

## 4.0 FUTURE CONDITIONS

The Regional Transportation Plan for the OMEGA RTPO region is focused on a five-year planning horizon, 2016 to 2020. However, longer term projects and needs that will have a significant impact on the RTPO region are also being considered. Therefore, assessment of future conditions especially as related to demographics and traffic volumes has been extended to 2040. Future conditions that will impact the transportation needs of the region, such as demographics, traffic volumes, bridge condition, transit systems, aviation, and the shale development industry are summarized in this section. Specific needs of the RTPO region including safety, rail, and pedestrian/bicycle facilities will be addressed in Section 5.0 of the Regional Transportation Plan.

### 4.1 Demographics

As indicated in Section 3.1 of the Regional Transportation Plan, the population of the OMEGA RTPO as compared to the 2010 census is projected to decline by 0.85% in 2020 and to decline by 2.64% in 2040. The population of Holmes County is projected to increase by almost 7% by 2040. Modest growth (less than 1%) is projected for Carroll and Tuscarawas Counties while the populations of all other counties are projected to decrease. As previously mentioned, these projections do not appear to consider the impact of shale development on the region.

Dot density maps (one dot = 100 people) were used to assess shifts in population patterns for the projected 2040 year. As shown in Figures 4-1 and 4-2, noticeable shifts in population patterns were not observed upon comparison of the 2010 Census Data to the 2040 projected data. As expected, population is and will continue to be centered around the cities and major villages in the RTPO region.

FIGURE 4-1: POPULATION DENSITY 2010

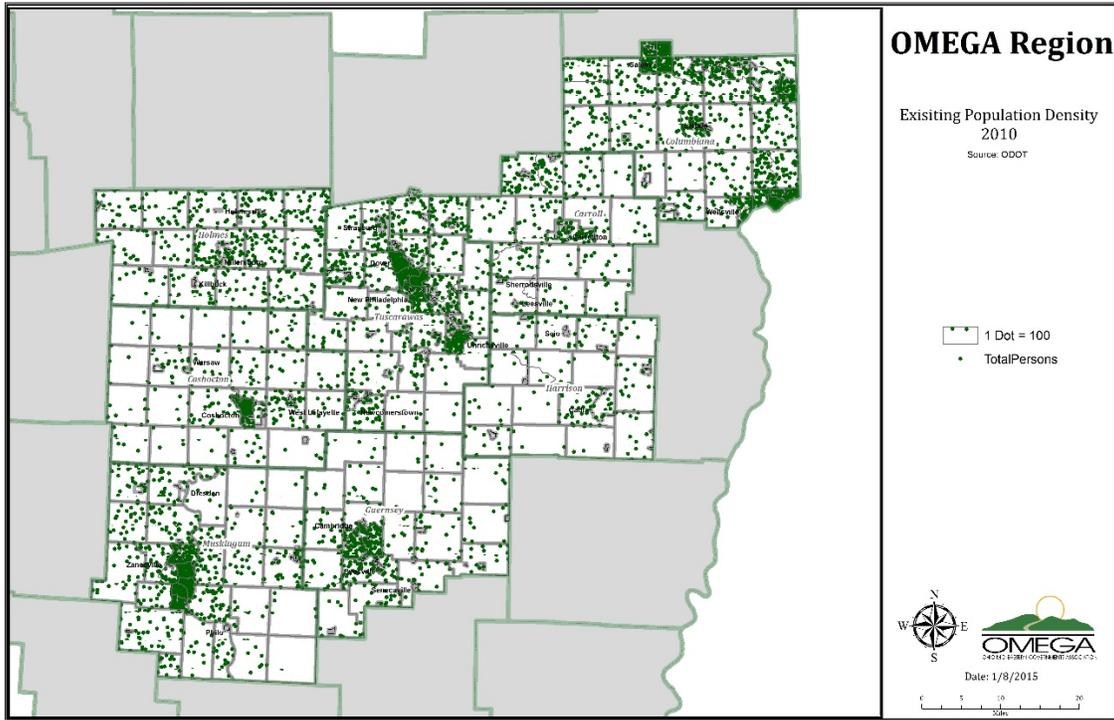
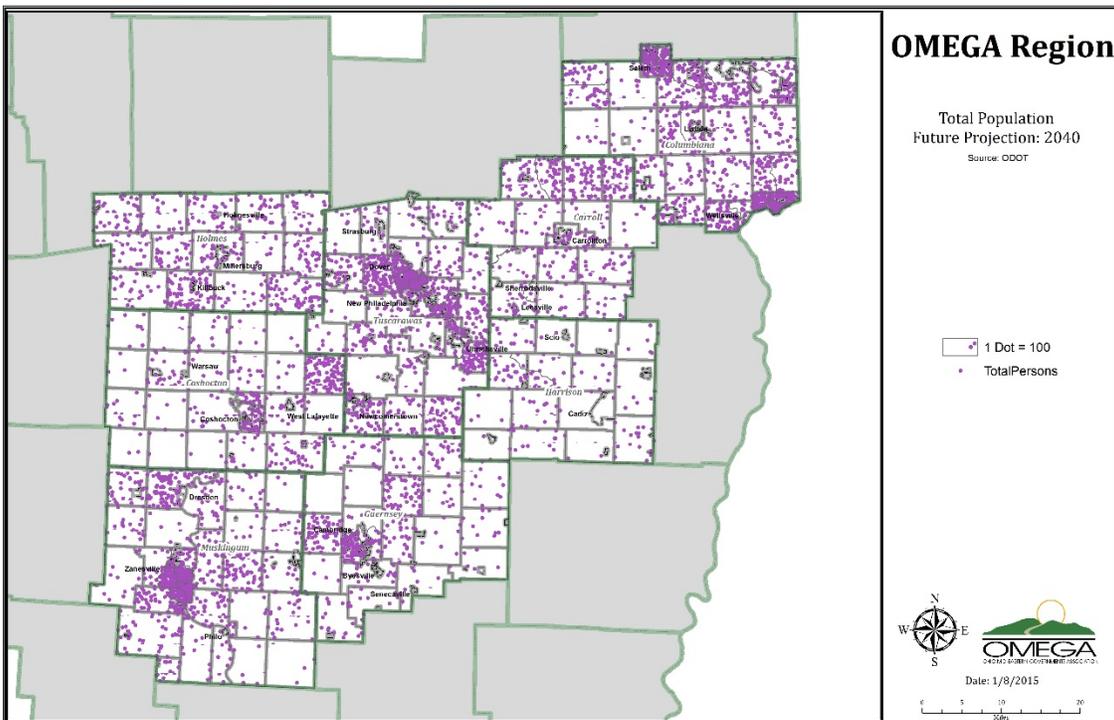
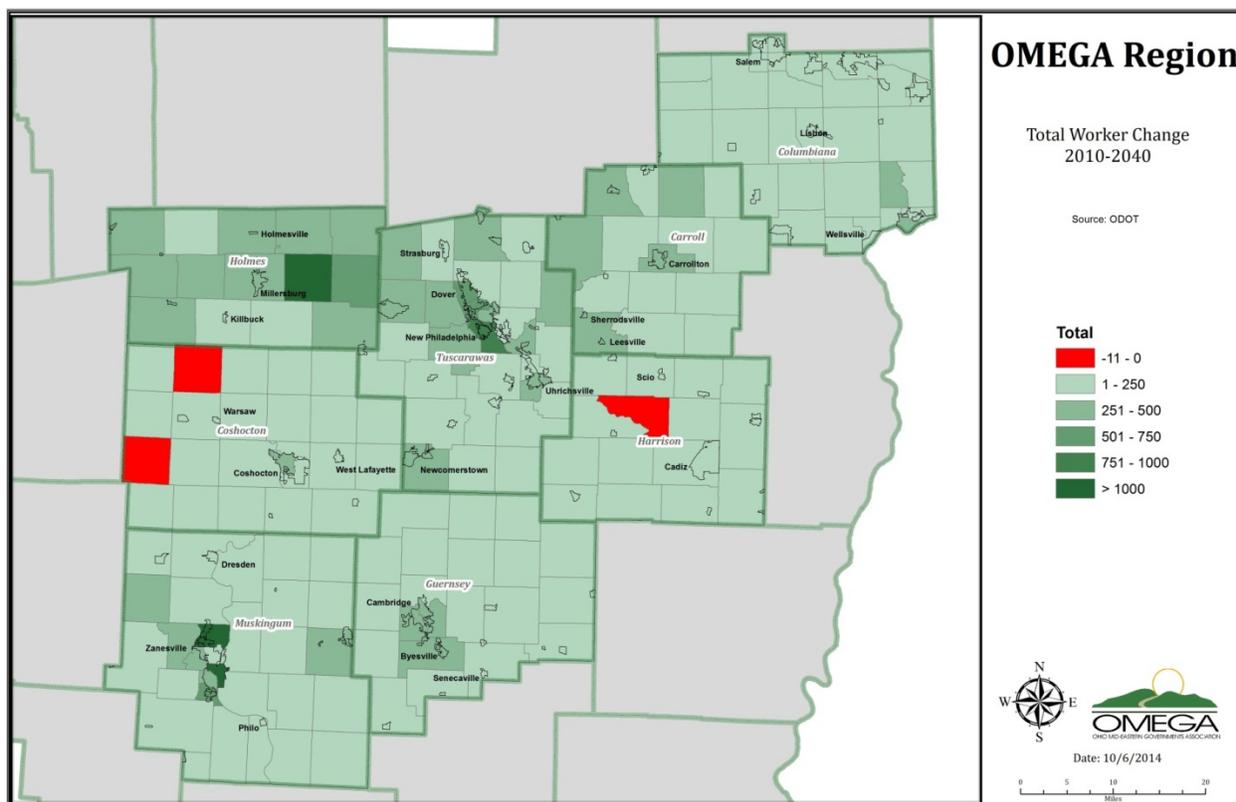


FIGURE 4-2: POPULATION DENSITY 2040



Although the population of the region is projected to decline by approximately 2.64% by 2040, the total available work force (people of working age who may or may not be employed) is expected to increase by 20% from 167,731 to 202,058. As shown in Figure 4-3, the total number of available workers is generally expected to increase with the greatest increases in Holmes, Carroll, and Tuscarawas Counties and near the City of Zanesville. Slight decreases in work force are projected in sections of Coshocton and Harrison Counties.

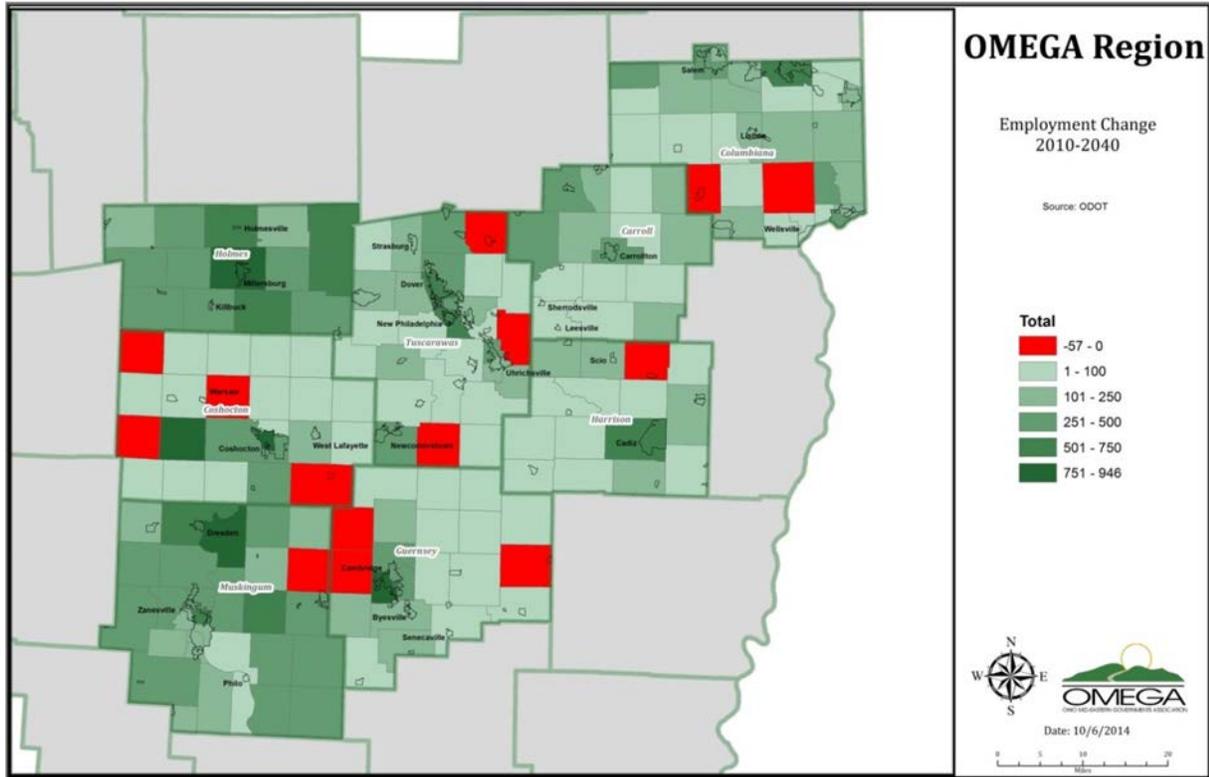
**FIGURE 4-3: PROJECTED CHANGE IN WORKFORCE 2010 TO 2040**



The OMEGA region is already seeing the impact of shale development and the improved economy on employment. The unemployment rate for the region has decreased from a high of 11.7% in 2010 to 5.2% for April 2015. In fact the April 2015 unemployment rate for Holmes County is 3.1%, the lowest in the RTPo region. Employment for the region is also expected to increase by 19% from 183,358 to 218,657. Since the number of employees in the region is greater than the available workforce in the region, this indicates that a significant number of workers (approximately 16,600) will be traveling into the region for work. As shown in Figure 4-4, Holmes and Muskingum Counties will see the highest increase in the number of people actually employed. Some isolated areas in Columbiana, Coshocton, Guernsey, Harrison, Muskingum, and Tuscarawas Counties are projected to either maintain current employment levels or to see slight decreases in the number of people employed. With shale

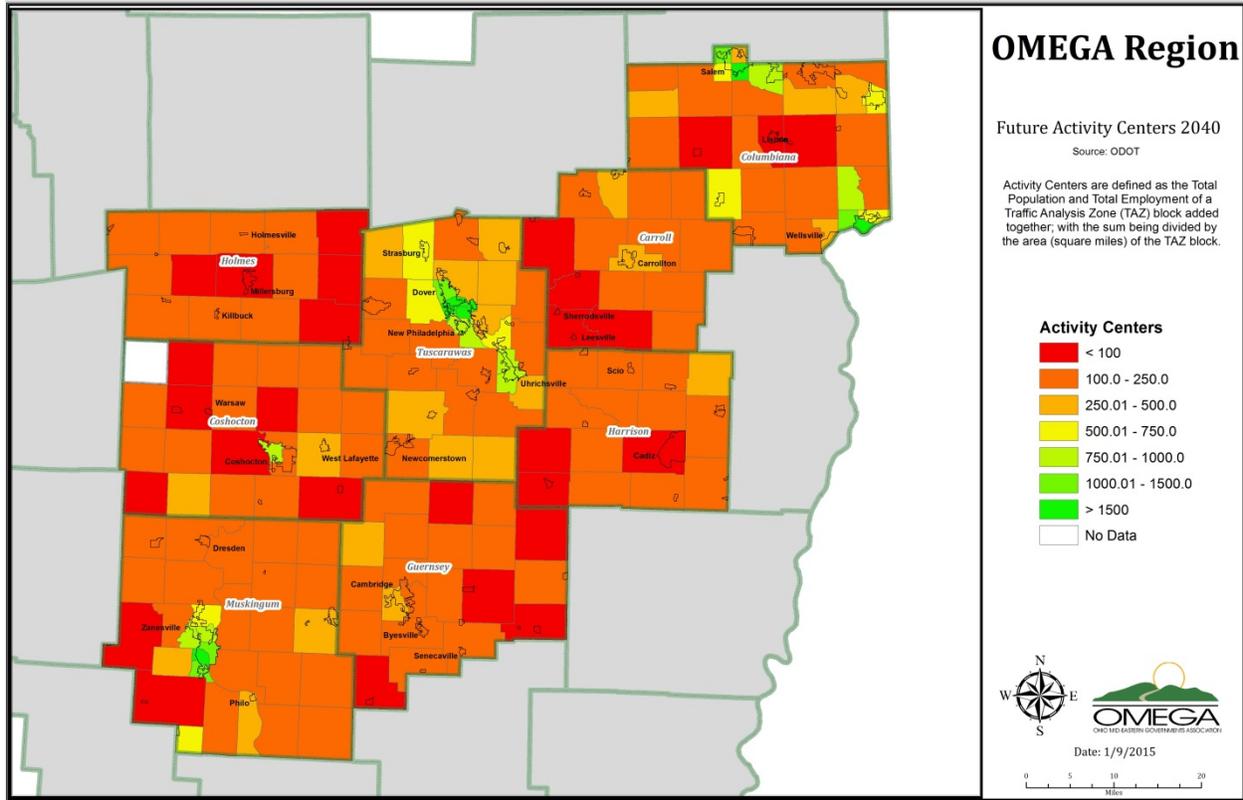
development, employment is expected to increase significantly more than projected especially in Carroll, Columbiana, and Harrison Counties where shale development activities are more prevalent.

**FIGURE 4-4: PROJECTED EMPLOYMENT CHANGE 2010 TO 2040**



OMEGA used an activity density index to better assess areas of concentrated activity and the potential impact on transportation systems. The concept of regional activity density focuses on given geographic areas with respect to population density and employment rates. The activity density index is defined as the sum of the population and the number of persons employed within a transportation analysis zone (TAZ) divided by the area in square miles of the TAZ. As shown in Figure 4-4.1, there are several municipalities with dense areas of human activity projected for 2040 including the cities of Coshocton, East Liverpool, Salem, Dover, New Philadelphia, Uhrichsville, and Zanesville; and the villages of South Zanesville and Dennison. As these municipalities increase economically and in population, attention will need to be paid to the local transportation infrastructure, traffic volumes, and safety concerns.

**FIGURE 4-4.1 FUTURE ACTIVITY DENSITY**

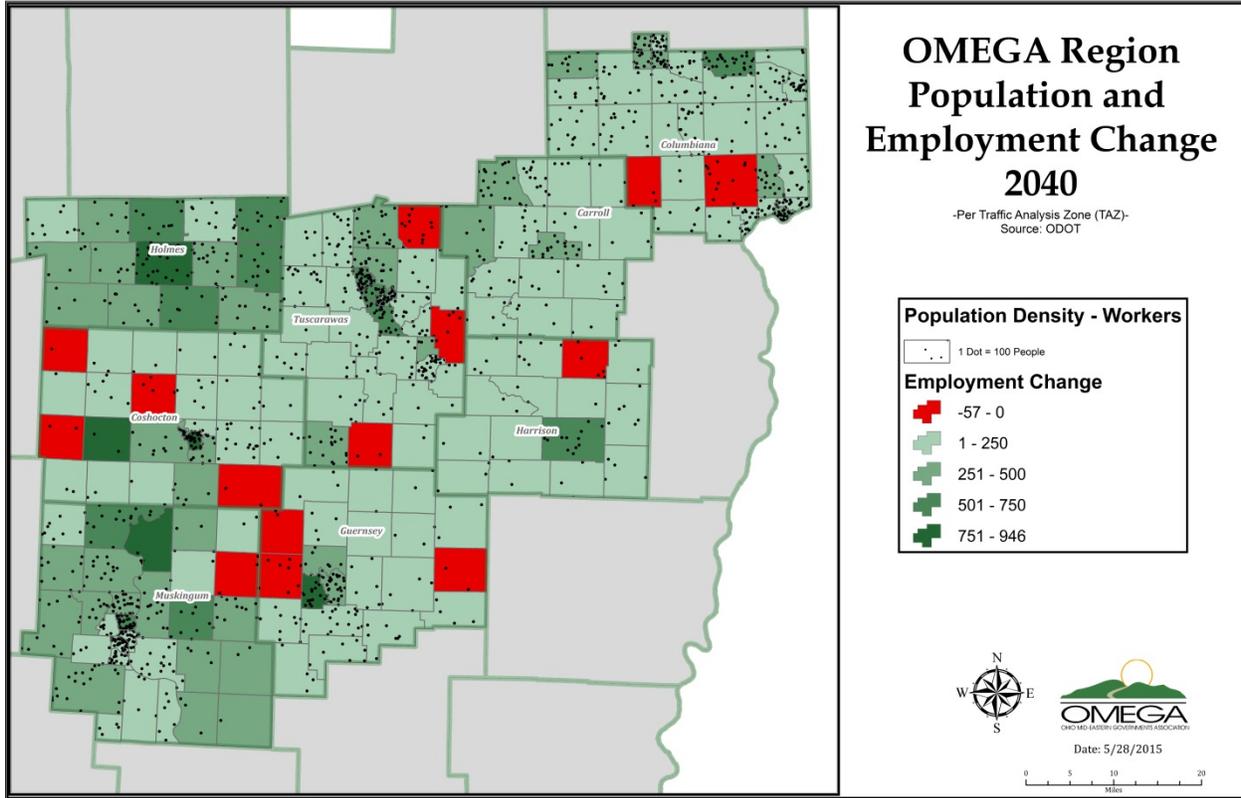


As shown in Figure 4-4.2, employment change within the region will impact the commuting distances of working age residents in the year 2040. Several areas within Muskingum and Coshocton Counties that have low worker-age population densities are projected to increase employment opportunities by 2040. Inversely, there are areas with sizeable working-age populations but negative projected employment rates, such as in northern Tuscarawas County and southeast Columbiana County. Since several of these areas are adjacent to urban areas with projected employment growth, it can be expected that these residents will work and commute farther from their residence in the future. These increases and decreases in employment will affect the distances that working age residents must travel to find employment.

