

Land Use Demand Assessment Results

Miami Valley Land Use Demand Assessment

Regional Land Use Projection Results

As mentioned above, two projections, lower and upper, were used to account for a range in employment projections. These figures therefore resulted in two sets of projections for the employment and facilities categories.

Table 20. Regional Land Use Projection Results by County

Region	Total Developed Acreage 2007	Lower Level Total Acreage Needed 2040	Percent Change 2007-2040	Upper Level Total Acreage Needed 2040	Percent Change 2007-2040
Region	275,709	283,253	2.7%	292,121	6.0%
Greene	73,696	77,799	5.6%	78,958	7.1%
Miami	63,512	67,080	5.6%	68,394	7.7%
Montgomery	130,715	130,956	0.2%	134,593	3.0%
Warren*	7,786	13,038	67.5%	13,038	67.5%

Source: MVRPC
Note: *Warren County includes only the cities of Carlisle, Franklin, and Springboro

As a whole, the Region can expect to need between 2.7% and 6.0% more developed land by the year 2040 (Table 20). Warren County is expected to see the largest increase in need, with 67.5%, but land use demand in Montgomery County is expected to increase only by between 0.2% and 3.0%.

Table 21. Regional Land Use Projection Results by Land Use Category

Category	Lower Level Additional Acreage Needed 2040	Upper Level Additional Acreage Needed 2040
Residential	6,421.1	
Employment	0.0	8,859.2
Facilities	11.5	20.6
Education	1,111.3	
Water and Wastewater	0.0	
Total	7,543.9	16,412.1

Source: MVRPC

Examining the projections by land use category shows that for the lower level projection, the land use category with the largest absolute increase is residential (Table 21). For the upper level projection, the largest absolute increase belongs to the employment-related land use category. It is important to note that not all elements of the five land use categories were projected. For example, only two categories of facilities were projected and no projections were made for Water and Wastewater facilities.

Residential Land Use Projection Results

Table 22 is a summary of the residential acreage need in 2040 and the percent changes between 2007 and 2040 by county. Overall, the Region is expected to need 3.8% more residential land in 2040. The three cities in Warren County are expected to need the largest increase in residential land (101.6%). On the other hand, the amount of residential land needed in Montgomery County is expected to decrease by -3.4%.

Table 22. Residential Land Use Projection Results by County

Region	Developed Residential Acreage 2007	Residential Acreage Needed 2040	Additional Acreage Needed	Percent Change 2007-2040
Region	167,446	173,867	6,421	3.8%
Greene	39,772	41,457	1,685	4.2%
Miami	45,428	48,601	3,173	7.0%
Montgomery	78,103	75,458	-2,645	-3.4%
Warren*	4,142	8,351	4,209	101.6%

Source: MVRPC
Note: *Warren County includes only the cities of Carlisle, Franklin, and Springboro

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Table 23. 2040 Residential Unit Projection Results by Residential Category

	Region	Greene	Miami	Montgomery	Warren*
Single Family					
<1 Units Per Net Acre	38,146	12,209	14,630	11,015	292
1-2 Units Per Net Acre	94,689	23,360	11,920	48,318	11,090
3-5 Units Per Net Acre	99,477	11,982	6,647	71,839	9,010
6+ Units Per Net Acre	67,577	4,271	4,277	58,612	417
Subtotal Single Family	299,890	51,822	37,474	189,784	20,810
Multi-Family					
Total Multi-Family	63,034	14,642	3,129	40,076	5,187
Total Housing Units	362,924	66,464	40,604	229,861	25,996

Note: *Warren County includes only the cities of Carlisle, Franklin, and Springboro

Table 23 details the number of housing units that will be needed in 2040 in order to accommodate the future population. Table 24 translates this into the number of acres that will be needed in order to accommodate these units.

Employment-Related Land Use Projection Results

Table 24. 2040 Residential Land Use Projection Results by Residential Category

	Region	Greene	Miami	Montgomery	Warren*
Single Family					
<1 Units Per Net Acre	83,700	24,128	37,982	21,113	477
1-2 Units Per Net Acre	48,794	12,421	7,453	23,955	4,966
3-5 Units Per Net Acre	24,583	2,794	1,550	17,787	2,452
6+ Units Per Net Acre	8,198	608	616	6,911	63
Subtotal Single Family	165,275	39,951	47,601	69,766	7,957
Multi-Family					
Total Multi-Family	8,592	1,506	1,000	5,692	394
Total Acreage	173,867	41,457	48,601	75,458	8,351

Note: *Warren County includes only the cities of Carlisle, Franklin, and Springboro

Total employment in the Region is projected to increase by 1.5% to 23% from 2010 to 2040. This represents an addition of between 6,957 and 96,343 jobs. Manufacturing and agriculture, and possibly public service are expected to lose jobs over this period; services, transportation, and construction sectors are anticipated to grow the most. Note, however, that because different job sectors have different space requirements, the amount of land used for employment changes not

only in response to changes in the total number of jobs, but in response to the change in percentage of the types of jobs. Specifically, industrial jobs in the Region take about 959 square feet per employee whereas commercial employees take about 398. Therefore, the decrease in industrial employment results in a lower overall demand for space.

