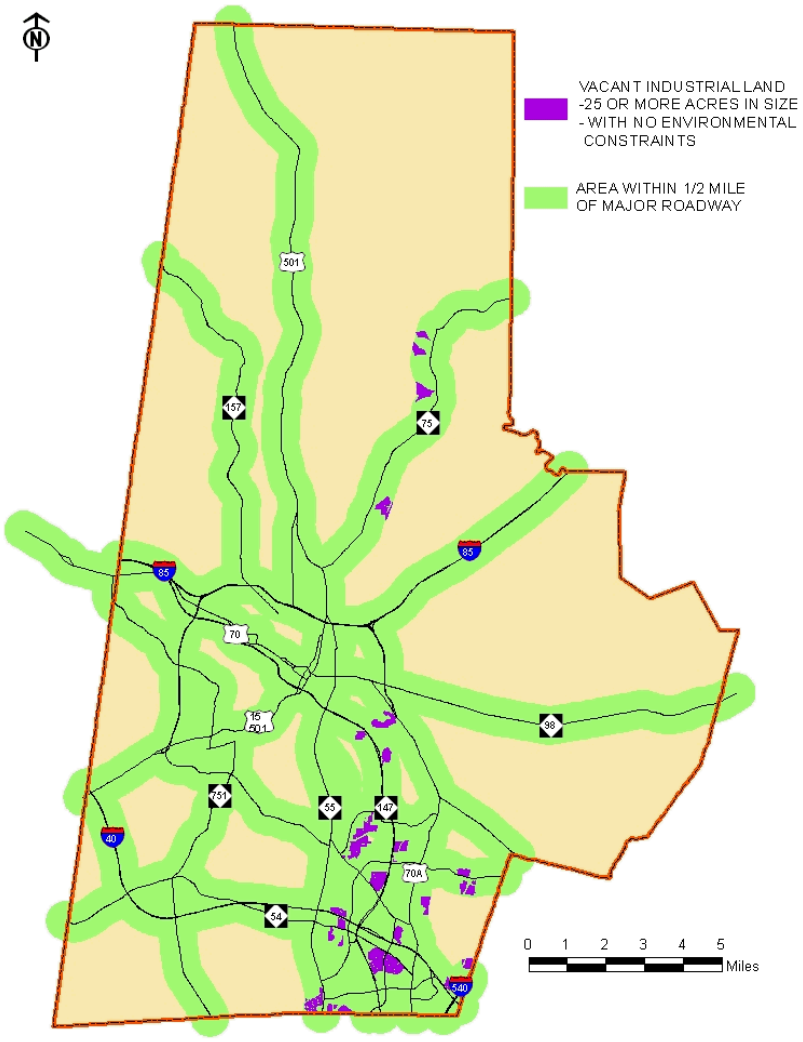

Figure 5. Vacant industrial land that is: 1) 25 or more acres in size; 2) within ½ mile of a major roadway; and 3) has few environmental constraints.

Staff followed the suggestion of the Greater Durham Chamber of Commerce and focused on parcels that are at least 25 acres in size and are within ½ mile of the major roadways identified in Figure 3.

Proximity to Residential Uses

This study identified 32 properties that met all criteria for marketable industrial land. Of these 32 properties, seven properties, totaling approximately 324 acres, were adjacent to residential properties. The seven properties adjacent to residential land were judged by staff to have sufficient acreage for required buffers necessary to preclude impacts on the adjacent residential land. No industrial properties were removed from consideration by this study because of their proximity to residential uses.

Other Factors Affecting Industrial Land Suitability

Research Triangle Park

Research Triangle Park's (RTP) exceptionally low intensity development pattern has a large effect on projected industrial land demand. The average FAR within RTP is approximately 0.06. Outside of RTP, average industrial FAR is 0.13. If the projections utilize the higher FAR, then land demand is decreased, and less than 1,000 additional acres would be needed to meet demand in 2035. Staff opted to use an FAR of 0.08 in the calculations, an overall average FAR for industrial uses in Durham County. The reason for doing so is that any over-estimate of the amount of land needed by 2035 will be available for industrial development after 2035, whereas an under-estimate might support conversion of industrial land to other uses, eventually resulting in a shortage of land for industrial development.

Very Large Industrial Parcels (100 acres or more)

There is a dearth of very large industrial parcels, as seen in the following table:

Marketable Industrial Land by Size	
Number of Parcels Over 150 acres	0
Number of Parcels 100-150 acres	2
Number of Parcels 50-100 acres	10
Number of Parcels 25-50 acres	20

It should be noted that the lack of very large marketable industrial properties may serve as a disincentive to some industrial employers.

Conclusions

Planning staff concludes that, while Durham County has an adequate supply of vacant, marketable industrial land to meet demand though the year 2035 (See Figure 6), the absence of available very large parcels of land (over 100 acres) may limit Durham's ability to attract some industrial employers.