These employment projections may not fully address the impact of shale development on employment in Carroll, Columbiana, Harrison, and Guernsey Counties which have the highest number of wells in our region. Economic, demographic, and transportation related issues will likely be higher than projected within these counties as shale development continues. Although the number of wells in Muskingum and Tuscarawas Counties is relatively low, several major employers such as Halliburton and Schlumberger as well as other shale related service industries are located in Muskingum and Tuscarawas Counties. Two new major pipelines, the Nexus and Rover pipelines, along with numerous smaller pipeline projects, are expected to bring additional employment and economic development into the region. Additionally,

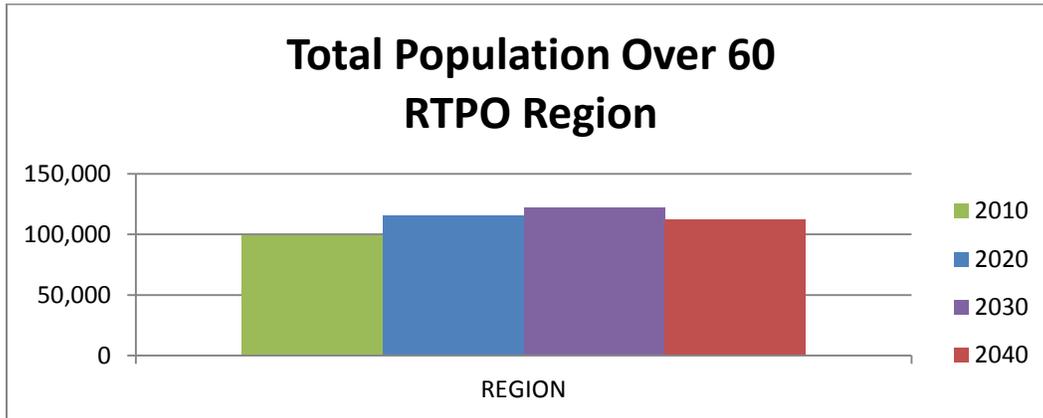
since shale development increased rapidly between 2010 and 2014, the employment projections may not have accounted for such growth.

**FIGURE 4-4.2: PROJECTED EMPLOYMENT CHANGE AND WORKING AGE POPULATION DENSITY**



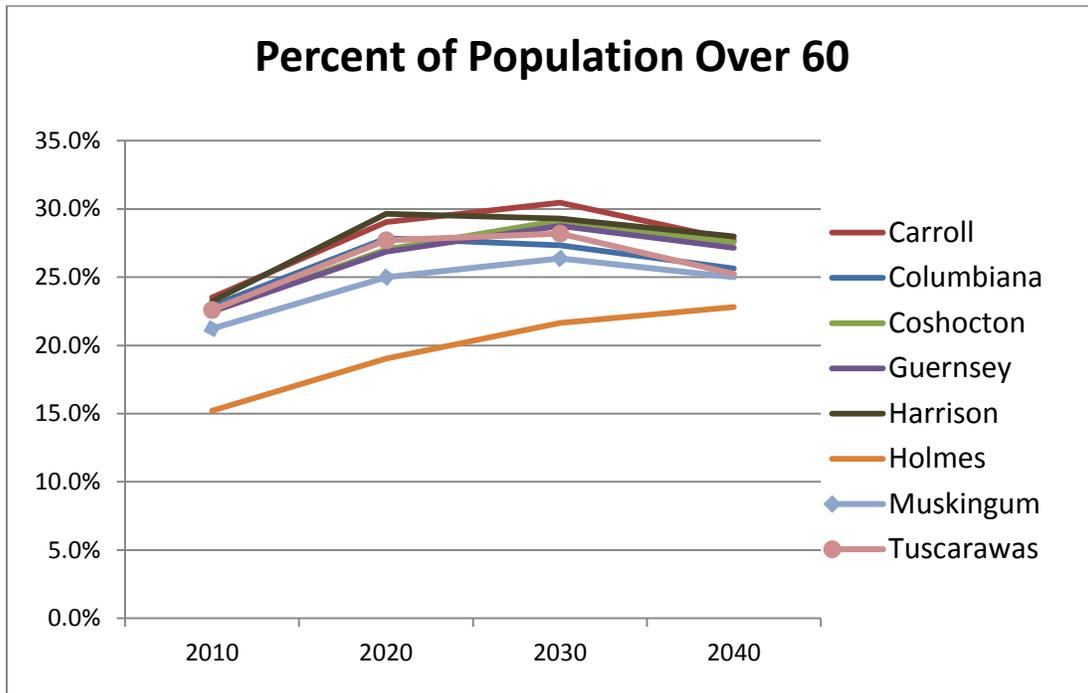
According to the 2010 Census, approximately 22% of the population in the RTPo region is currently age 60 or older. Based upon projections from the Ohio Development Services Agency, the percentage of the population over 60 by 2020 will be 26.4%. Between 2010 and 2040, the total population of age 60 and older will increase by **14%** from 98,649 to 112,000. Figure 4-5 shows this change in total numbers for the RTPo region for 2010, 2020, 2030, and 2040.

**FIGURE 4-5: CURRENT AND PROJECTED POPULATION AGE 60 AND OLDER**



As shown in Figure 4-6, the percentage of the population age 60 and older ranges from a low of 15.9% in Holmes County to a high of 24.8% in Harrison County. In 2040, Harrison County is projected to continue to have the highest percent of people over 60 at approximately 28% within the region, and will see significant increases within this decade. As the population ages and these people are no longer able to drive safely, the demand for transit services for routine daily activities such as shopping, banking, medical appointments, and social visits is expected to increase. Additionally, this aging population is expected to increase relatively soon and remain comparatively sizeable through the year 2040, indicating the need for long term planning to accommodate this growing demographic.

**FIGURE 4-6: PROJECTED POPULATION AGE 60 AND OLDER BY COUNTY**



## 4.2 ROADS

Preservation and maintenance of our existing transportation systems, especially roadways, is the highest priority for our region. The future condition of our primary transportation system will be impacted by the projected increases in both passenger cars and commercial trucks. Analysis of recent traffic count data and statewide modeling conducted by ODOT will form the basis for assessing the future condition and needs for preservation and maintenance of the roads in our region. Specific issues include:

1. Traffic Volumes
2. Level of Service
3. Volume to Capacity Ratio

### 4.2.1 Traffic Volumes

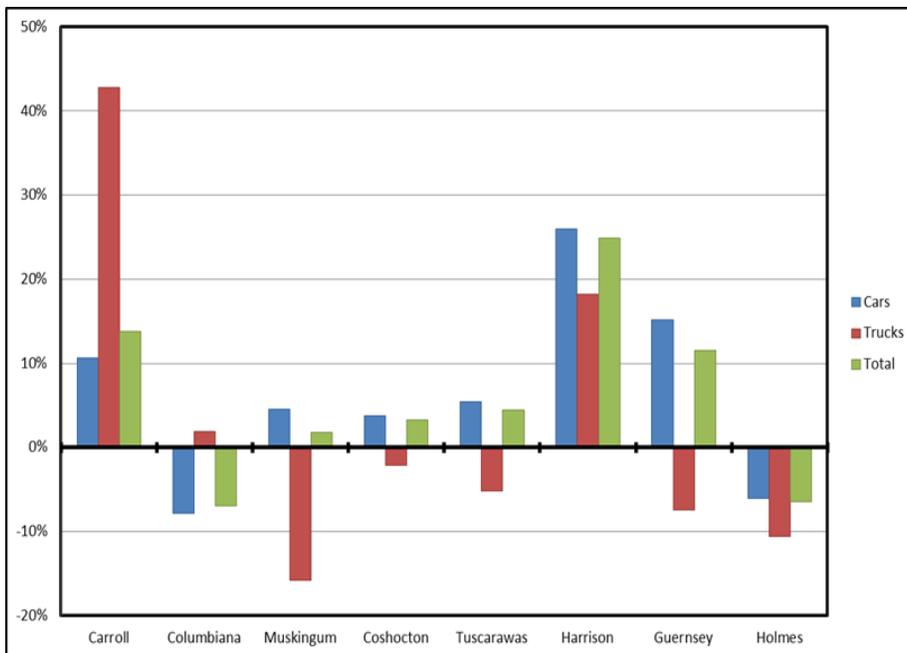
Traffic counts from ODOT are generally taken on state routes, US routes, and interstates on a three to four year cycle. This data is then used to create forecasted models so as to depict possible vehicle counts, growth rates per year, level of service, and volume to capacity ratio based upon past trends within these road systems. The information used for this section came from ODOT's 2040 Congestion Management System data, which analyzed past trends to forecast future vehicle rates in the years 2020 and 2040. OMEGA conducted a county-by-county and regional analysis to show possible future trends on the state and federal highway systems.

OMEGA compared the actual daily traffic volumes (ADT) that were measured by ODOT in 2011 (prior to shale development) to volumes recently measured by ODOT in 2013 and 2014. As shown in Figure 4-7, the greatest increases in traffic volume occurred in Carroll and Harrison Counties, the two most active shale counties in our region. In Carroll County, the total volume of trucks increased by over 40% and in Harrison County the total volume of trucks increased by almost 20%. Guernsey County also showed over a 12% increase in the total ADT despite a decrease in truck volume. This is somewhat surprising because there are currently 149 oil and gas wells and five injection wells in Guernsey County.

ODOT also provided OMEGA with the results from their statewide modeling efforts showing the projected growth rate for total volume of traffic, cars, and trucks in our region to the year 2040. Yearly vehicle growth rates were generated by ODOT's statewide model and classified into five different range categories, starting from low growth (0 to 0.25%) to high growth (3% and greater). These growth rates were separated by vehicle type (car or truck) and analyzed individually by region and county. Projected growth rates for cars and trucks are provided in Figures 4-7.1 and 4-7.2, respectively. Roads in which the car and truck growth rates are projected to be 3% or greater per year are shown in red.

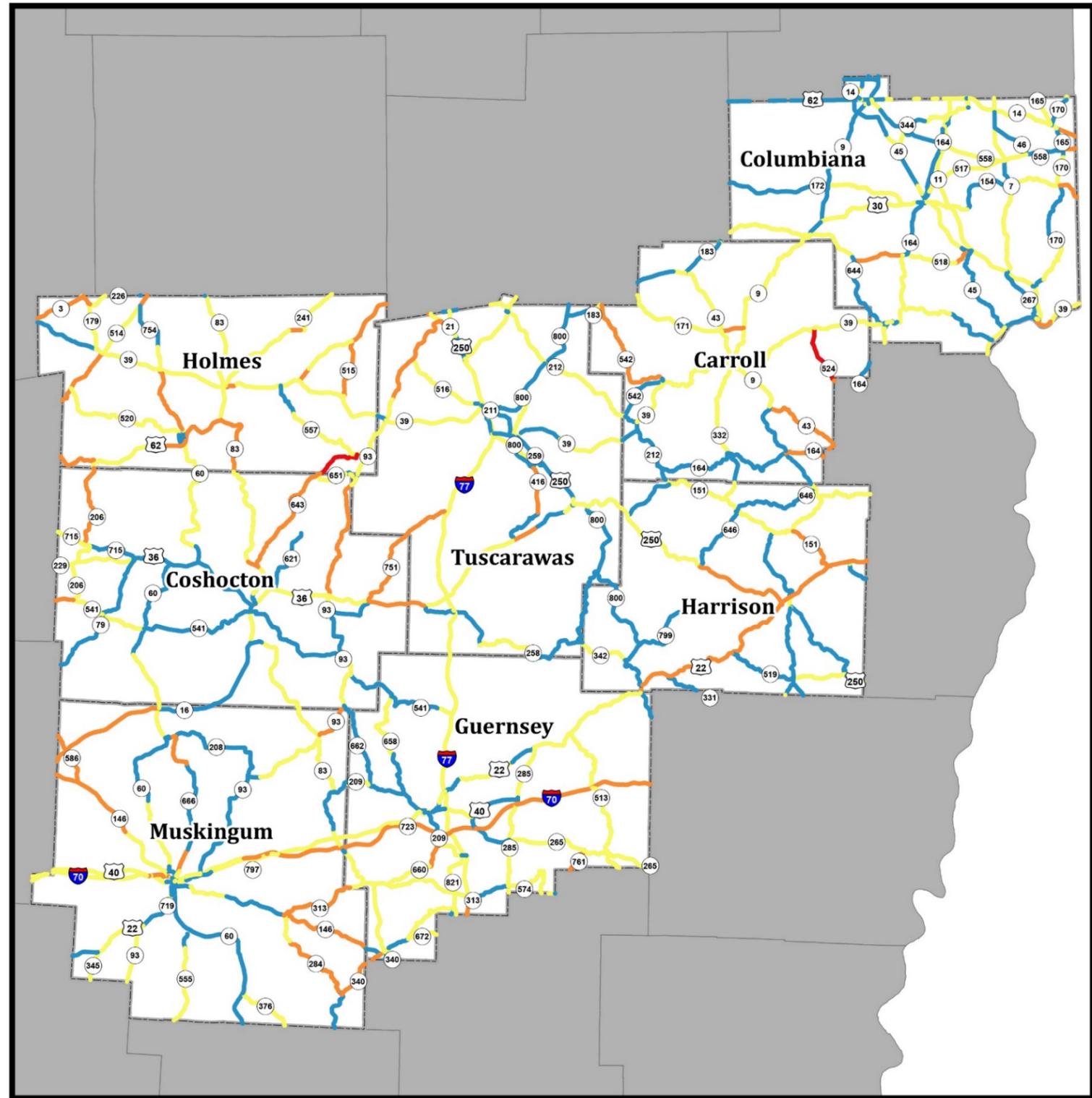
Figure 4-7.2 illustrates the projected growth rate of trucks in our region. Please note that in some cases, the increase between 2011 and 2013/2014 is greater than the increase projected for 2040. This just illustrates the difficulty in projecting the long term impact of shale development on the region.

**FIGURE 4-7: CHANGE IN TRAFFIC VOLUME 2011 TO 2013/2014**

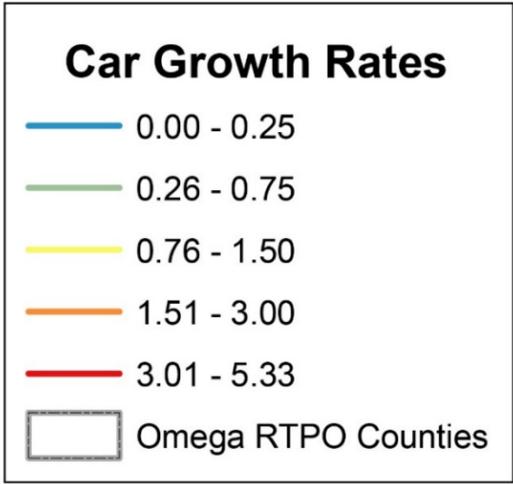


These increases in traffic volumes, especially truck traffic, will also impact pavement life. As indicated in Section 3.3.3 of the Existing Conditions, approximately 948.6 center lane miles of roads or 33% of the roads for which PCR data was available are in Fair, Fair to Poor, or Poor Condition. Pavement condition will continue to degrade with the increased volume of traffic especially in Carroll, Harrison, and Guernsey Counties.

FIGURE 4-7.1: OMEGA CAR GROWTH RATES 2040 PROJECTION

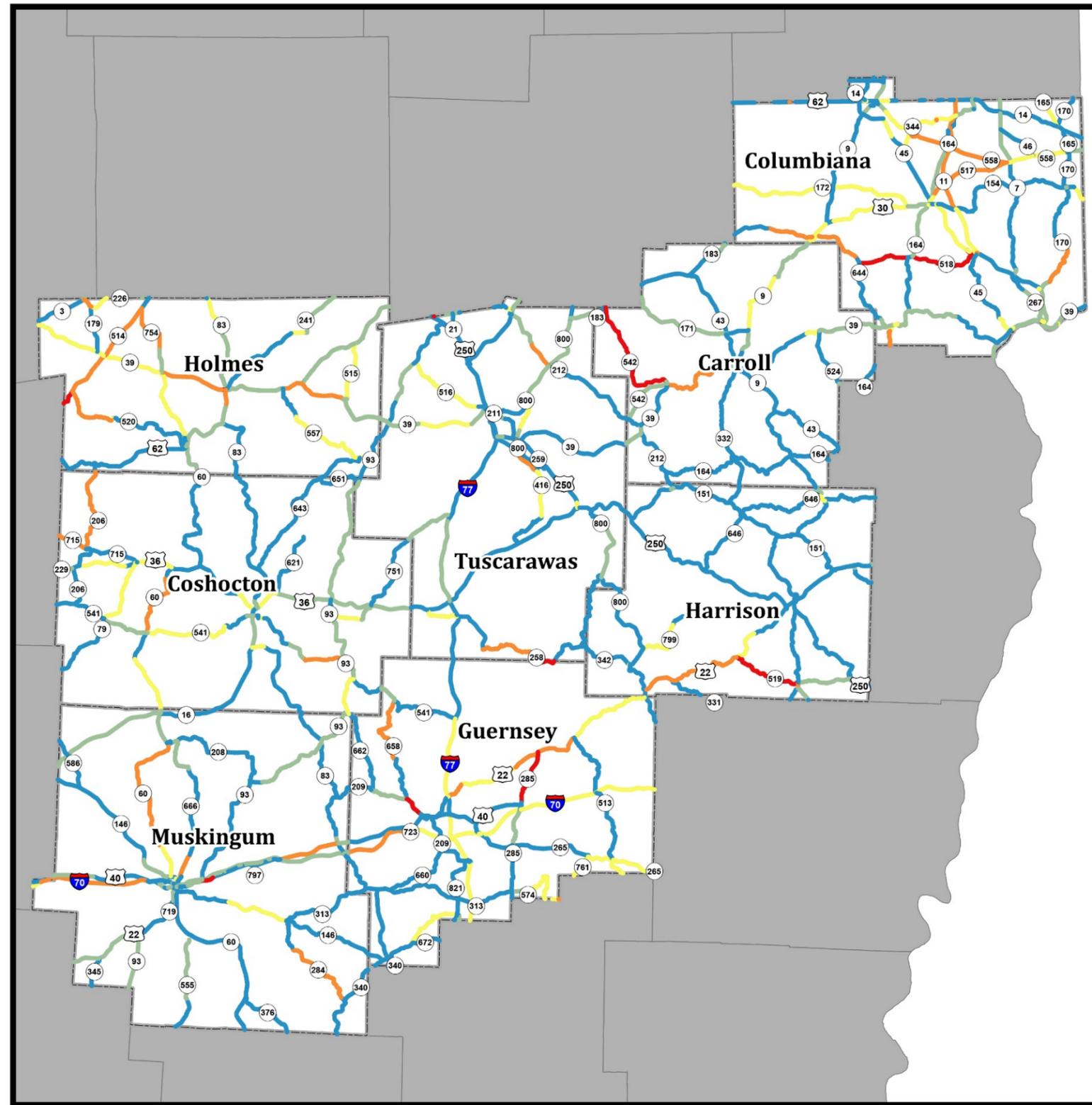


# OMEGA RTPO Region Roadway Congestion 2040 Projection

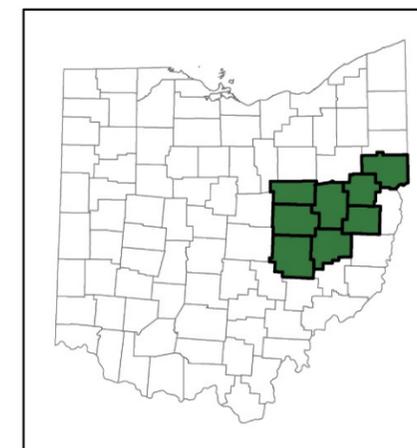
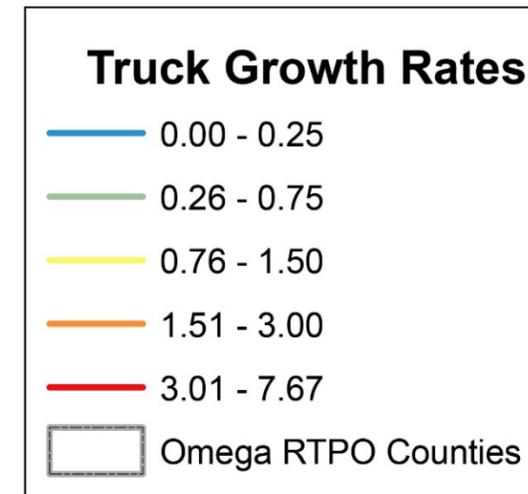