Table 25 is a summary of the land that will be needed to accommodate the changes in employment numbers for the Region as a whole and by county. The Region will experience a demand between -3.3% and 25.1% for more land for employment-related land use in 2040. In the lower level projections, Montgomery County is projected to need less land for employment-related land use than it had in 2007. The three cities in Warren County will see the highest percent increase in land demand. In the upper level projections, all of the counties show an increase in the land needed, although Miami and Montgomery

Table 25. Employment-Related Land Use Projection Results by County

	Developed Employment-Related Acreage 2007	Lower Level Employment-Related Acreage Needed 2040	Percent Change 2007-2040	Upper Level Employment-Related Acreage Needed 2040	Percent Change 2007-2040
Region	35,308	34,151	-3.3%	44,167	25.1%
Greene	4,646	6,306	35.7%	7,464	60.6%
Miami	5,673	5,898	4.0%	7,211	27.1%
Montgomery	23,445	19,535	-16.7%	27,081	15.5%
Warren*	1,544	2,412	56.2%	2,412	56.2%

Source: MVRPC

Note: *Warren County includes only the cities of Carlisle, Franklin, and Springboro

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counties have the smallest percent increases, with 27.1% and 15.5%, respectively. The largest percent increase is projected to occur in Greene County.

Table 26 shows the land needed to accommodate the 2040 employment projections by employment category and by county. Table 27 provides the percent changes in the land needed for employment-related land uses between 2007 and 2040.

Regionally, for the lower projection, industrial employment-related land uses are projected to decrease by more than 10% between 2007 and 2040; commercial employment-related land uses are expected to decrease by 0.3%. For the upper projection, industrial employment-related land uses are projected to increase by 6.5% and commercial employment-related land uses are expected to increase by over 33%.

Table 26. 2040 Employment-Related Land Use Projections by Employment Category

	Region		Greene		Miami		Montgomery		Warren*
	Lower proj.	Upper proj.	Lower proj.	Upper proj.	Lower proj.	Upper proj.	Lower proj.	Upper proj.	
Total Industrial	9,628.4	11,408.1	815.4	965.1	1,898.7	2,317.5	5,583.2	6,794.4	1,331.0
Manufacturing	8,146.0	9,628.8	515.8	610.6	1,706.6	2,083.1	4,620.6	5,632.1	1,303.0
Total Commercial	24,522.7	32,758.7	5,490.4	6,498.6	3,999.5	4,893.3	13,952.0	20,286.1	1,080.8
Retail	6,918.4	8,297.3	2,082.3	2,464.7	888.9	1,084.9	3,575.1	4,375.6	372.1
Office**	3,509.6	4,245.7	650.1	769.5	400.3	488.6	2,361.0	2,889.4	98.3
Total Employment	34,151.0	44,166.9	6,305.8	7,463.7	5,898.2	7,210.8	19,535.2	27,080.5	2,411.8

Note: *Warren County includes only the cities of Carlisle, Franklin, and Springboro
 **Includes FIRE, Services, and Government SIC categories

Table 27. Percent Change from 2007 to 2040 for Employment-Related Land Use Projection Results by Employment Category

	Region		Greene		Miami		Montgomery		Warren*
	Lower proj.	Upper proj.	Lower proj.	Upper proj.	Lower proj.	Upper proj.	Lower proj.	Upper proj.	
Total Industrial	-10.1%	6.5%	-7.0%	10.1%	-16.5%	1.9%	-17.5%	0.4%	68.3%
Manufacturing	-18.5%	-3.6%	-16.2%	-0.8%	-20.1%	-2.5%	-28.5%	-12.9%	68.5%
Total Commercial	-0.3%	33.2%	45.6%	72.4%	17.7%	44.0%	-16.3%	21.7%	43.5%
Retail	6.0%	27.1%	74.3%	106.3%	-0.4%	21.6%	-14.3%	4.9%	39.3%
Office**	10.8%	34.0%	34.4%	59.1%	15.5%	41.0%	4.6%	28.0%	22.1%
Total Employment	-3.3%	25.1%	35.7%	60.6%	4.0%	27.1%	-16.7%	15.5%	56.2%

Note: *Warren County includes only the cities of Carlisle, Franklin, and Springboro
 **Includes FIRE, Services, and Government SIC categories

Losses are seen in manufacturing employment-related land use for both the lower and upper level projections in all counties except Warren, for which manufacturing employment-related land use is projected to increase by over 68%. The lower level projection also shows decreases in retail employment-related land use for Miami and Montgomery counties. Overall, the largest percent increases in employment-related land use for all categories are projected for Greene County's upper level projection, and Warren County's projection.