The criteria used in this study were:

1. Proximity to major roads. Staff determined that 70 percent of Durham's major industrial employers were located within ½ mile of major roads.
2. Access to public water and sewer services.
3. Parcel size adequate to accommodate industrial uses.

4. Lack of environmental constraints. The constraints evaluated include floodplains (Special Flood Hazard Areas) and wetlands, steep slopes, and water supply watershed critical areas.
5. Proximity to residential land.

1) Durham has an adequate supply of marketable industrial land through 2035. However,

2) The absence of very large vacant industrial properties (over 100 acres) may hinder recruitment of some industrial employers.

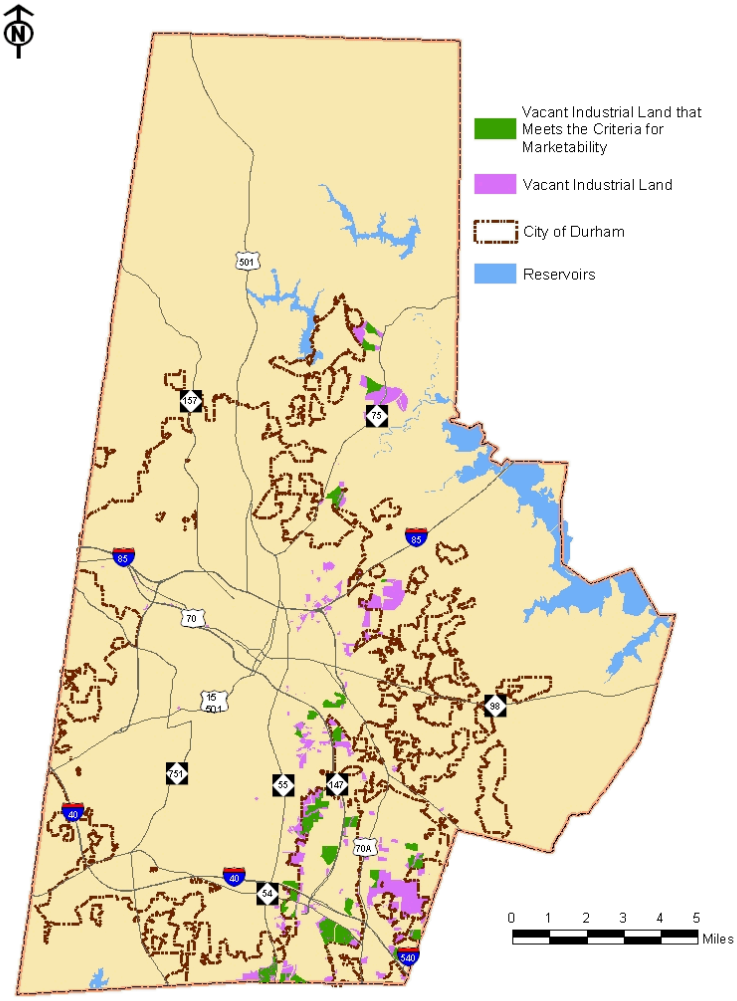

Figure 6. Vacant industrial land in Durham County compared to land determined in this study to be marketable for industrial uses.

Further Study

The supply of available, marketable industrial land should be monitored and reevaluated frequently because of its importance to economic development efforts. Within the next five years, Durham will undertake a revision of its Comprehensive Plan. A thorough reevaluation of the amount of marketable industrial and other non-residential land should be undertaken as part of that process.

Additionally, the lack of very large, marketable industrial properties may be a concern the local governments wish to address. An evaluation of vacant or minimally utilized properties that could serve to meet Durham's need for very large industrial properties may be worthwhile.

Technical Appendix

This appendix provides data tables and maps that illustrate how the criteria defined in this report were used to identify vacant, marketable industrial land.

Base Year Industrial Demand (The base year is 2010)	
Industrial Employment	54,614
Industrial Space (in square feet)	24,094,487
Vacancy Rate	0.15
Occupied Industrial Space (in square feet)	21, 138,684
Industrial square feet demand per Employee:	
Industrial uses, excluding warehousing, storage, and trucking	240
Warehousing, storage, and trucking	2,890
Land Demand in Acres	5,300

Note: Salvage yards and mining were not included in this study because: (1) Location requirements for those uses do not conform to the criteria set forth in this study; and (2) those uses account for very little employment in Durham County.

Industrial Land Demand in 2035	
Projected Industrial Employment	64,925
Additional industrial space required by 2035 (in square feet)	
Industrial uses, excluding warehousing, storage, and trucking	1,997,945
Warehousing, storage, and trucking	4,319,782
Additional acres needed	1,161
Industrial uses, excluding warehousing, storage, and trucking	764
Warehousing, storage, and trucking	397
Total additional acres needed (with 20% market adjustment added)	**1,393**

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