Date: 12/19/2014  
Source: ODOT

FIGURE 4-7.2: OMEGA TRUCK GROWTH RATES 2040 PROJECTION



# OMEGA RTPO Region Roadway Congestion 2040 Projection



Date: 12/19/2014  
Source: ODOT

While the 2040 CMS projection model is designed to predict volumes based on 2010 demographic and employment data and past roadway trends, it does not fully capture shale development that has and will continue to occur in our region. Averages provided by the Pennsylvania DOT show that, from the development of a well pad through the completion of hydraulic fracturing process, 3,300 trucks visit a single well pad over a six week to two month time period; the fracking process alone averages 2,100 trucks over one week. Fewer trucks are needed when water for the fracturing process is piped directly to a well. This demonstrates the inherent difficulty with capturing truck volumes within counties experiencing rapid shale development. In an effort to address this issue, we used these averages to provide truck traffic volumes from the permitted wells that are to be drilled and listed them by county below:

- **Carroll:** 58 permitted wells would bring 191,400 trucks into the county
- **Columbiana:** 56 permitted wells would bring 184,800 trucks into the county
- **Coshocton:** 3 permitted wells would bring 9,900 trucks into the county
- **Guernsey:** 28 permitted wells would bring 92,400 trucks into the county
- **Harrison:** 55 permitted wells would bring 181,500 trucks into the county
- **Holmes:** 3 permitted wells would bring 9,900 trucks into the county
- **Muskingum:** 2 permitted wells would bring 6,600 trucks into the county
- **Tuscarawas:** 11 permitted wells would bring 36,300 trucks into the county

In counties within the Utica Shale region, truck volumes may be much higher in future years than what the model can predict. Additionally, the number of expected drilling permits could rise as well. Product shipment by truck, rail, and pipeline as well as pipeline construction will also impact traffic volumes into the foreseeable future. Past and future trends regarding shale activity within our region must be recognized for future transportation issues and studies. Increases in truck growth rates will likely impact pavement conditions and maintenance. Congestion, capacity, and safety may also be of concern by the year 2040. Future concern will need to be placed on the relationships between vehicle growth rates and congestion, capacity, safety, and shale development.

The projected increase in traffic volumes and the impacts for each county are summarized in the sections which follow. This county summary is meant to assess the projected impact of increased volumes regarding issues of congestion, capacity, and pavement maintenance.

#### 4.2.1.1 Carroll County

Carroll County, one of several counties experiencing the impact of local shale development, is projected to see a mix of high and low vehicle growth. Additionally, the rates of growth between the two variables do not consistently correlate with each given roadway system. SR 524, for example, is expected to experience an exceptionally high annual car growth rate of 5.33 %, while the truck growth rate remains low at 0.06%. SR 542 is expected to have a high annual car growth rate of 3% and a yearly truck growth rate of 4% between the Stark County border to SR 39. Between 2011 and 2013, the total volume of traffic along this route doubled. As the trends in Figure 4-8 and Figure 4-9 illustrate, car and truck growth rates are not necessarily consistent with each other in the same area, but do show that Carroll

County is expected to have at least some increase within many of the state routes inside of the county's border.

FIGURE 4-8: CARROLL COUNTY CAR GROWTH RATE 2040 PROJECTION

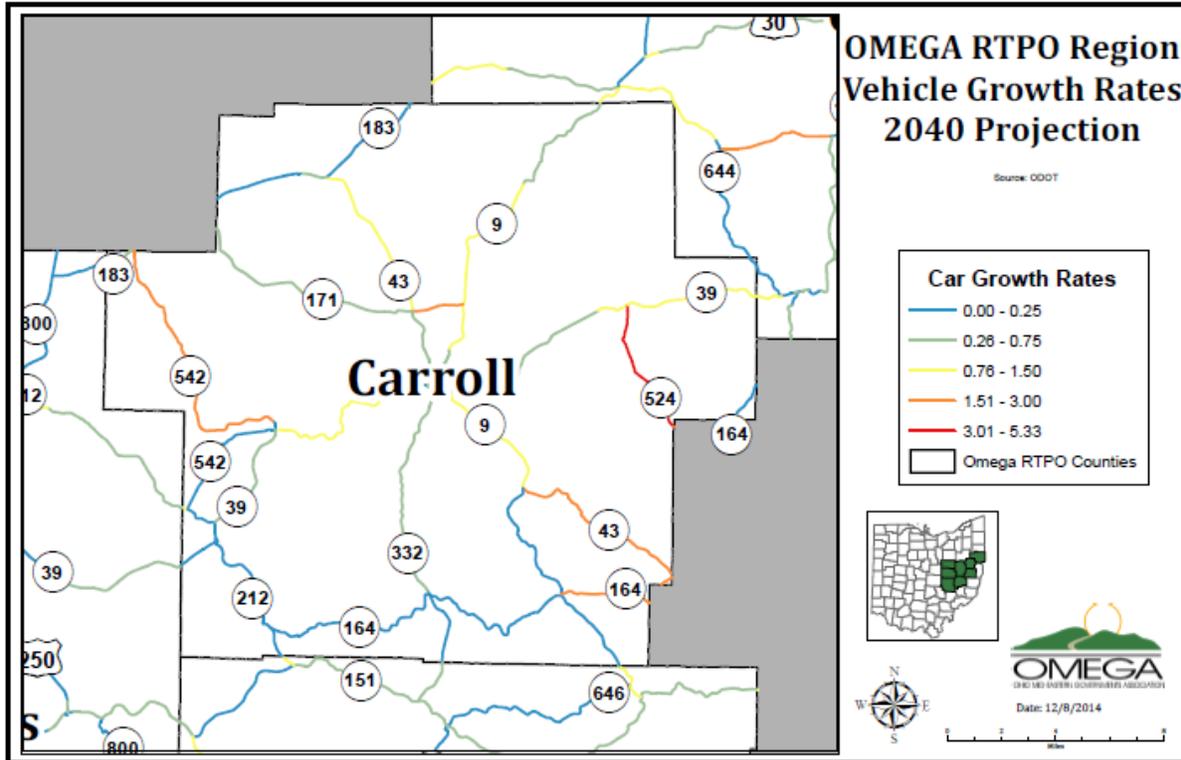
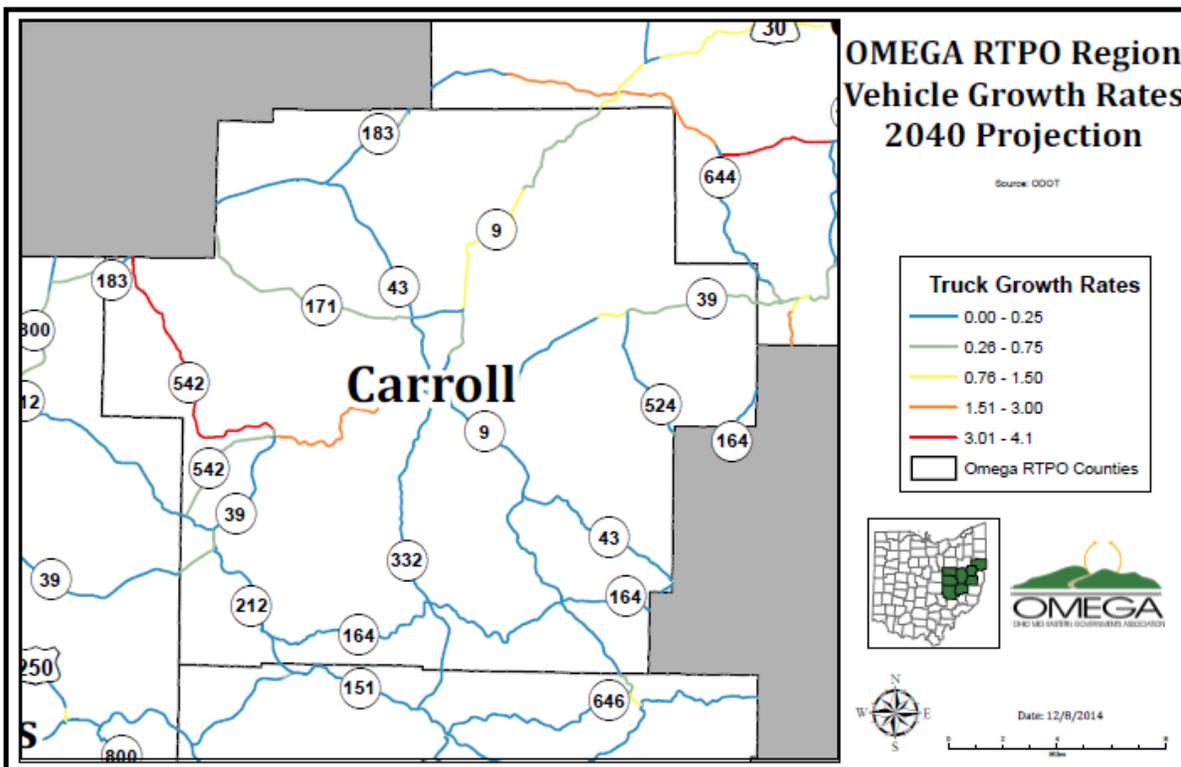
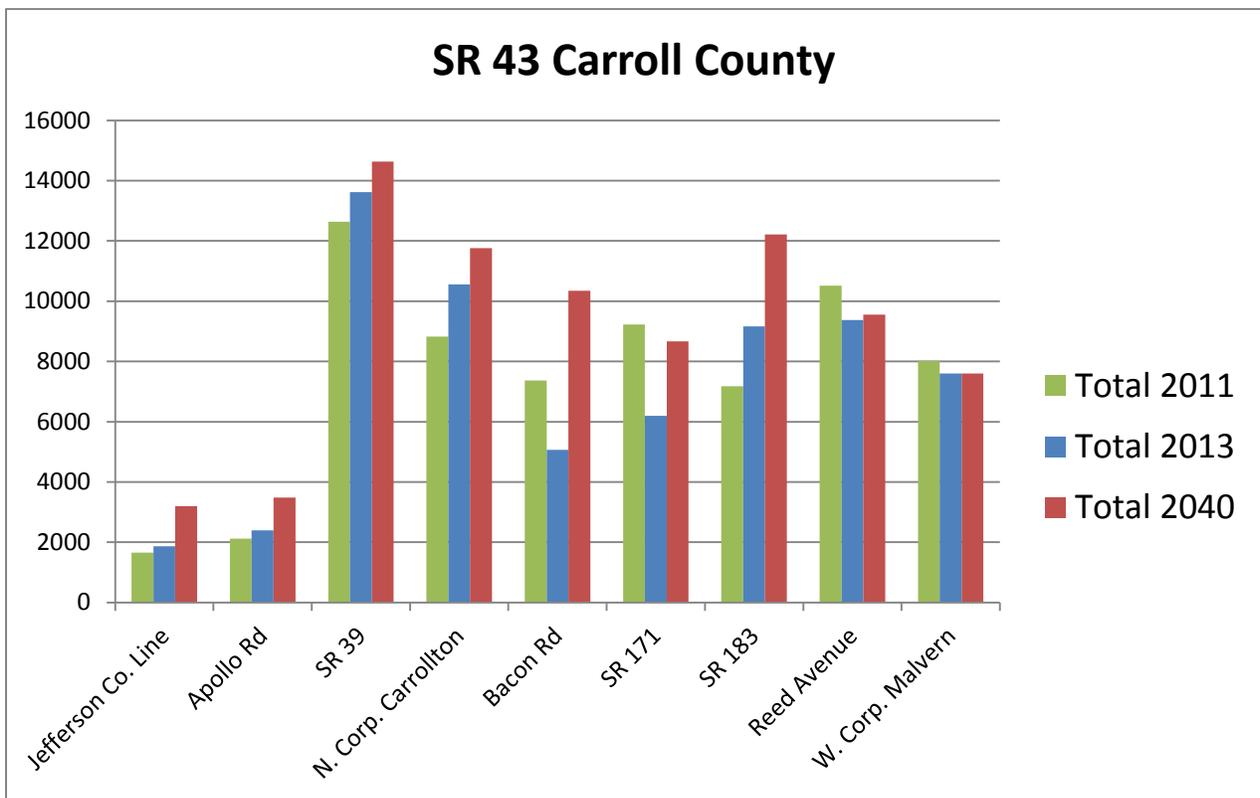


FIGURE 4-9: CARROLL COUNTY TRUCK GROWTH RATE 2040 PROJECTION

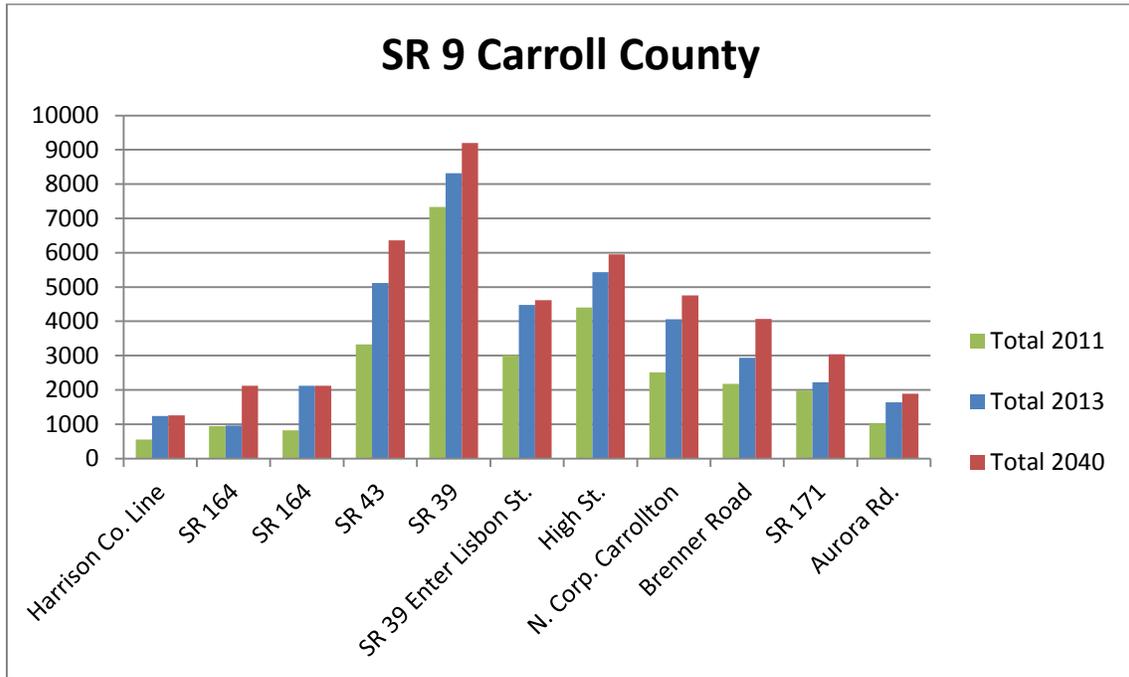


Based on the data from the projected and actual daily traffic volumes, road totals from traffic count segments show an upward trend amongst nearly all of the road segments. Some roadways were projected to have much higher volumes of daily vehicle travel than others. SR 43, which has the highest ADT in the county, had increases within nearly all of its segments, as shown in Figure 4-10. As shown in Figure 4-11, SR 9 also showed consistently larger increases in volume across nearly all of its segments. Similarly, as shown in Figure 4-12, SR 183 also had increases within the majority of its segment totals and had the second highest volumes within the county. Total projected increases in traffic volume will be highest in and around Carrollton, especially for SR 43 and SR 9. As daily traffic volume increases within this village, congestion and road maintenance in Carrollton will be of concern now and in the foreseeable future.

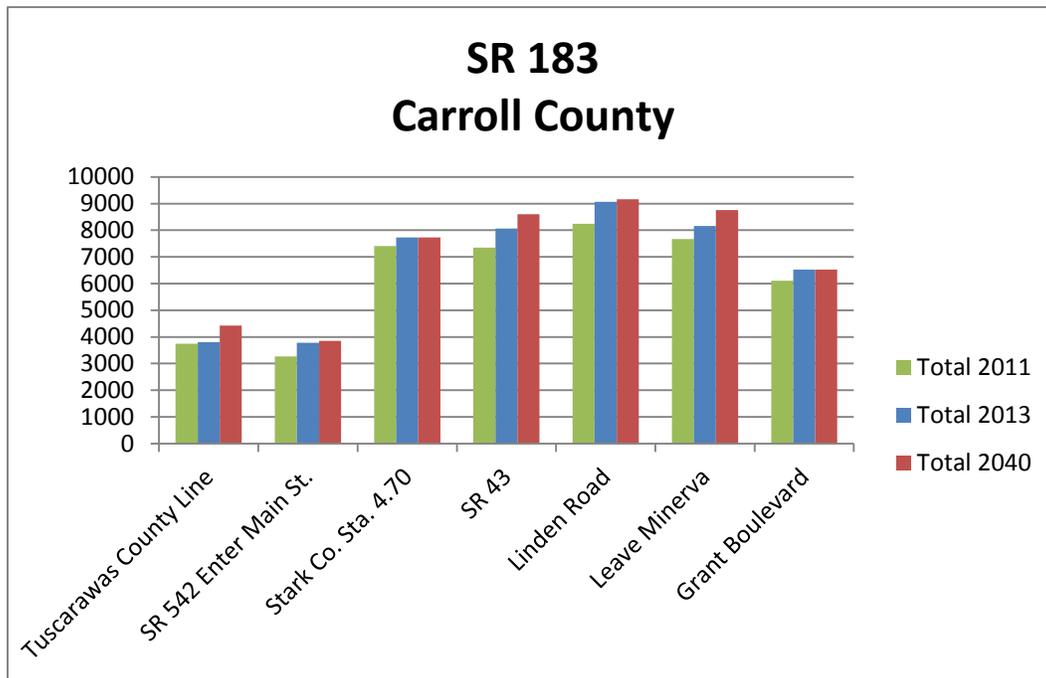
**FIGURE 4-10: SR 43 CARROLL COUNTY**



**FIGURE 4-11: SR 9 CARROLL COUNTY**



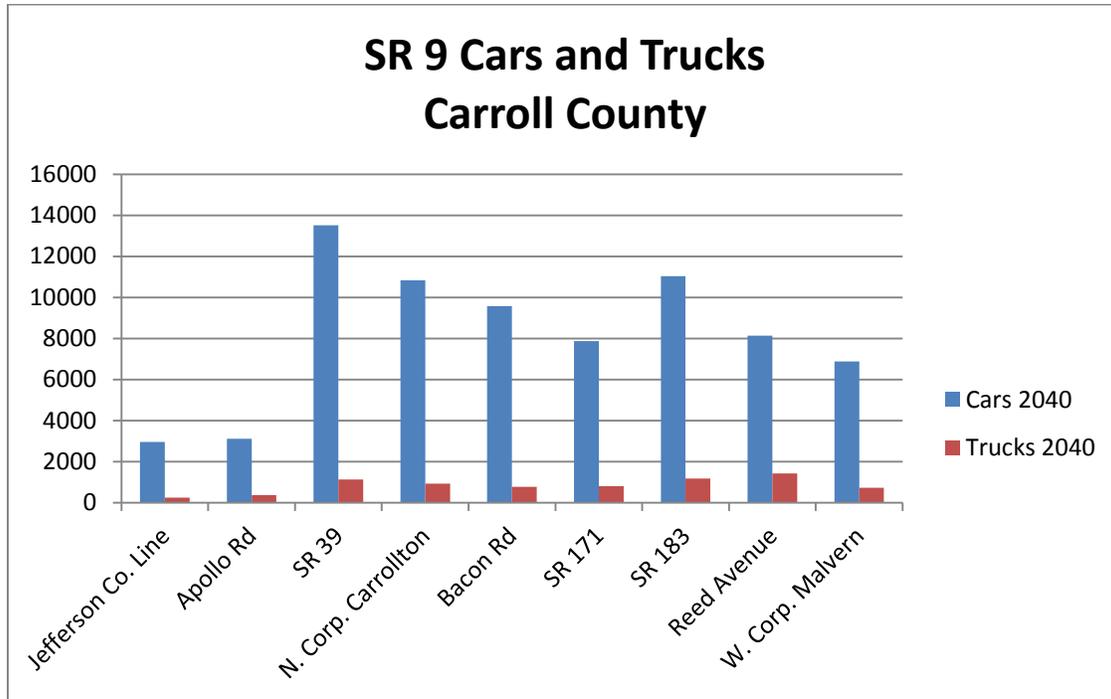
**FIGURE 4-12: SR 183 CARROLL COUNTY**



Despite high amounts of predicted and current shale activity within Carroll County, the 2040 projections indicate that most of the daily vehicle travel will be in cars. A comparison between the projected volume of cars and trucks in 2040 on SR 9 is shown in Figure 4-13. Since the state routes in Carroll County are all two lanes, future attention will need to be placed upon the manner in which this

projected truck growth will impact congestion and road deterioration, including the need for turn lanes at key intersections.