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Public Facilities Land Use Projection Results

As Table 28 shows, acreage used for facilities is substantial, but additional land needed in 2040 is not, due to the fact that only fire/EMS and police facilities – a small proportion of the land in the facilities category – were projected.

Table 28. Public Facility Land Use Projection Results

	Region		Greene		Miami		Montgomery		Warren*
	Lower proj.	Upper proj.	Lower proj.	Upper proj.	Lower proj.	Upper proj.	Lower proj.	Upper proj.	
Fire/EMS Facilities Acreage	133.2	137.9	23.7	24.5	25.3	26.2	75.9	78.9	8.3
Police Facilities Acreage	129.0	133.4	7.6	7.8	3.5	3.7	99.8	103.8	18.1
Total Facility Acreage 2040	48,507.6	48,516.6	12,753.9	12,754.9	7,334.5	7,335.5	27,507.2	27,514.2	912.0
Total Facility Acreage 2007	48,496.1		12,750.9		7,332.5		27,513.5		899.2
Percent Change 2007-2040	0.02%	0.04%	0.02%	0.03%	0.03%	0.04%	-0.02%	0.00%	1.42%

Source: MVRPC

Note: *Warren County includes only the cities of Carlisle, Franklin, and Springboro

As a whole, the Region can expect to need between 0.02% and 0.04% more acreage for public facilities in 2040 as compared to 2007. The projections for both the upper and lower level projections for Greene and Miami counties fall within this range. Montgomery and Warren counties, however, do not. Montgomery County, due to a projected population decrease, is not projected to need any more land for public facilities in 2040. The three cities in Warren County, however, are projected to have a relatively large population increase, and therefore will need 1.42% more land for public facilities in 2040.

Educational Land Use Projection Results

Table 29 shows the change in enrollment for public primary and secondary schools between 2007 and 2040. Only public primary and secondary schools were projected; enrollment and land needed for other types of educational facilities were held constant from 2007. Table 30 shows the projections for land needed in 2040 for educational facilities.

Table 29. Percent Change between 2007 and 2040 for Public Primary and Secondary Enrollment

	Region	Greene	Miami	Montgomery	Warren*
Public Primary & Secondary Schools 2007	129,424	22,338	17,078	80,310	9,698
Public Primary & Secondary Schools 2040	167,771	33,540	24,059	94,811	15,360
Percent Change 2007-2040	29.63%	50.15%	40.88%	18.06%	58.39%

Source: MVRPC

Note: *Warren County includes only the cities of Carlisle, Franklin, and Springboro

The total number of public elementary and secondary students in the Region is expected to rise by almost 30%, and acreage demand is expected to rise by 28.67%. This indicates that as a whole, the Region has slightly more facility space than students currently, and so can absorb some increase in students without needed the given demand for facility acreage.

Note that the OSFC's equation for gross square footage for a school building actually gives a range, on a sliding scale; for this report, we used the lowest number in that range in our calculations. However, the OSFC does note, "The sliding scale allows for the fact that larger buildings that must be provided for larger student populations are more space efficient and require fewer square feet per student." The variation in school sizes across the region can certainly affect acreage demand. Not all schools in the

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region can support a larger, more space-efficient building, in which case the fundable square footage will rise, as will the acreage.

Table 30. Educational Land Use Projection Results

	Region	Greene	Miami	Montgomery	Warren*
Public Primary & Secondary Schools					
Grades K-5 (Elementary School)	1,860.5	563.0	191.8	1,014.7	176.4
Grades 6-8 (Middle School)	1,172.8	470.5	177.4	548.8	76.4
Grades 9-12 (High School)	1,954.5	458.9	302.8	1,039.2	184.3
Total Public Primary & Secondary School Acreage 2040	4,987.8	1,492.4	672.1	2,602.7	437.1
Total Public Primary & Secondary School Acreage 2007	3,876.5	737.4	503.2	2,361.1	274.8
Percent Change 2007-2040	28.7%	102.4%	33.6%	10.2%	59.1%
Auxiliary Facilities	346.0	73.0	67.3	191.6	14.1
Total Private Primary & Secondary Schools	399.7	69.4	40.5	289.4	0.5
Total Public Post-secondary Education	1,046.4	864.2	124.8	57.5	0.0
Total Private Post-secondary Education	778.9	524.8	12.0	228.8	13.3
Total Education Facility Acreage 2040	7,558.8	3,023.7	916.7	3,370.0	465.0

Note: *Warren County includes only the cities of Carlisle, Franklin, and Springboro