**FIGURE 4-13: SR 9 2040 CAR AND TRUCK COMPARISONS CARROLL COUNTY**



#### 4.2.1.2 Columbiana County

Columbiana County, similarly to that of Carroll County, is projected to experience car and truck growth in different areas of the county. In recent years, the county saw an increase in truck traffic (most likely attributed to shale development), and this trend is expected to continue in 2040 in some areas. SR 518, which is expected to increase by 4% in yearly truck traffic, has the highest truck growth rate in the county. Additionally, US 30 is expected to see medium-level truck growth rates. Yearly car growth rates were expected to have medium-level growth (0.76 to 1.5%) in the central portion of the county and select roads on the eastern border. As Figures 4-14 and 4-15 illustrate, car and truck growth rates are projected to increase differently with respect to the road and geographic area of the county.

FIGURE 4-14: COLUMBIANA COUNTY CAR GROWTH PROJECTION RATE

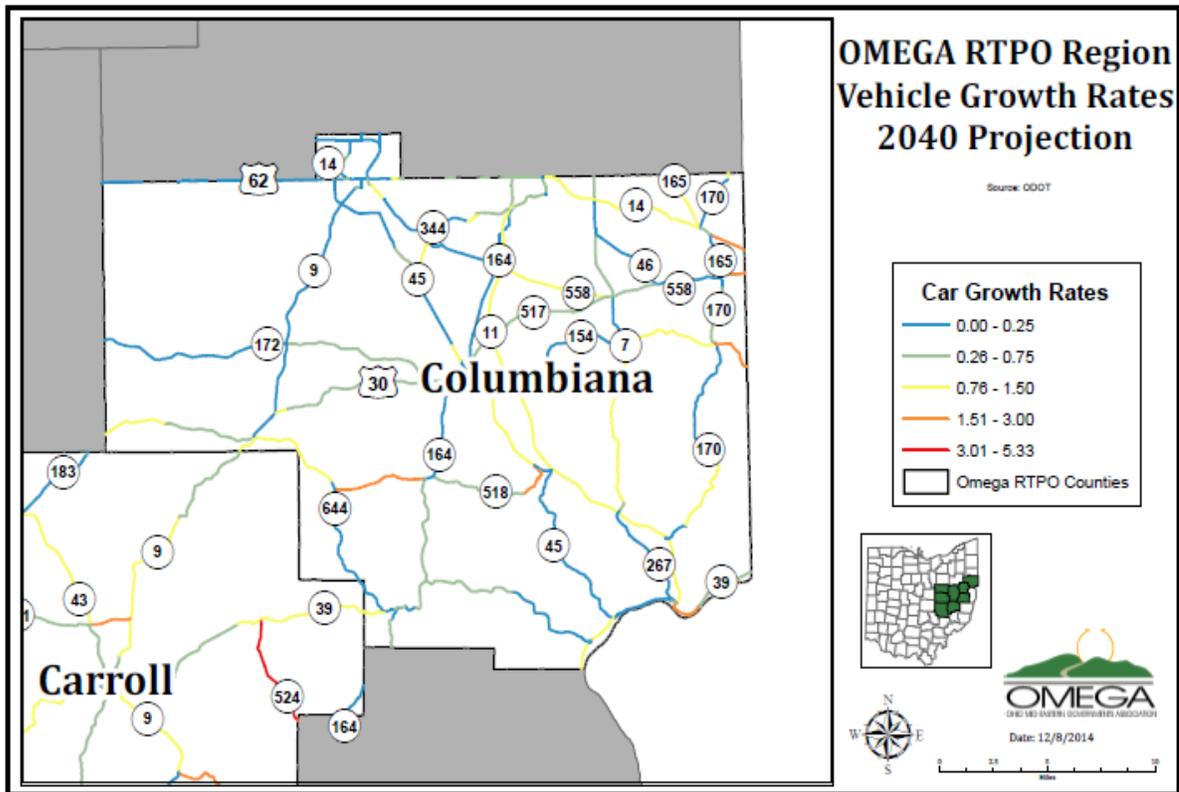
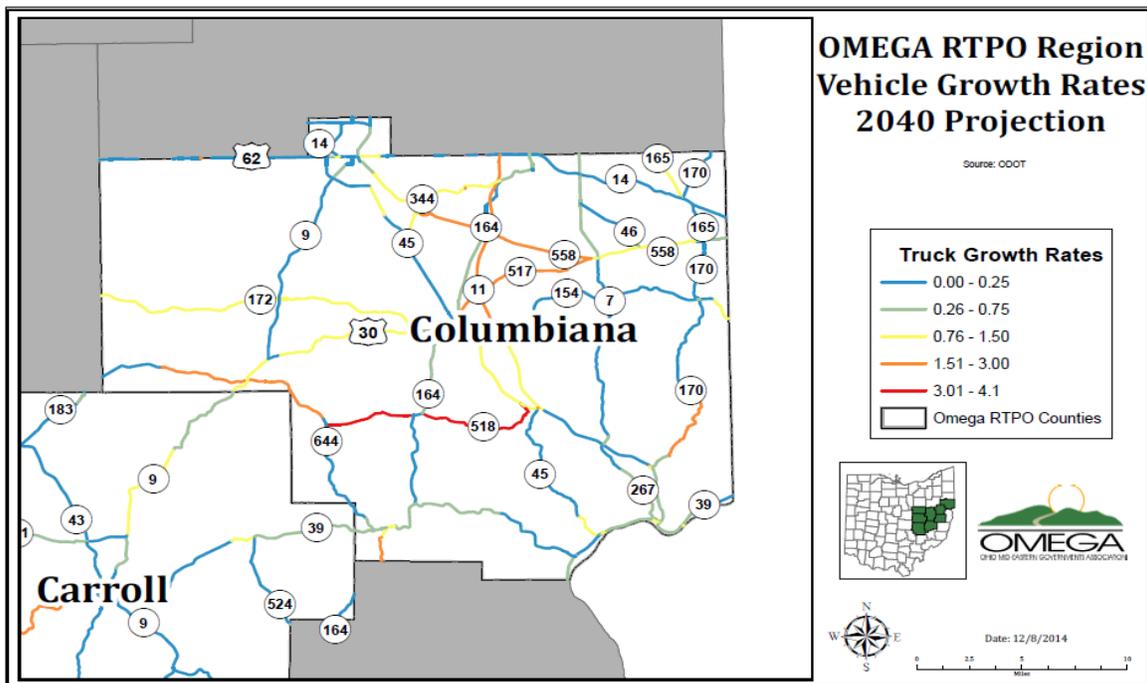
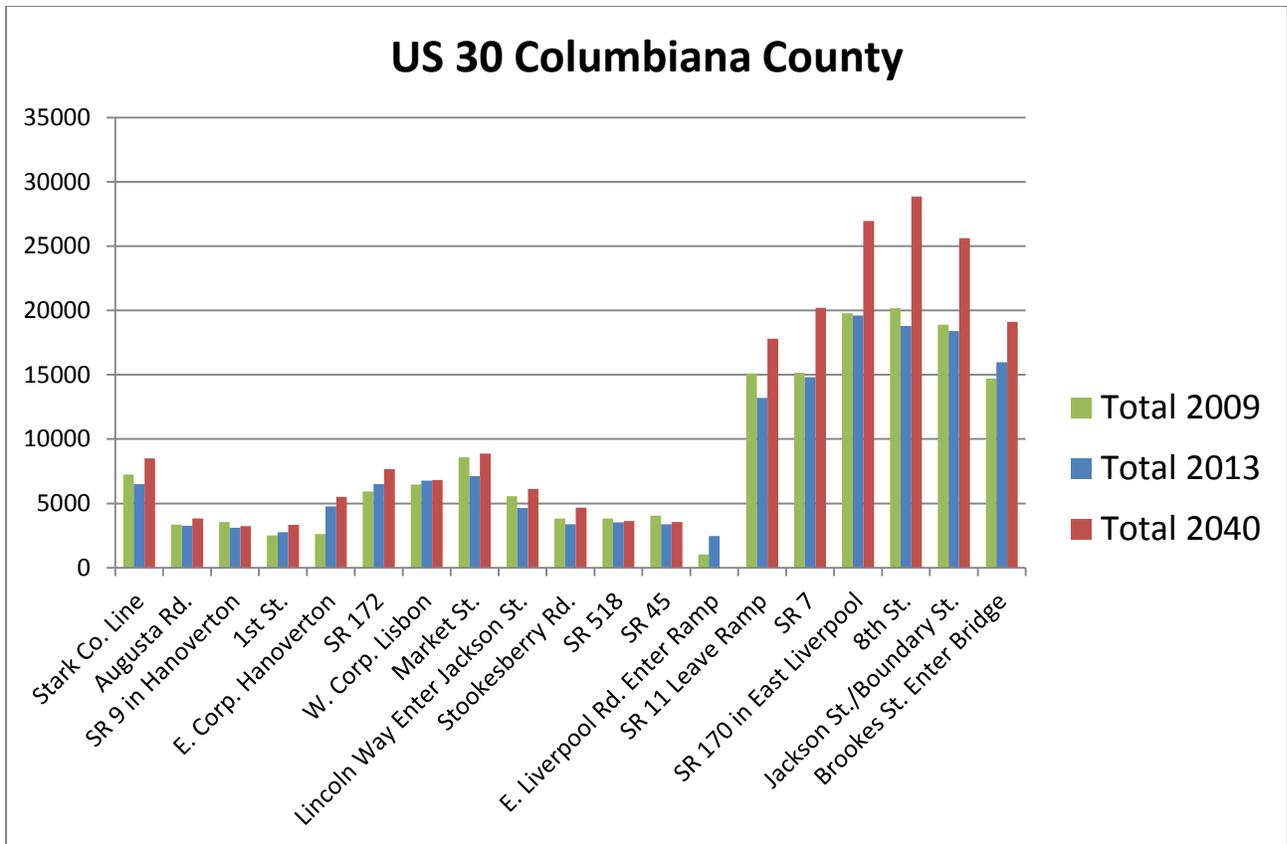


FIGURE 4-15: COLUMBIANA COUNTY TRUCK GROWTH RATE

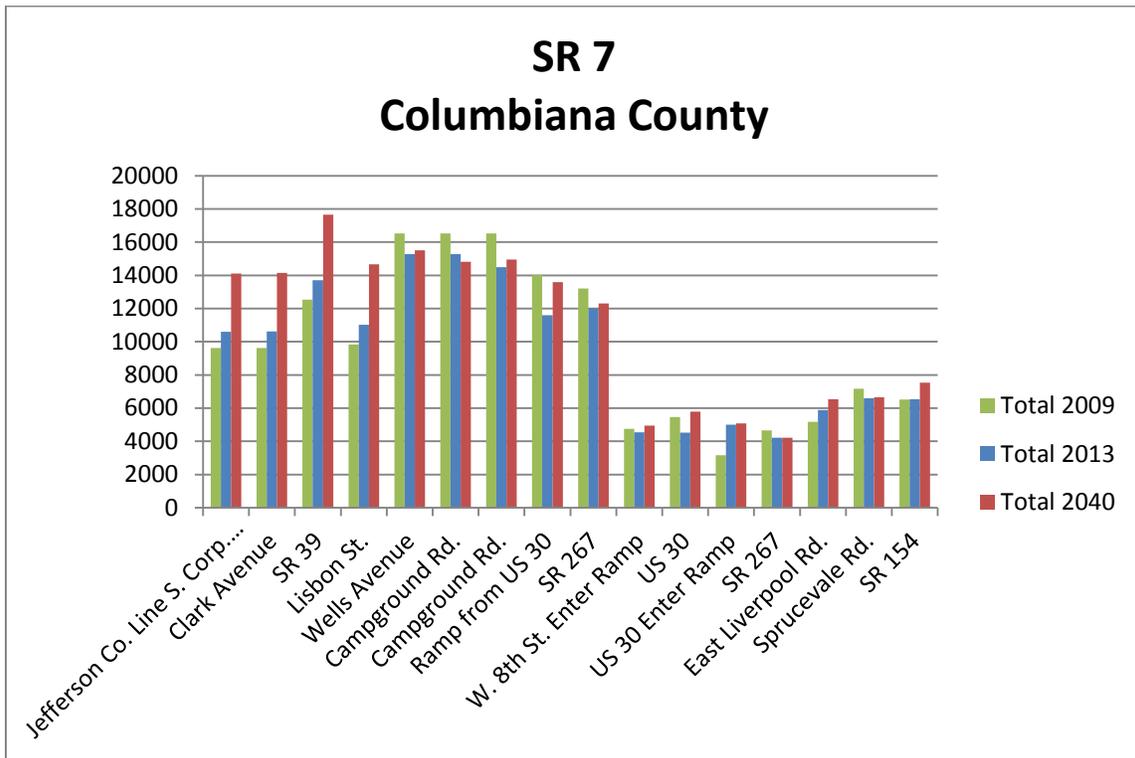


In comparison to recent counts, Columbiana County is projected to have both increases and decreases within the daily traffic counts. US 30 and SR 7, which are designated Statewide Highway Primary Corridors and part of Ohio's Strategic Transportation System, are projected to have larger increases in traffic compared to the rest of the county. US 30, with the highest projected daily volume in the county, had much higher traffic volumes in some segments. Figure 4-16 shows that much of the total increase of volume exists on the eastern 4-lane segment of US 30. These projections support the development of the US 30 Ohio's Energy Corridor. Similar to US 30, SR 7 has high volumes on some segments but not on others, as shown in Figure 4-17. Segments of SR 7 between the Jefferson County line and SR 39 are projected to see a higher increase in traffic volume than more central segments where there is actually some decline. Future attention will be necessary for sections of roadways with high traffic volumes such as these rather than entire roadways.

**FIGURE 4-16: US 30 COLUMBIANA COUNTY**

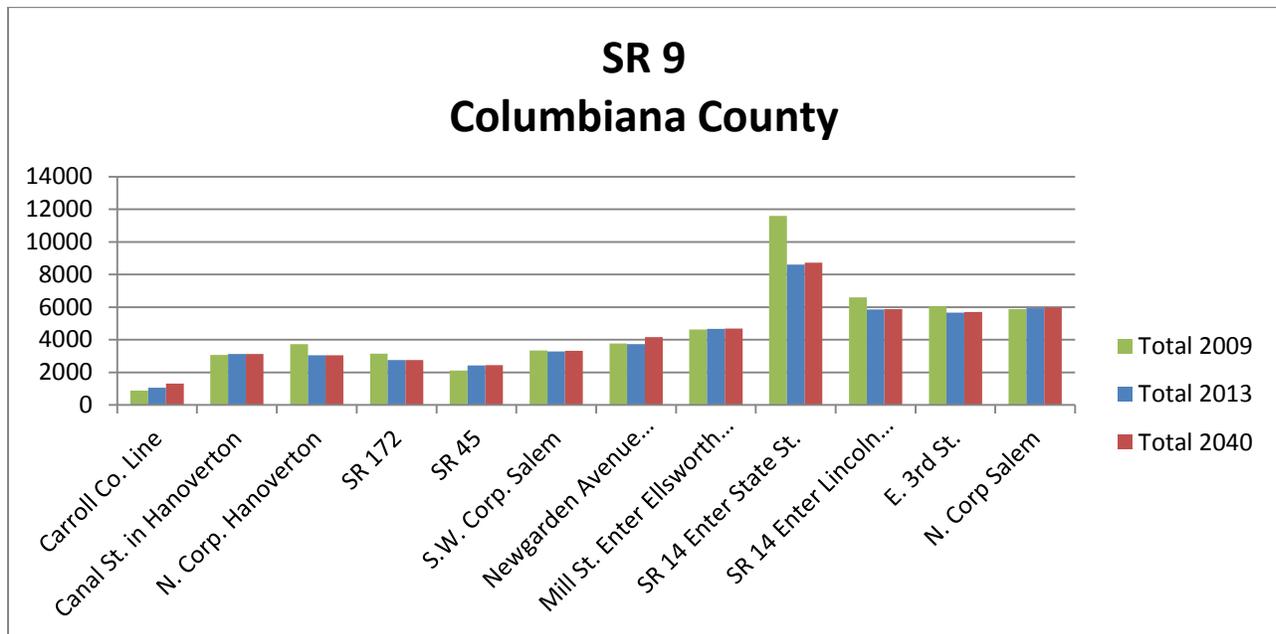


**FIGURE 4-17: SR 7 COLUMBIANA COUNTY**



For some roadway systems, traffic volumes are expected to decline. SR 45 and SR 9 are projected to have a decrease in total traffic volumes by 2040. Figure 4-18 illustrates the projected declines across SR 9, showing a gradual decrease along many of the segments.

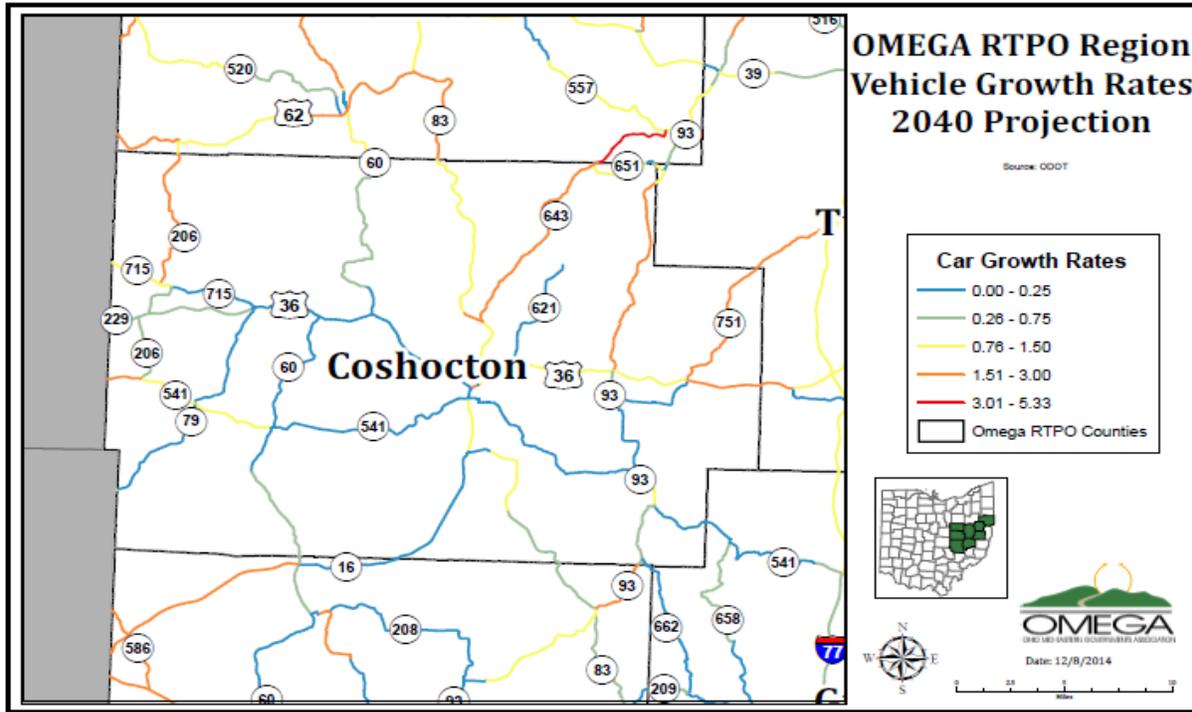
**FIGURE 4-18: SR 9 COLUMBIANA COUNTY**



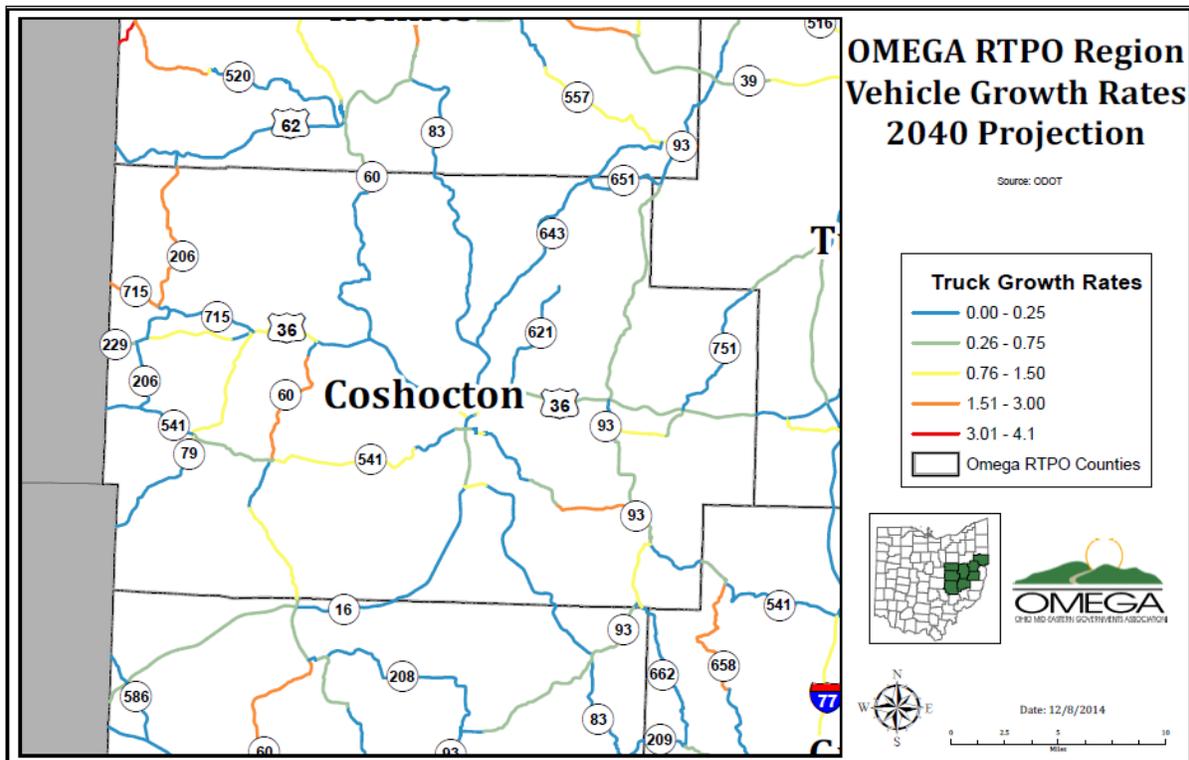
#### 4.2.1.3 Coshocton County

As shown in Figure 4-19, Coshocton County is expected to see a rise in car growth rates in many parts of the county for 2040. SR 643, which has a projected yearly car growth rate of 3%, has the highest projected growth rate in the county. SR 751 and SR 206 also have medium-high yearly growth rates. Higher projected growth is occurring on two-lane state routes rather than on US 36, which is 4 lanes in the central-eastern portion of the county. Interestingly, these high-growth segments are projected to be outside of incorporated areas. In contrast, the yearly truck growth rates are expected to increase only on segments of SR 206, SR 715, and SR 541. Most of these roadways have segments, rather than entire roads, with medium-high growth (1.51-3.00%). Notably, SR 206 is projected to have medium-high growth in both car and truck rates.

**FIGURE 4-19: COSHOCTON COUNTY CAR GROWTH RATE 2040 PROJECTIONS**

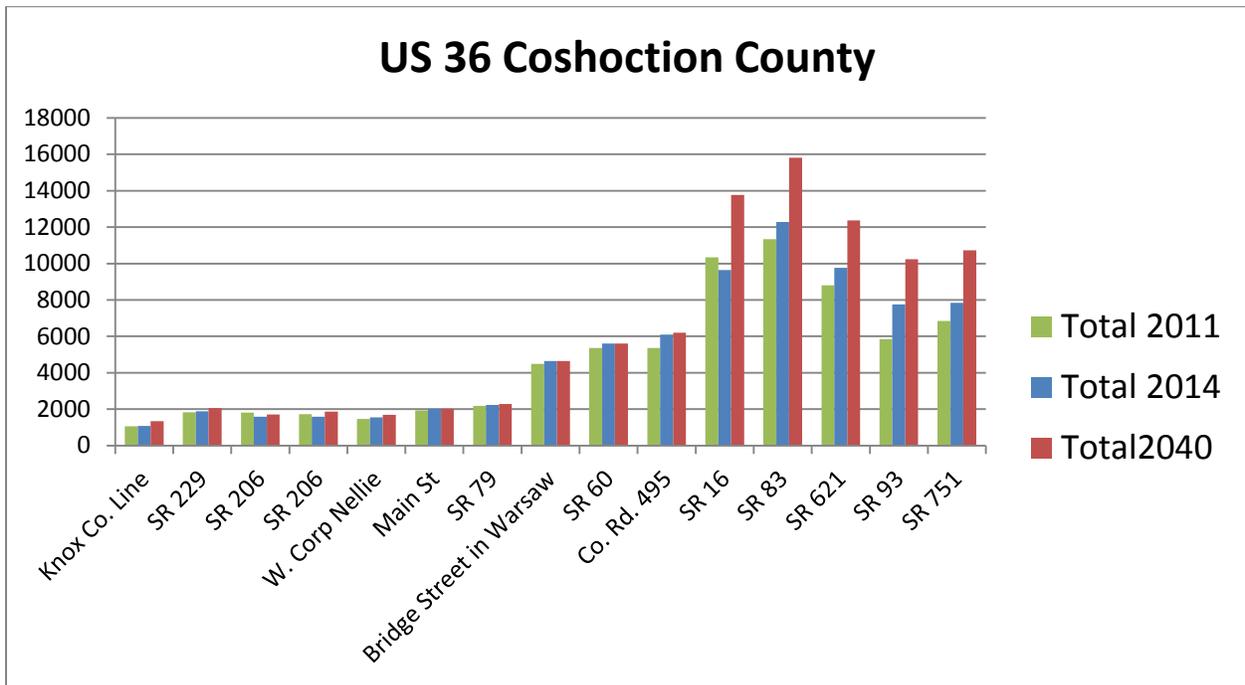


**FIGURE 4-20: COSHOCTON COUNTY TRUCK GROWTH RATE 2040 PROJECTIONS**



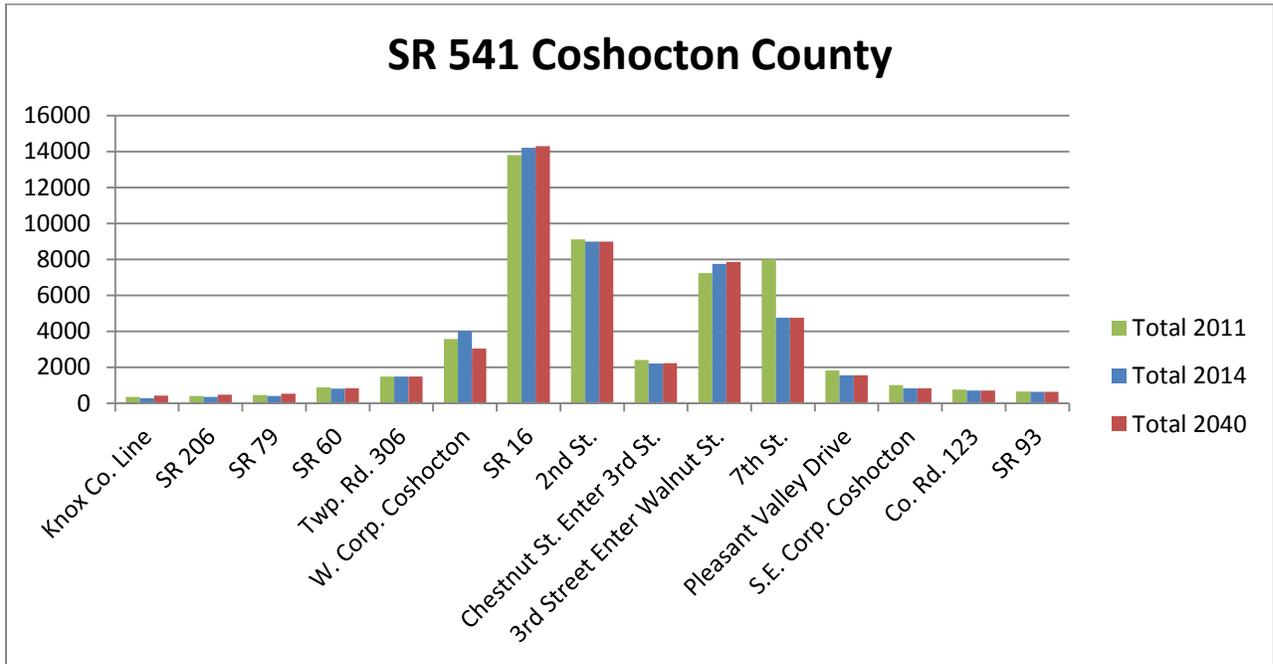
With regards to volume, the majority of the roadways are expected to see an increase in volume in 2040. As shown in Figures 4-19, 4-20, and 4-21, US 36 is projected to continue to have high vehicle segment volumes when compared to the rest of the roadways within the county. Additionally, most of the segments of US 36 with a growth of total daily volume are east of the City of Coshocton. SR 16, SR 83, and SR 93 are also expected to have traffic volume increases.

**FIGURE 4-21: US 36 COSHOCTON COUNTY**



Four roadways were projected to have a total vehicle volume decline: SR 79, SR 541, SR 621, and SR 715. As shown in Figure 4-22, a few segments along SR 541 are projected to have lower traffic volumes by 2040. This loss is mainly within car volumes; in contrast, truck volumes in SR 541 were actually expected to increase from the year 2011, but would not offset the car vehicle loss within the total volume decline or are projected to remain at 2014 levels.

FIGURE 4-22: SR 541 COSHOCTON COUNTY



#### 4.2.1.4 Guernsey County

With two interstate highways, two US routes, and extensive shale development, Guernsey County has several high yearly car and truck growth roadway rates of interest. With regards to car growth rates, I-70 is expected to have medium-high growth rate (around 2 %) across the county. I-77 is projected to have car growth rates between 0.47% and 0.91% among its sections, indicating that some growth is still expected to occur. Both SR 660 and SR 761 are projected to have medium-high growth rates. Based on the data in Figure 4-23, much of the projected car growth is expected to occur on Interstate 70.

High and medium-high yearly truck growth rates are expected to occur on state routes rather than interstates, with the exception of the I-70 segment that enters Muskingum County. SR 209 is projected to have a high truck growth rate of 3.45%, which is significant since the growth begins to slow at the city limits of Cambridge. Similarly, SR 285 has a high truck growth rate of 3.1% north of the village of Old Washington. SR 285 is a windy and technically hilly road, and officials have voiced their concerns regarding safety issues within that stretch of roadway. Additionally, sections of US 22 and SR 658 also have medium-high growth rates. Figure 4-24 illustrates these relationships. These high truck growth rates will need to be considered in the future when addressing congestion and safety concerns within Cambridge and north of Old Washington.

FIGURE 4-23: GUERNSEY COUNTY CAR GROWTH RATE PROJECTIONS

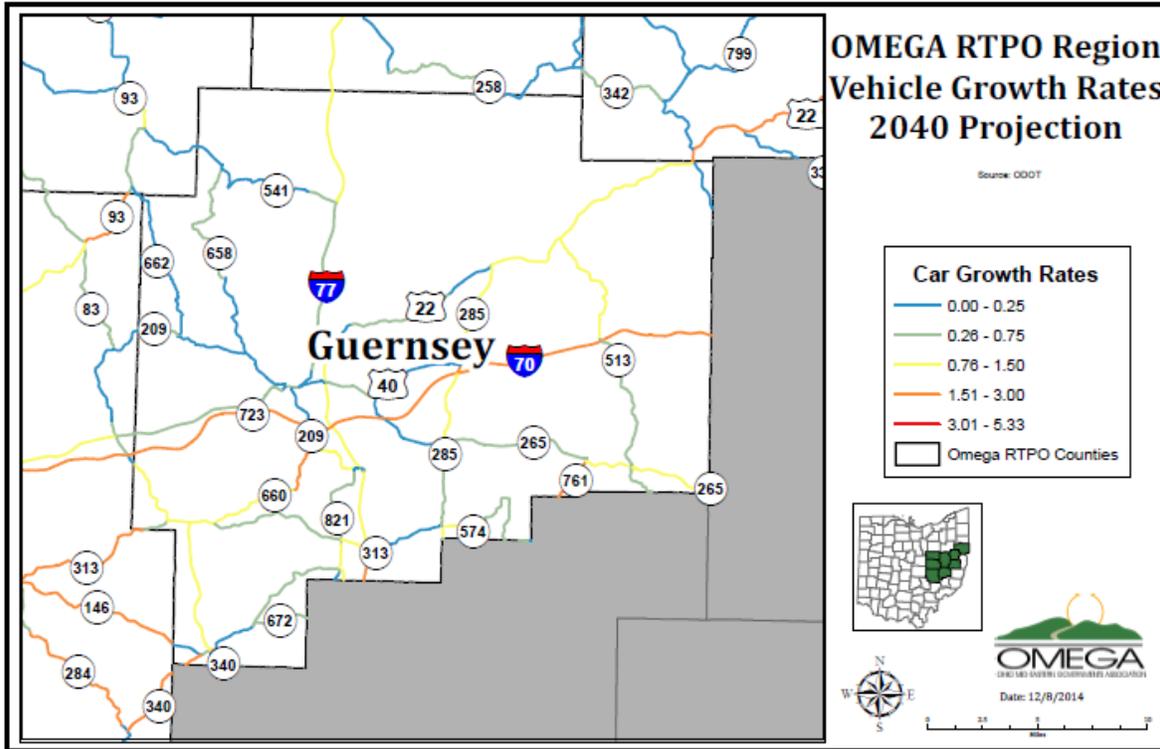
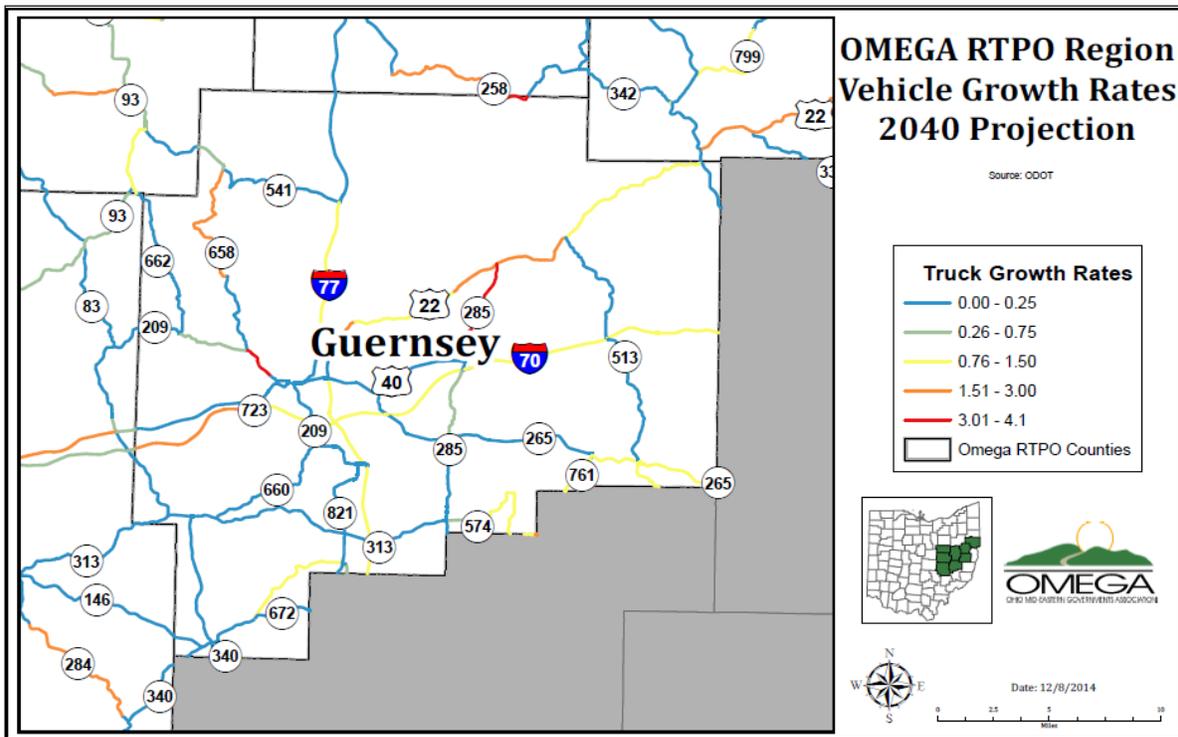
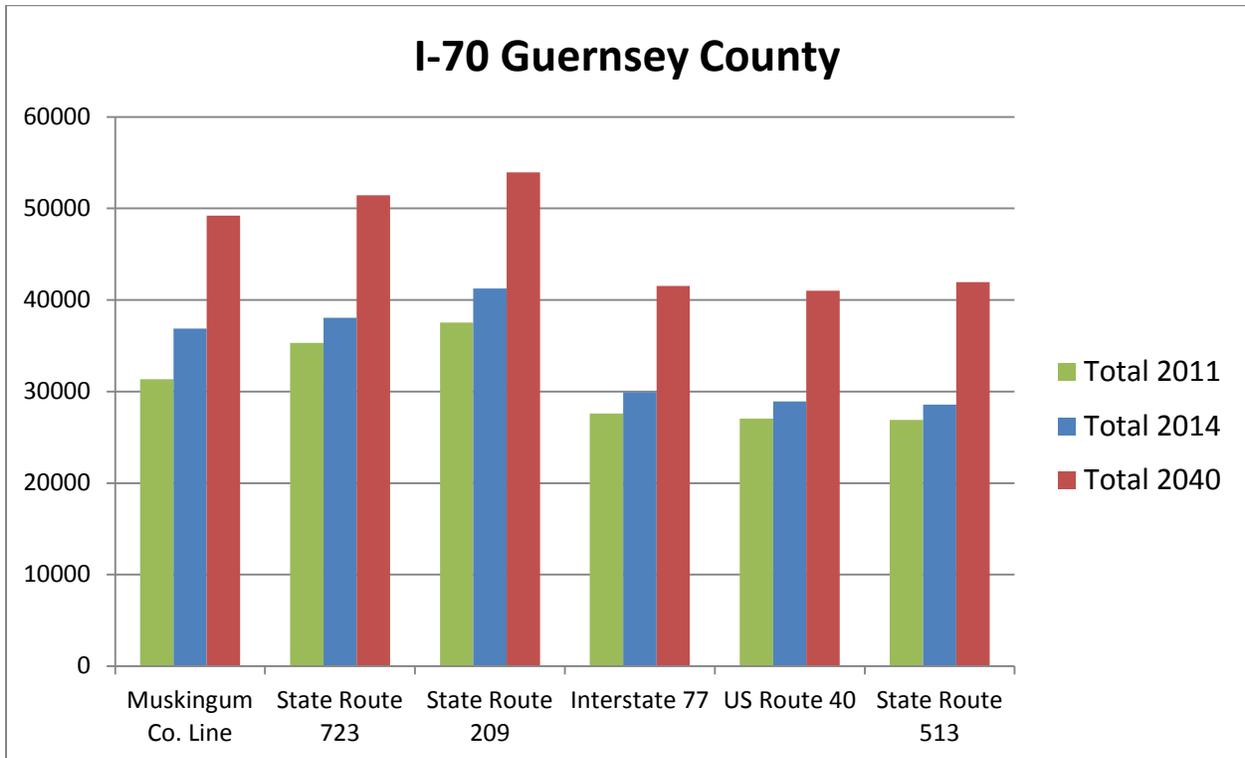


FIGURE 4-24: GUERNSEY COUNTY TRUCK GROWTH RATE PROJECTIONS

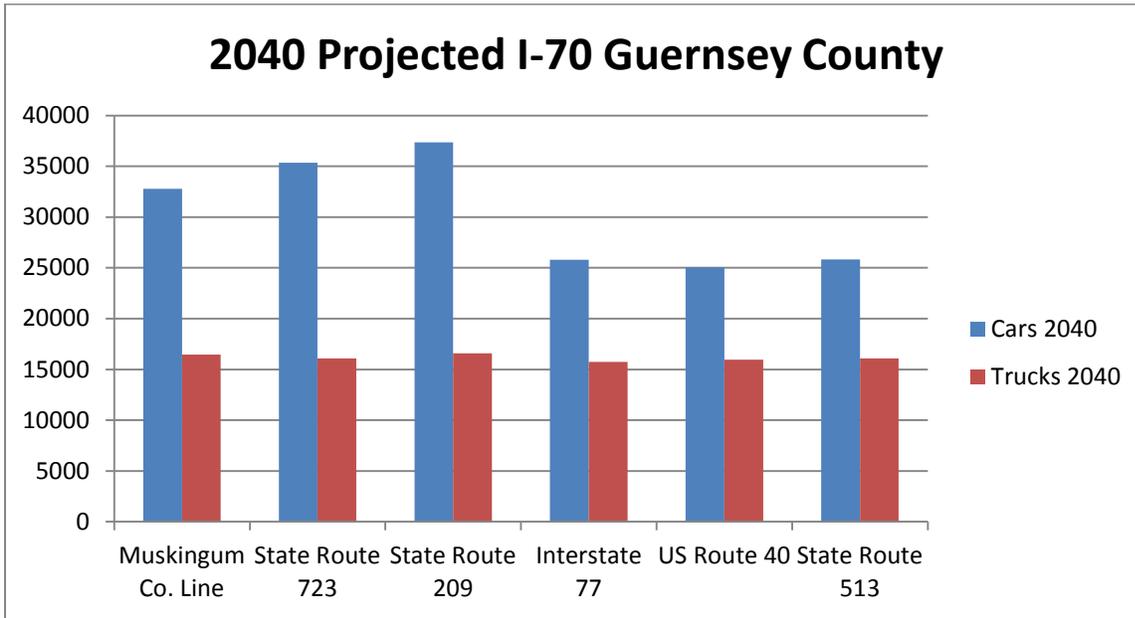


As expected, I-70, a national highway corridor that is part of Ohio’s Strategic Transportation System has the highest ADT in Guernsey County. By 2040, over 50,000 vehicles per day will travel I-70 between the Muskingum County Line and SR 209 as shown in Figure 4-25. As shown in Figure 4-26, truck volumes along I-70 are projected to exceed 15,000 vehicles per day by 2040. For these reasons, it is not only critical to the region, but also to the state and nation that capacity and congestion issues along this corridor be addressed.

**FIGURE 4-25: INTERSTATE 70 GUERNSEY COUNTY**

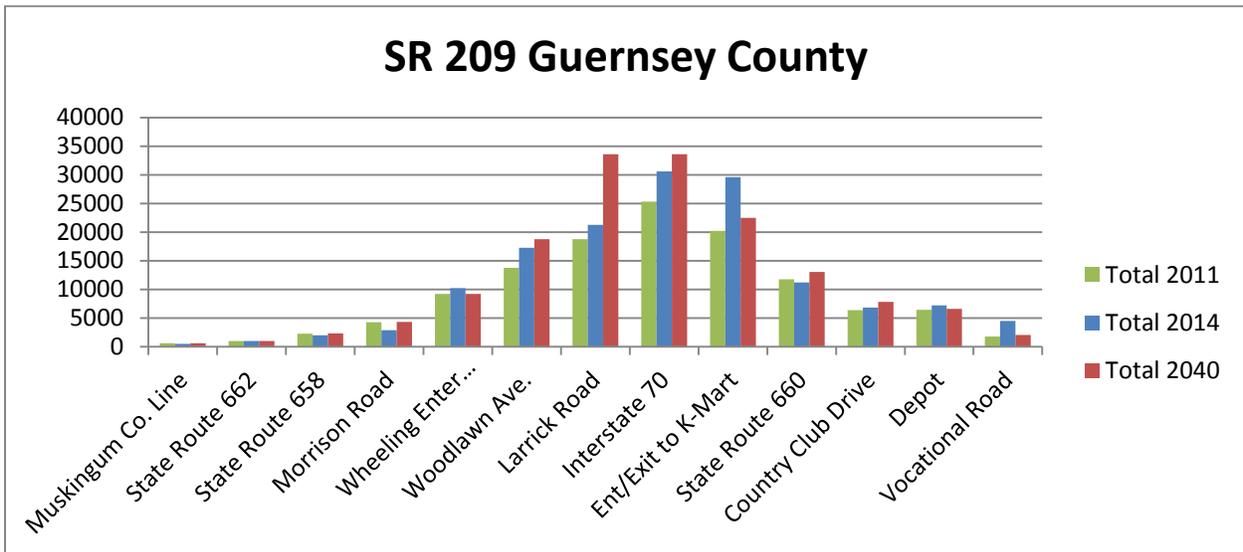


**FIGURE 4-26: 2040 PROJECTION INTERSTATE 70 GUERNSEY COUNTY**



In general, the current and projected ADTs for state routes within Guernsey County are less than 5,000 vehicles per day. The exception to this trend is SR 209 (see Figure 4-27) which has segments within the City of Cambridge that are projected to exceed 30,000 vehicles per day. Access management will be a key component to minimize congestion along these segments of SR 209.

**FIGURE 4-27: SR 209 GUERNSEY COUNTY**



#### 4.2.1.5 Harrison County

In Harrison County, the highest yearly car growth rates are expected to occur along US 22 and US 250. US 22 is projected to have a medium-high car growth rate of 1.54 to 2% throughout the county. From the Village of Cadiz to its intersection with SR 646, US 250 is projected to have a car growth rate of 1.72%. Many of the state routes within Harrison County are projected to have medium yearly car growth rates, as shown in Figure 4-28.

Despite its current and future shale development activity, Harrison County is only projected to have high yearly truck growth rates on SR 519. SR 519 is expected to have a truck growth rate of 3.37%, which is significantly higher than any projected car or truck growth rate within the county. For the remaining state routes, minimal growth is projected. Figure 4-29 shows these rates and relationships within the county's borders. Truck growth rates will need to be monitored during future shale activity as well, as they will likely be higher than the projected amount in 2040.

FIGURE 4-28: HARRISON COUNTY CAR GROWTH RATE PROJECTIONS

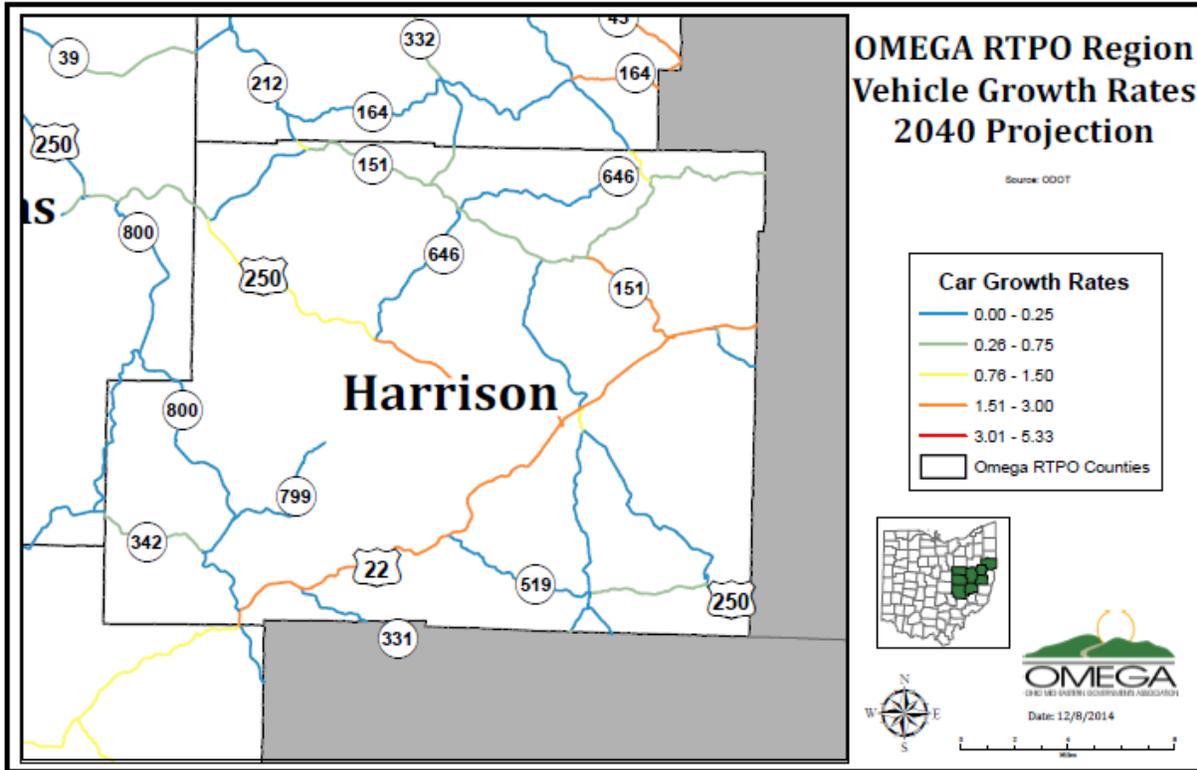
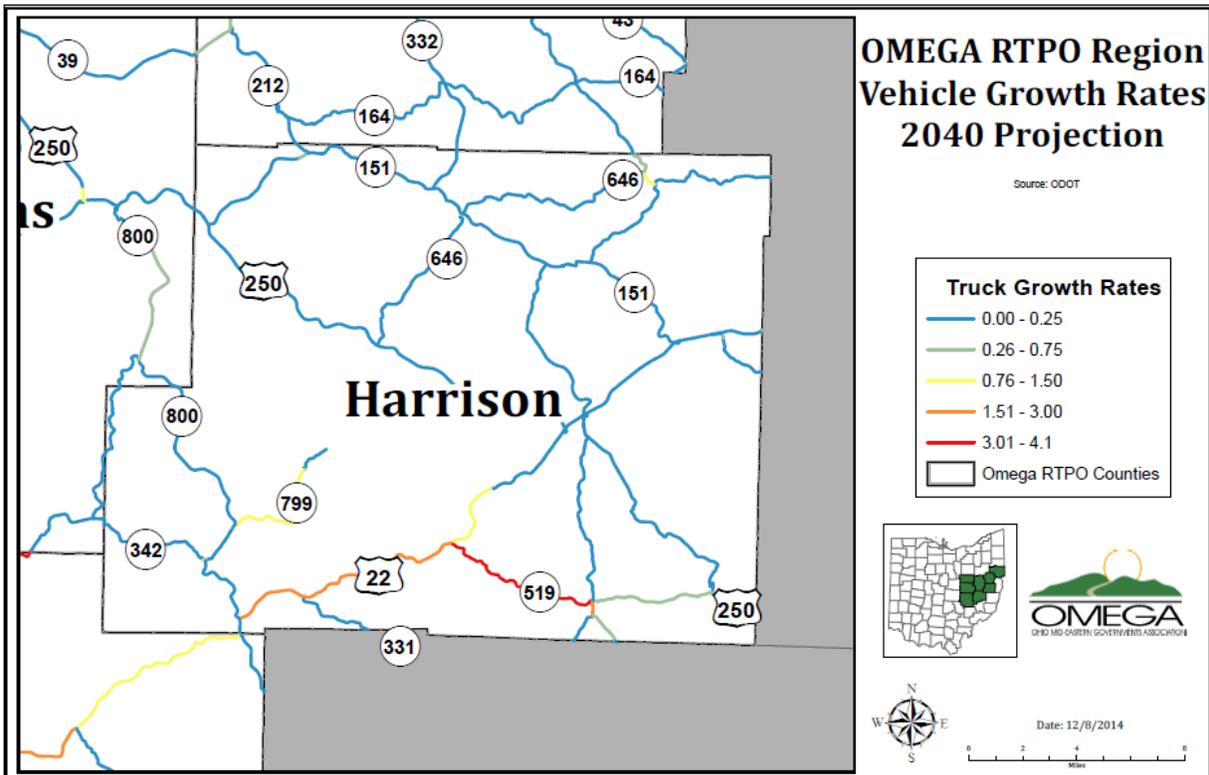


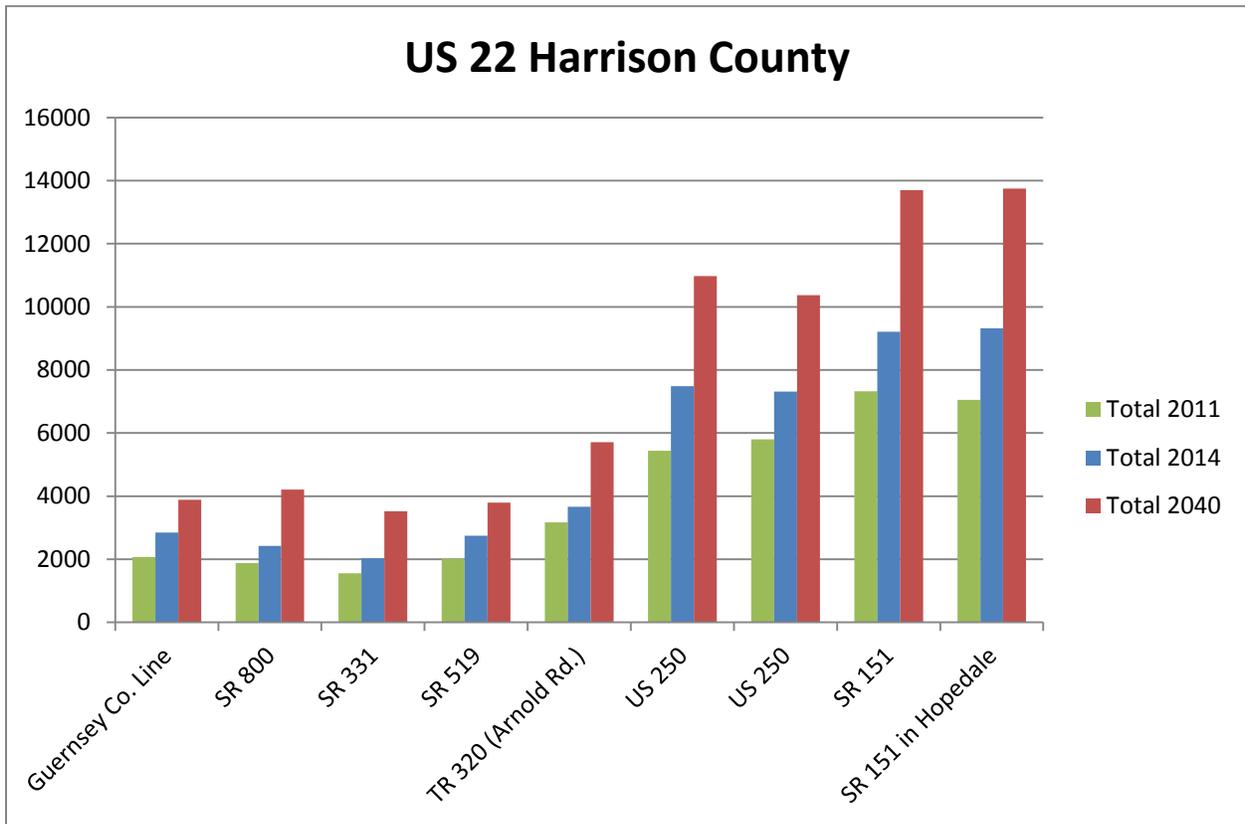
FIGURE 4-29: HARRISON COUNTY TRUCK GROWTH RATE PROJECTIONS



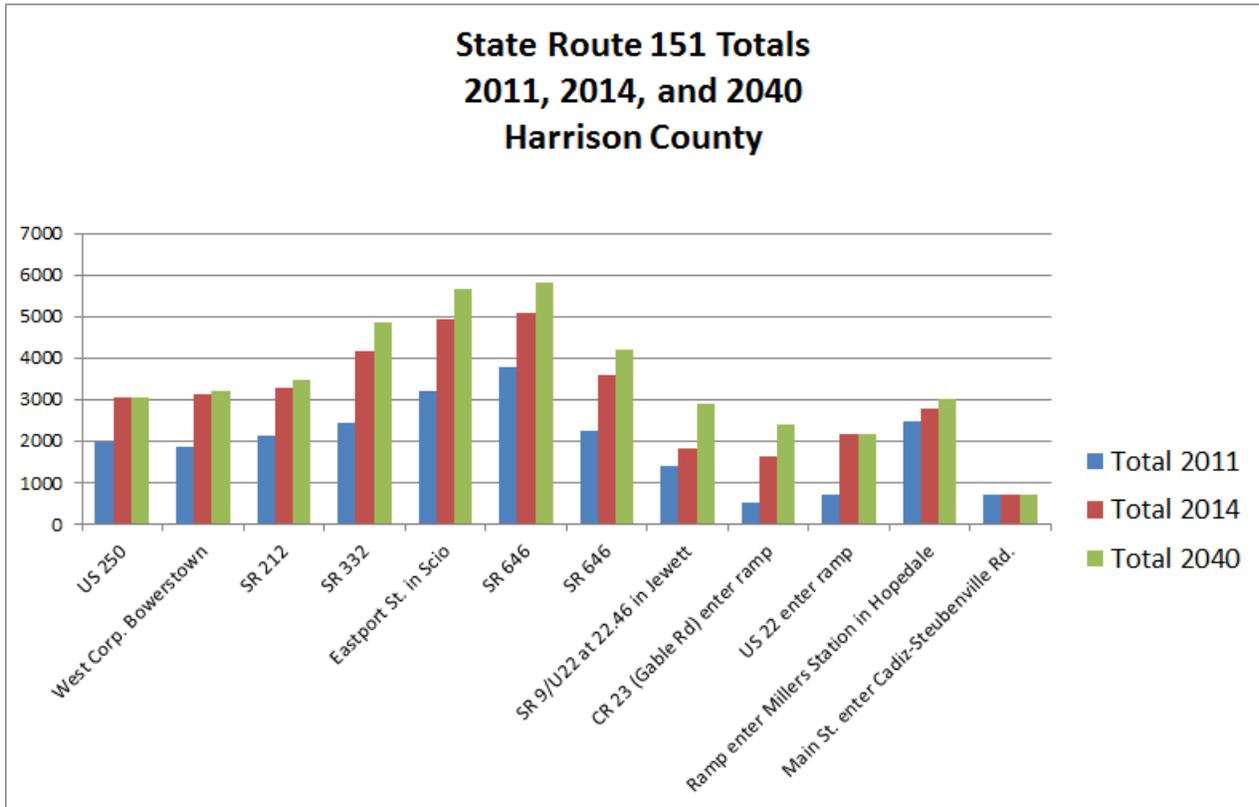
US 22 is expected to have the highest increase in ADT in the county and is projected to have total daily vehicle volumes above 10,000 for several of its segments. As shown in Figure 4-30, US 22 volumes will be much higher towards the eastern portion of the county near the Jefferson County line.

SR 9 and SR 151 are also heavily traveled in Harrison County. From the data in Figure 4-31, SR 151 is projected to have increases in every segment, primarily due to increases in car volumes.

**FIGURE 4-30: US 22 HARRISON COUNTY**



**FIGURE 4-31: SR 151 HARRISON COUNTY**



**4.2.1.6 Holmes County**

Holmes County has a mix of both low and high vehicle growth rates within its road systems. Unlike most of the counties with the RTP region, Holmes County has very minimal shale activity but much higher tourism rates. Holmes County consistently has the lowest unemployment rate in the RTP region and the unemployment rate is typically lower than state and national levels. As shown in Figure 4-32, the 2040 projection points to several areas of interest with regards to yearly car growth rates. SR 643 is projected to have the highest car growth rate within the county at 4.1%. Car growth rates along the US 62 and many of the state routes are projected to increase in 2040 as well.

Truck growth rates are not as high in many of the roadways but a few state routes within the county that are expected to have significant truck growth, as shown in Figure 4-33. SR 514 is expected to have a high truck growth rate of 3.02% within the segment beginning at Knox County line to SR 520, then remaining at 2% for the majority of the roadway. Similarly, both SR 520 and SR 754 are expected to have medium-high truck growth rates as well.

FIGURE 4-32: HOLMES COUNTY CAR GROWTH RATE PROJECTIONS

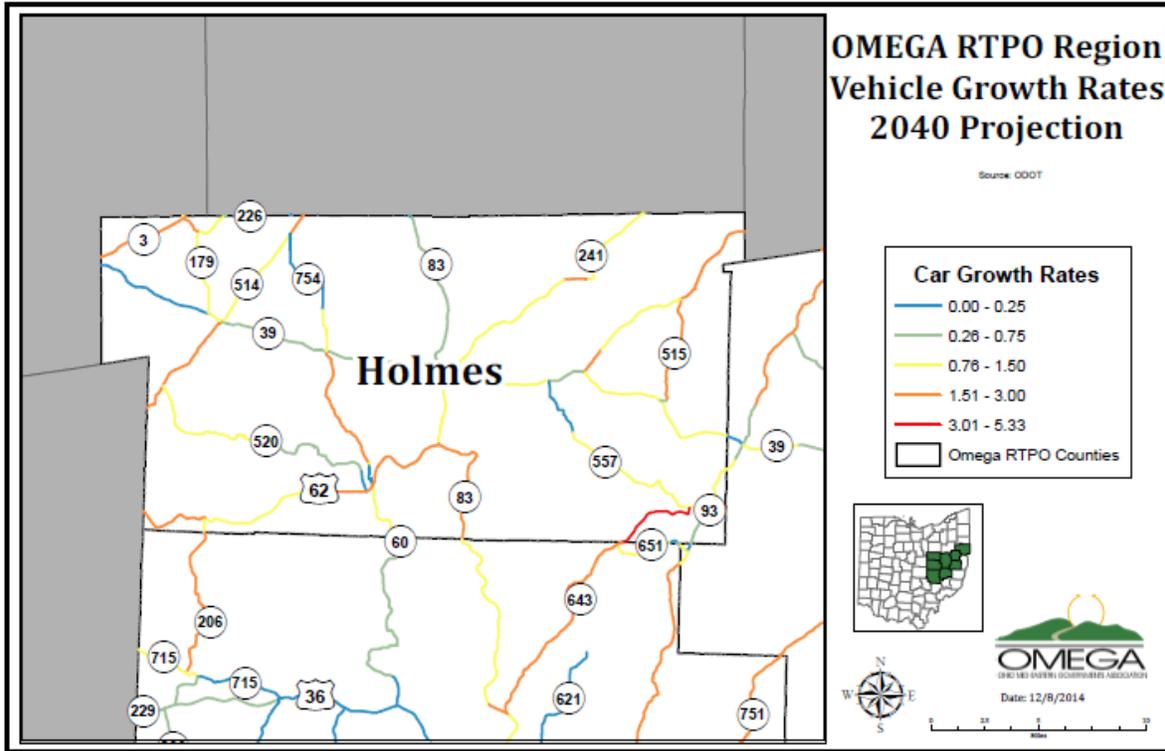
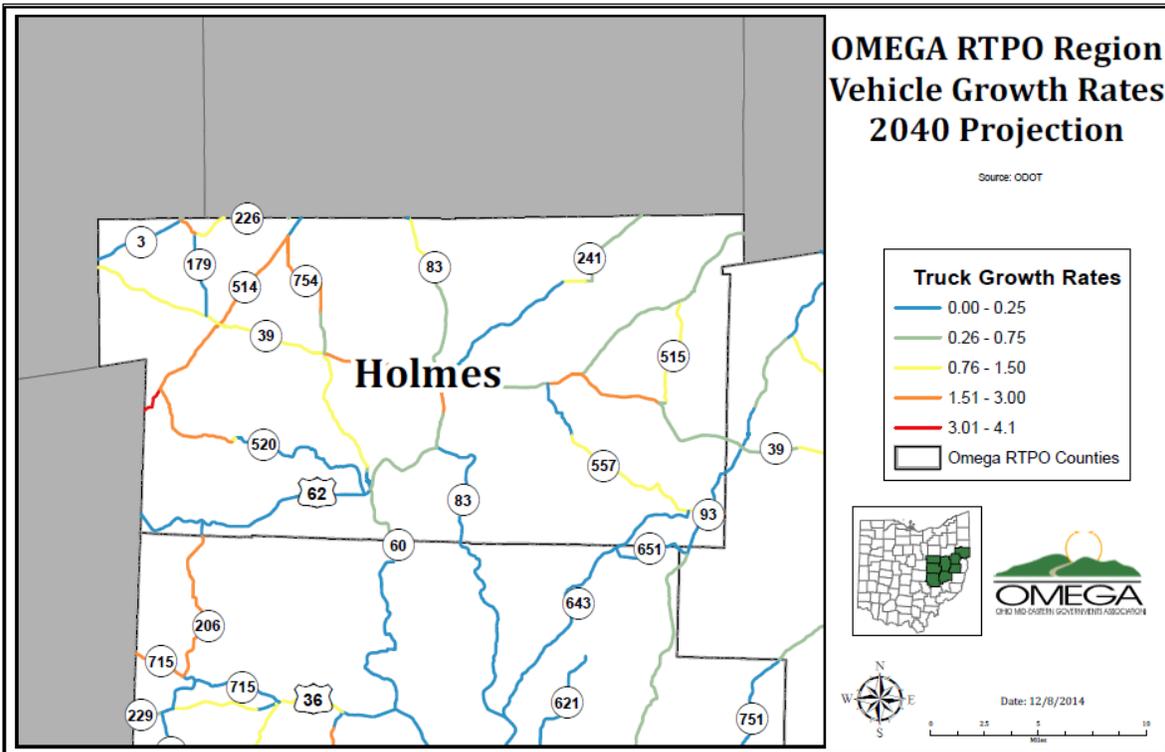


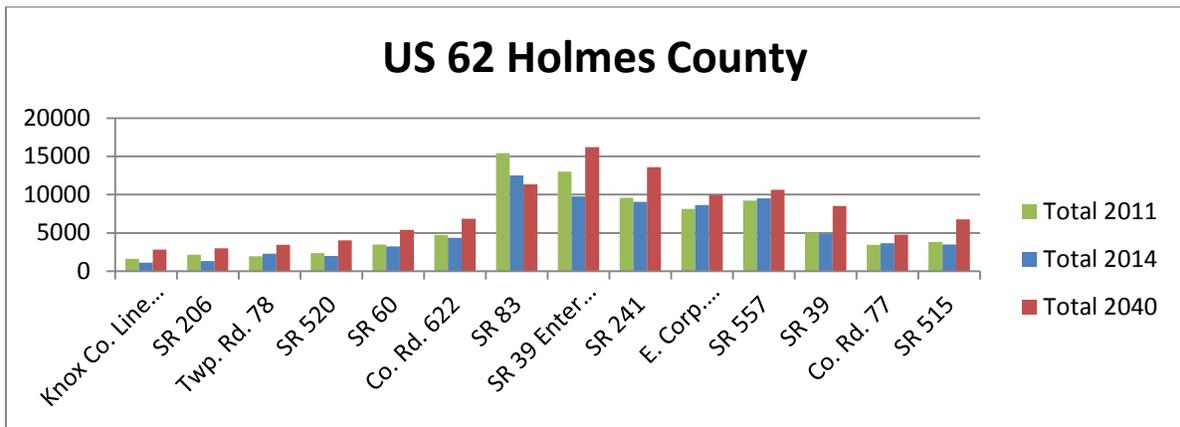
FIGURE 4-33: HOLMES COUNTY TRUCK GROWTH RATE PROJECTIONS



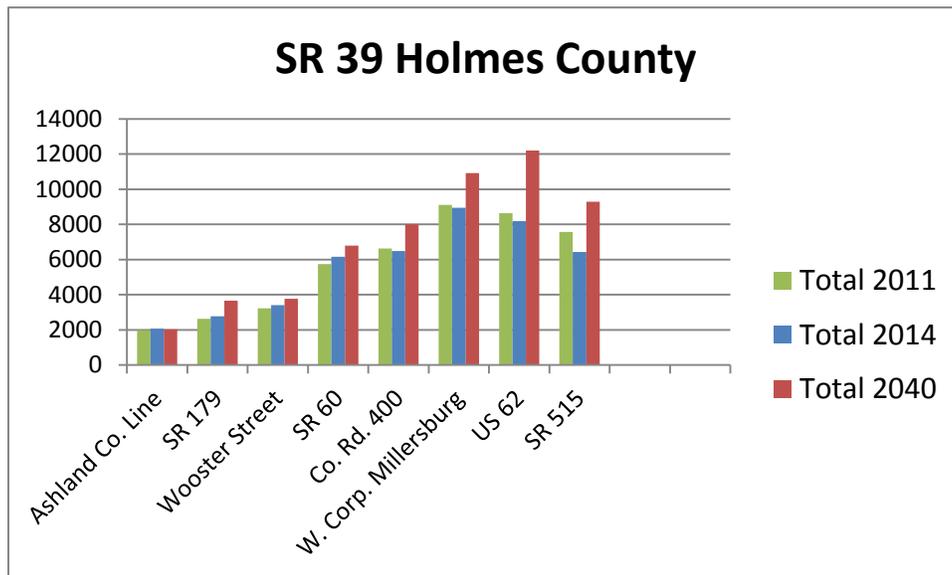
As shown in Figure 4-34, US 62 will have the most significant total traffic volume increase in Holmes County especially within the Village of Millersburg. Other state routes with high traffic volumes include SR 39 and SR 83, which also intersect the village of Millersburg. This trend for SR 39 is shown in Figure 4-35.

Additionally, there are no declines in traffic volume in the roadway systems of this county; every road system is projected to increase. With a growing rural population, Holmes County is expected to have some level of growth in traffic volumes across all of its roadway systems, especially those within Millersburg, Berlin, and the western section of the county.

**FIGURE 4-34: US 62 HOLMES COUNTY**



**FIGURE 4-35: SR 39 HOLMES COUNTY**



#### 4.2.1.7 Muskingum County

With a mix of interstate, US routes, and state routes, Muskingum County has a wide range of vehicle growth rates across its systems. Zanesville, the largest city within the RTPO region, also has several traffic networks with high growth rates in and around its limits. With regards to yearly car growth rates, I-70 has medium-high growth rates from the Guernsey County border and into the city of Zanesville. Several state routes have segments with medium-high growth rates as well, such as SR 146, SR 313, and SR 586. As shown in Figure 4-36, Muskingum County has several roadway segments with minimal or flat car growth rates.

Yearly truck growth rates also vary within the county, but there are fewer high and medium-high growth segments than exist in the car growth data. However, a segment of US 22 outside of Zanesville is projected to have a truck growth rate of 3.79%, which is a higher growth rate than any segment within the county. Most of the medium-high growth rate segments include SR 284 (1.67%), segments of I-70 (ranging from 1.7 to 3.00%), and SR 60 (2.27%). These areas are illustrated in the Figure 4-37.

FIGURE 4-36: MUSKINGUM COUNTY CAR GROWTH RATE PROJECTIONS

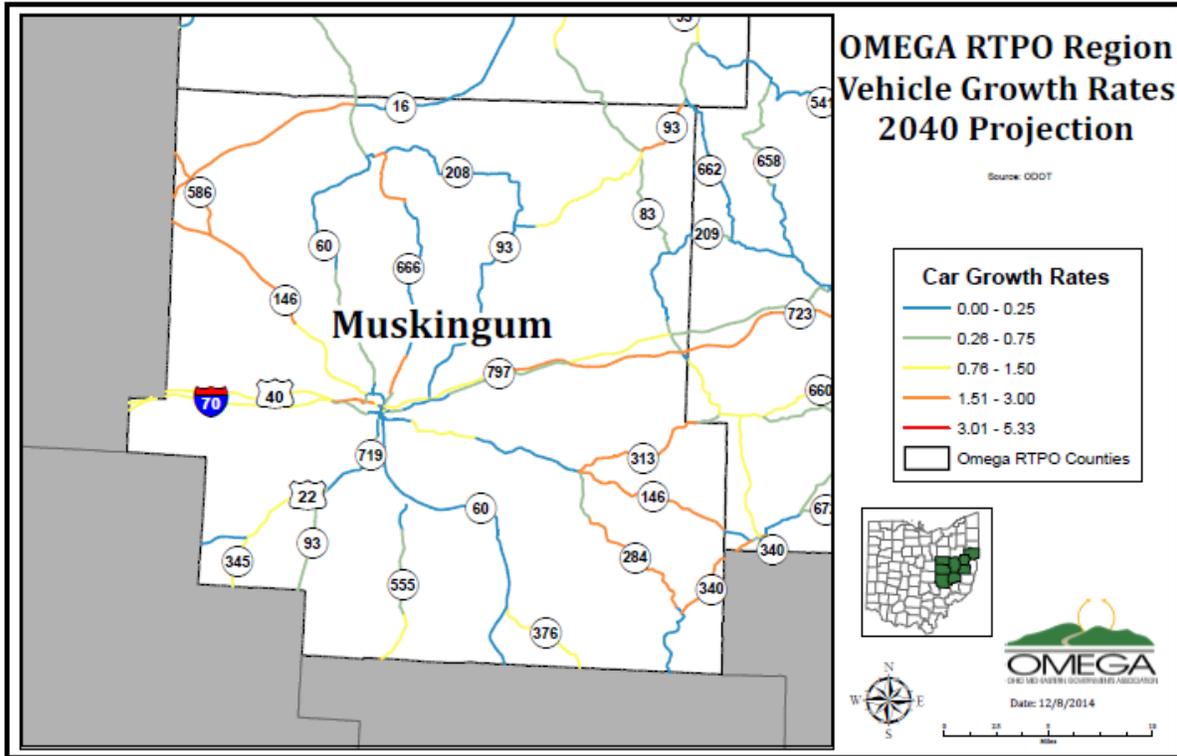
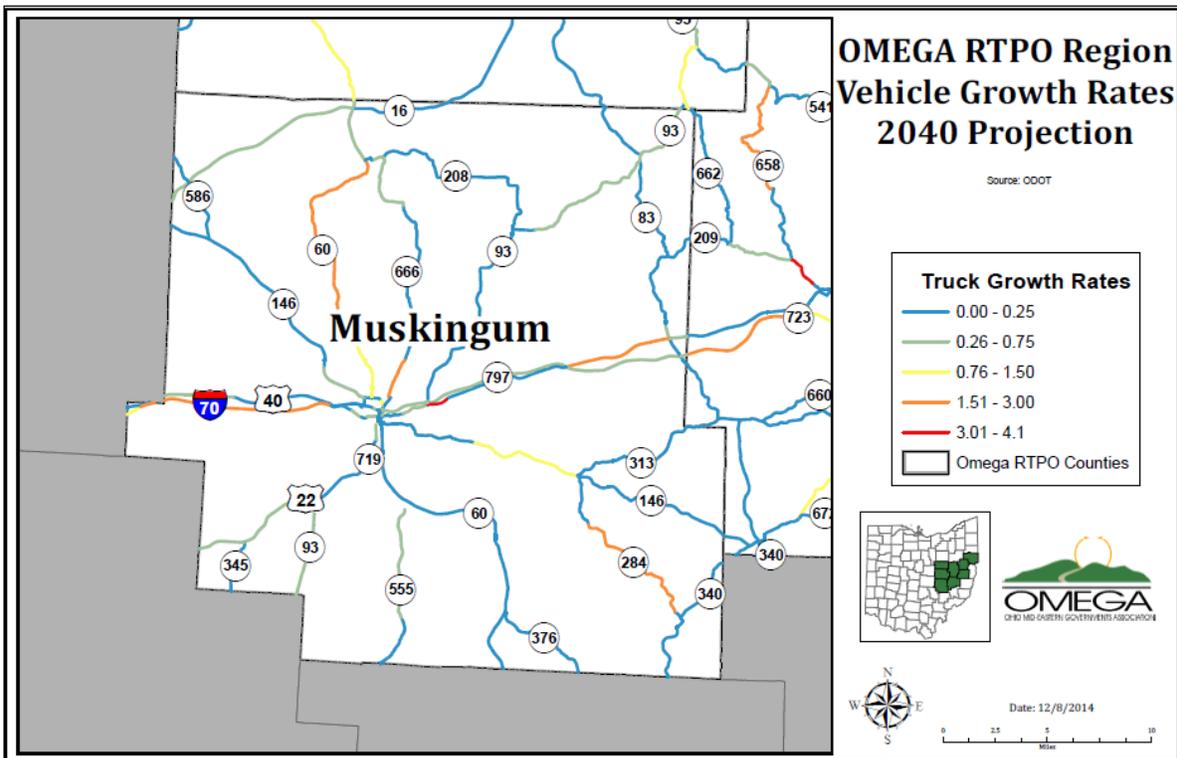
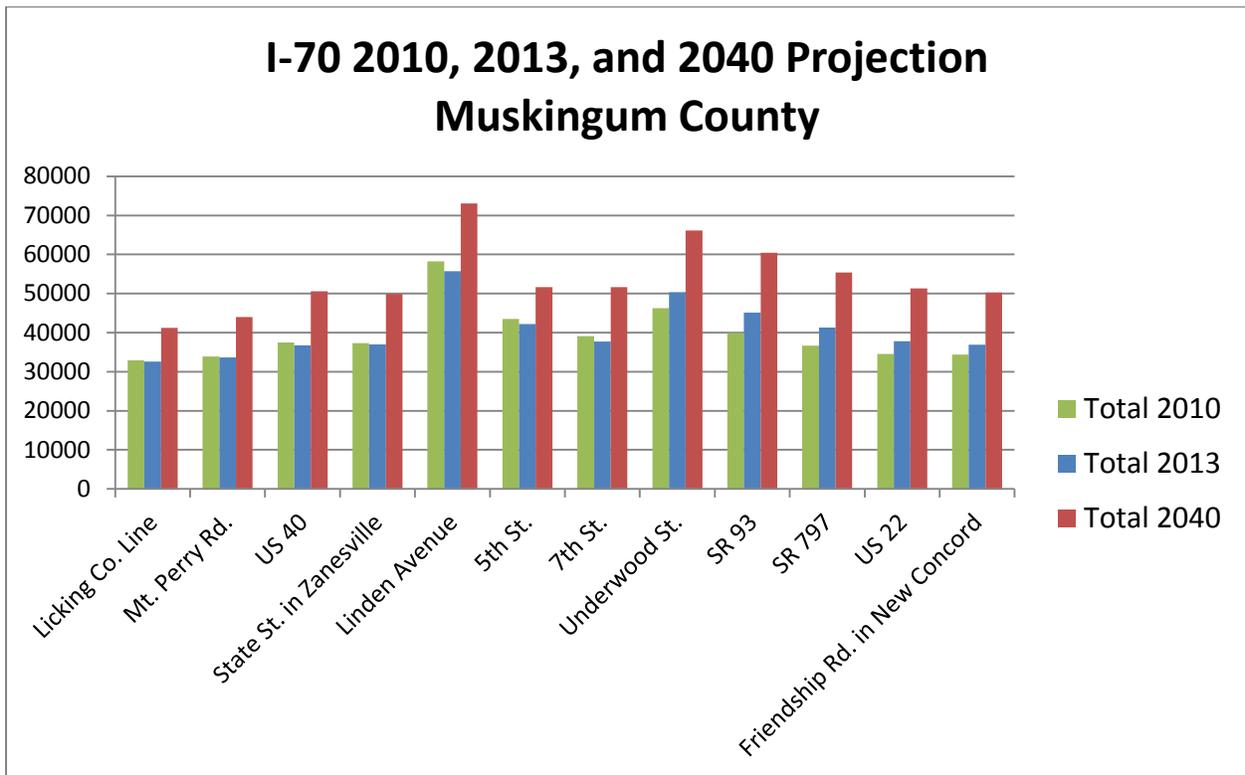


FIGURE 4-37: MUSKINGUM COUNTY TRUCK GROWTH RATE PROJECTIONS

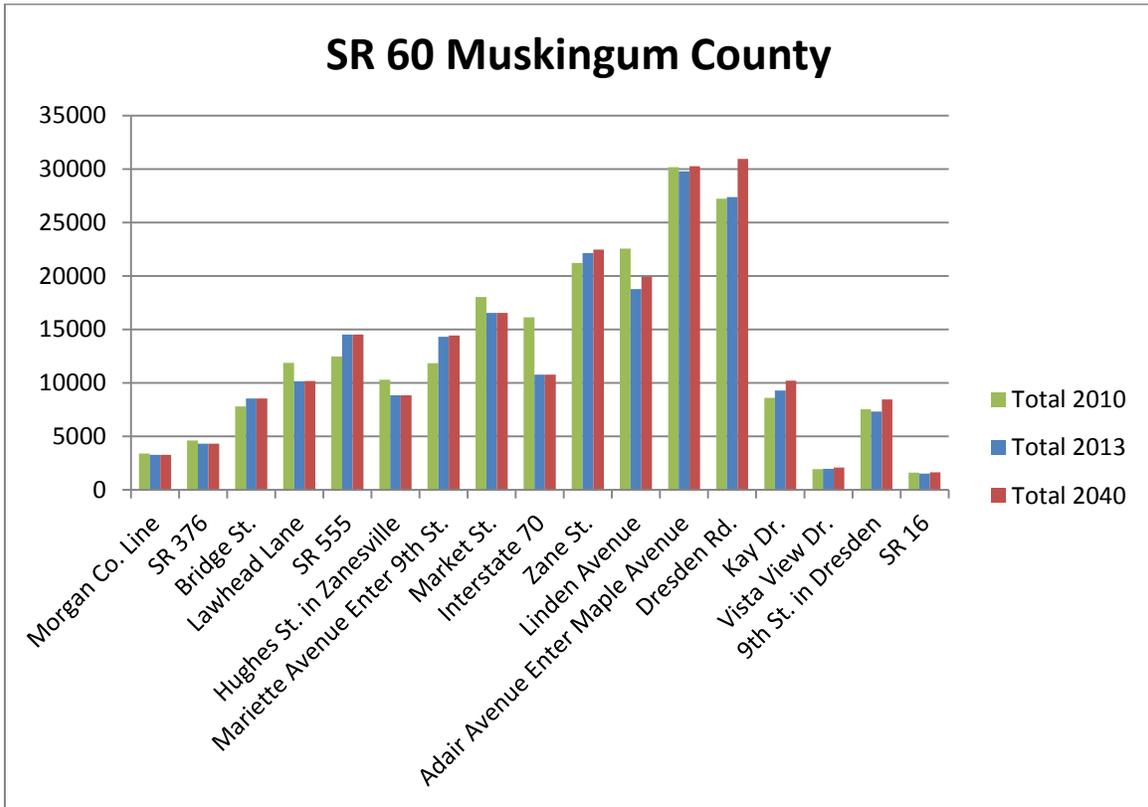


As shown in Figure 4-38, I-70, a national highway corridor, has the highest projected traffic volumes in the county with segments ranging from 40,000 to over 70,000 vehicles per day. SR 60, with a higher projected volume than both US 22 and US 40, had mixed growth among its route segments, but was still projected to have overall total growth. This trend is illustrated in Figure 4-39. A similar segment pattern was projected for US 22, which is depicted in Figure 4-40. This will mean that higher levels of deterioration and congestion will continue to occur within the county, especially in the urban area of Zanesville.

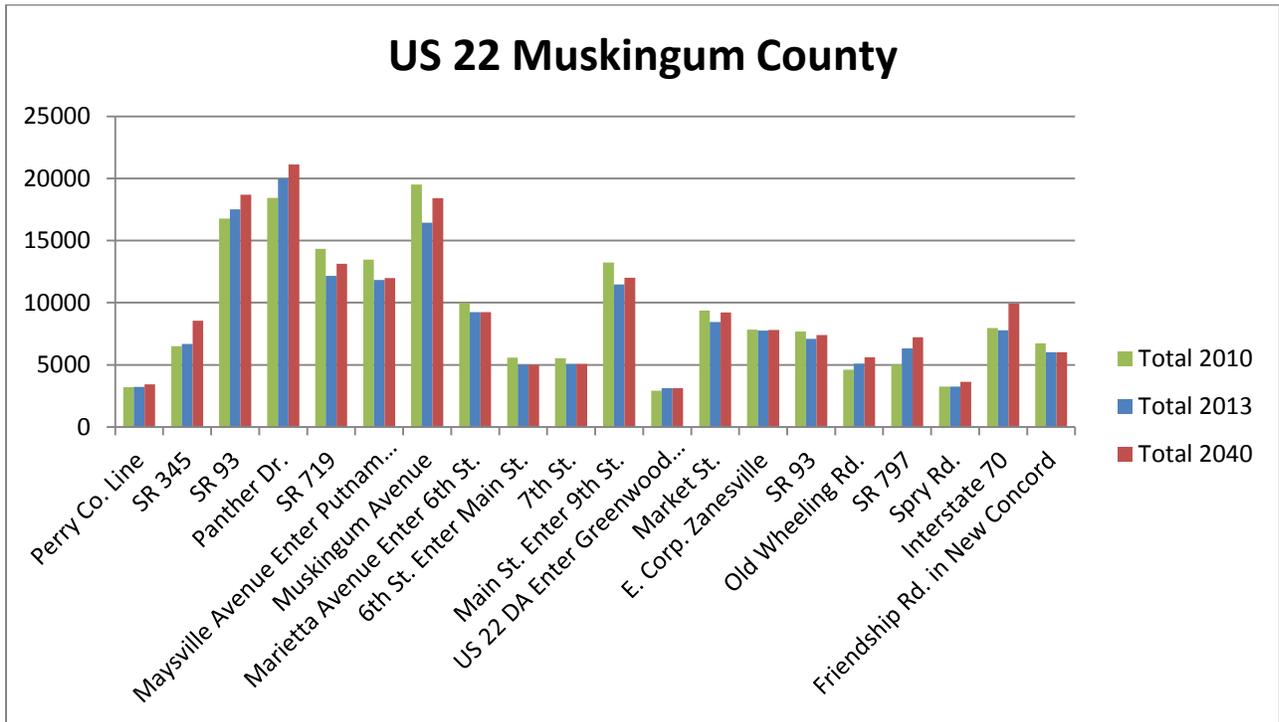
**FIGURE 4-38: INTERSTATE 70 MUSKINGUM COUNTY**



**FIGURE 4-39: SR 60 MUSKINGUM COUNTY**



**FIGURE 4-40: US 22 MUSKINGUM COUNTY**



#### 4.2.1.8 Tuscarawas County

The 2040 projections for Tuscarawas County indicate that yearly car growth rates, rather than yearly truck growth rates, will be much higher within this county. For many of the state route systems, high growth will be experienced between and within some of the villages and cities as well. SR 93, for example, will see an increase in car growth rates by 2.1%. I-77 is projected to have a medium increase in car traffic (between 1% and 1.5% in segments), but will be reflected more so in its total volume. These growth rates are shown in Figure 4-41.

With regards to truck growth, only short segments of roadways are expected to see growths in truck volume, primarily along SR 416, SR 212, and SR 258. This trend is shown in Figure 4-42. I-77 is projected to have low to low-medium yearly truck growth rates.

FIGURE 4-41: TUSCARAWAS COUNTY CAR GROWTH RATE PROJECTIONS

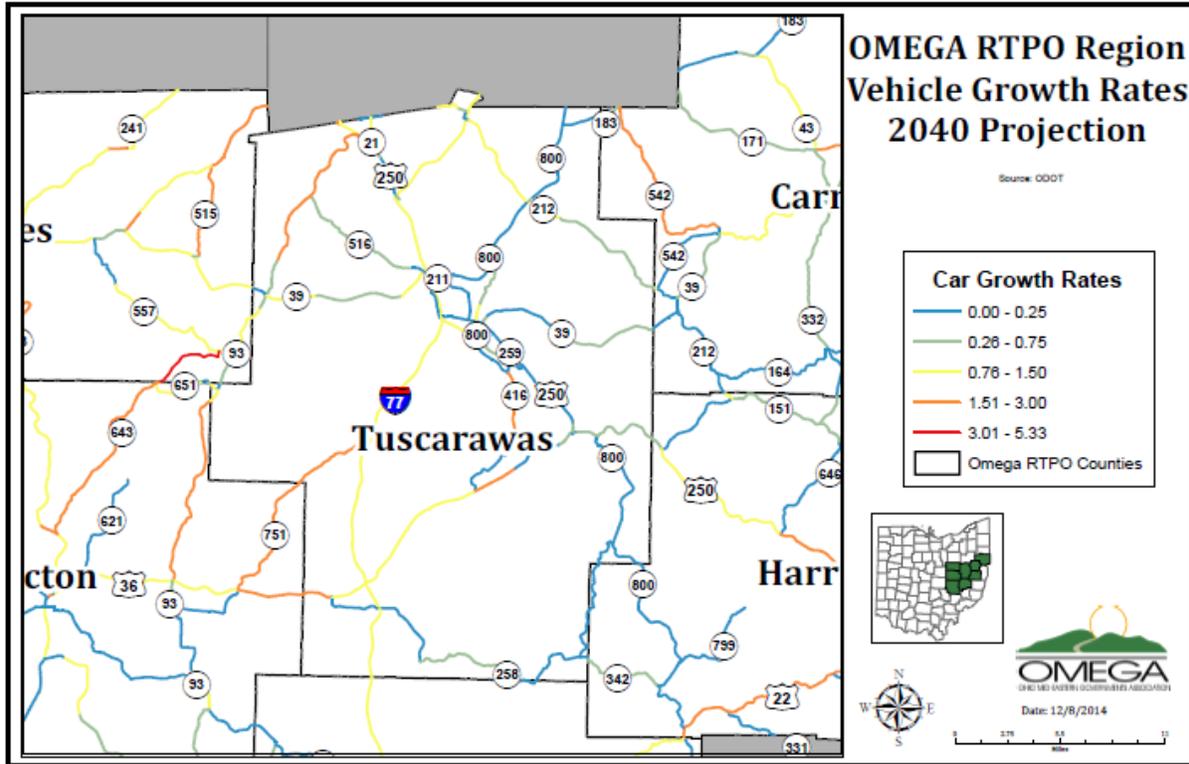
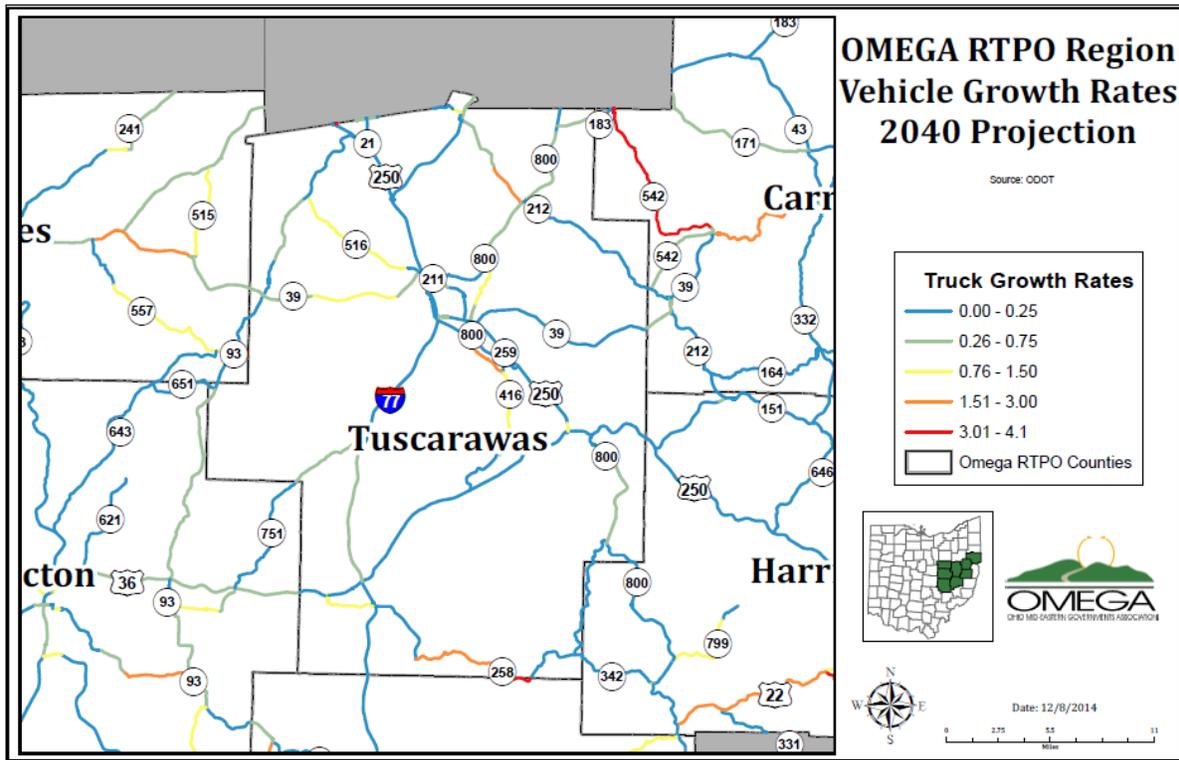
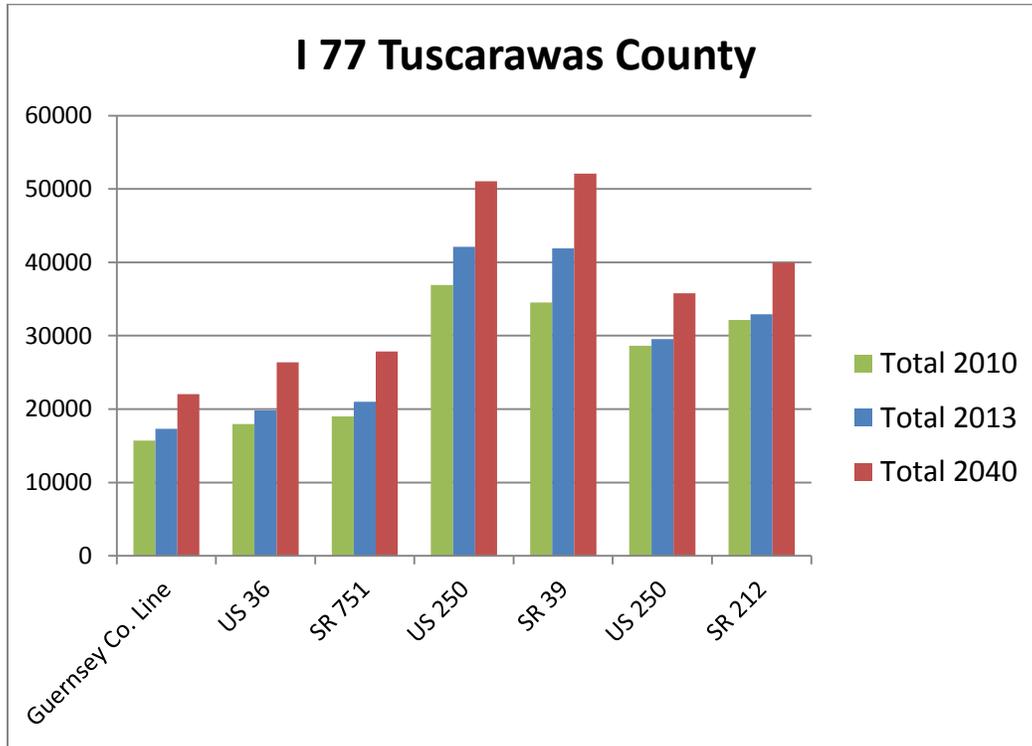


FIGURE 4-42: TUSCARAWAS COUNTY TRUCK GROWTH RATE PROJECTION

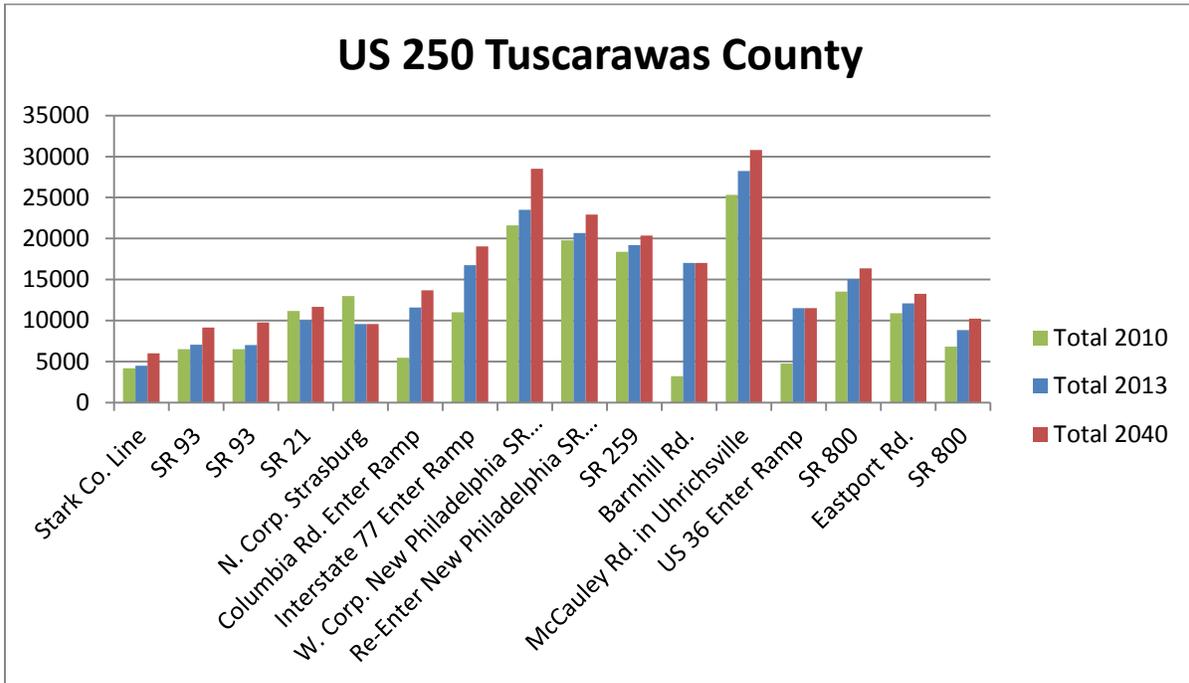


As expected, total traffic volumes within Tuscarawas County are highest along I-77, a national highway corridor and US 250, a statewide highway corridor, see Figure 4-43 and Figure 4-44. SR 800, which has experienced serious pavement degradation, is expected to have traffic volume growth along segments as well. These segment locations are depicted in Figure 4-45. Consideration should be placed upon these roadways so as to avoid possible congestion or safety issues in the future. Pavement condition will also need to be monitored closely to assess the impact of increased traffic from shale development activities on these roads.

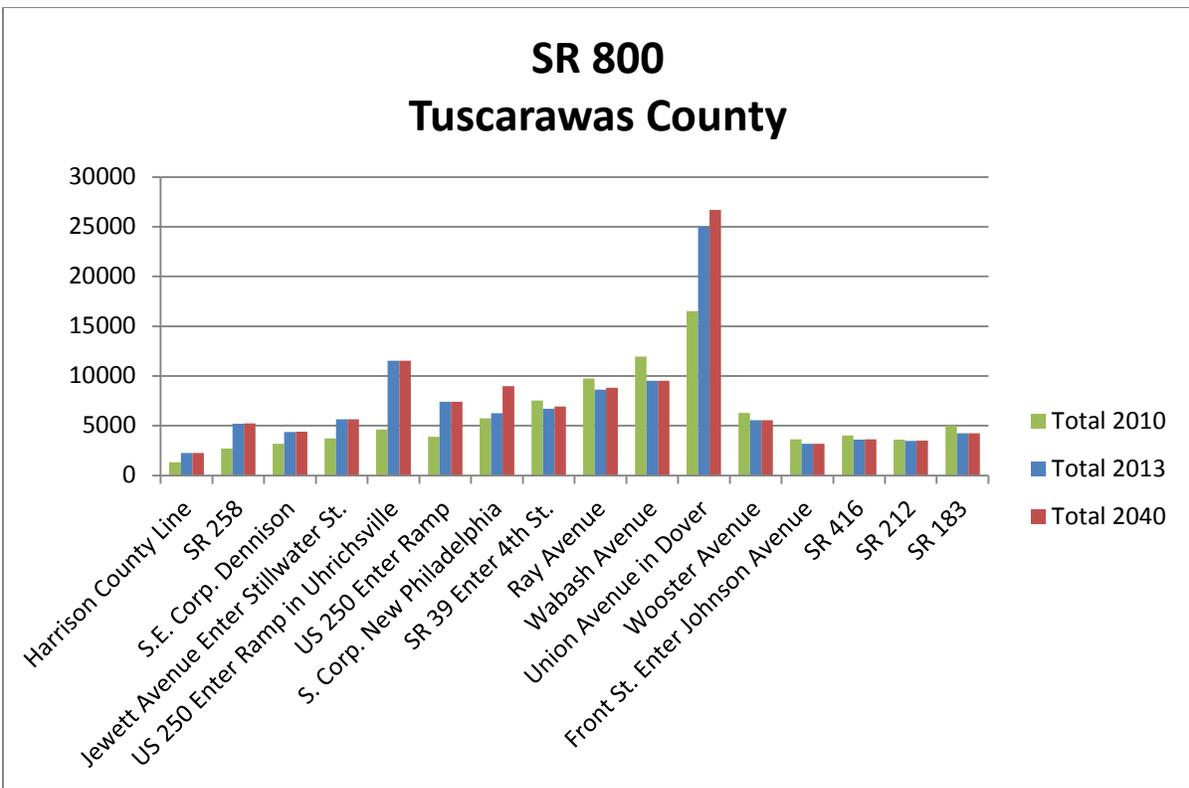
**FIGURE 4-43: INTERSTATE 77 TUSCARAWAS COUNTY**



**FIGURE 4-44: US 250 TUSCARAWAS COUNTY**

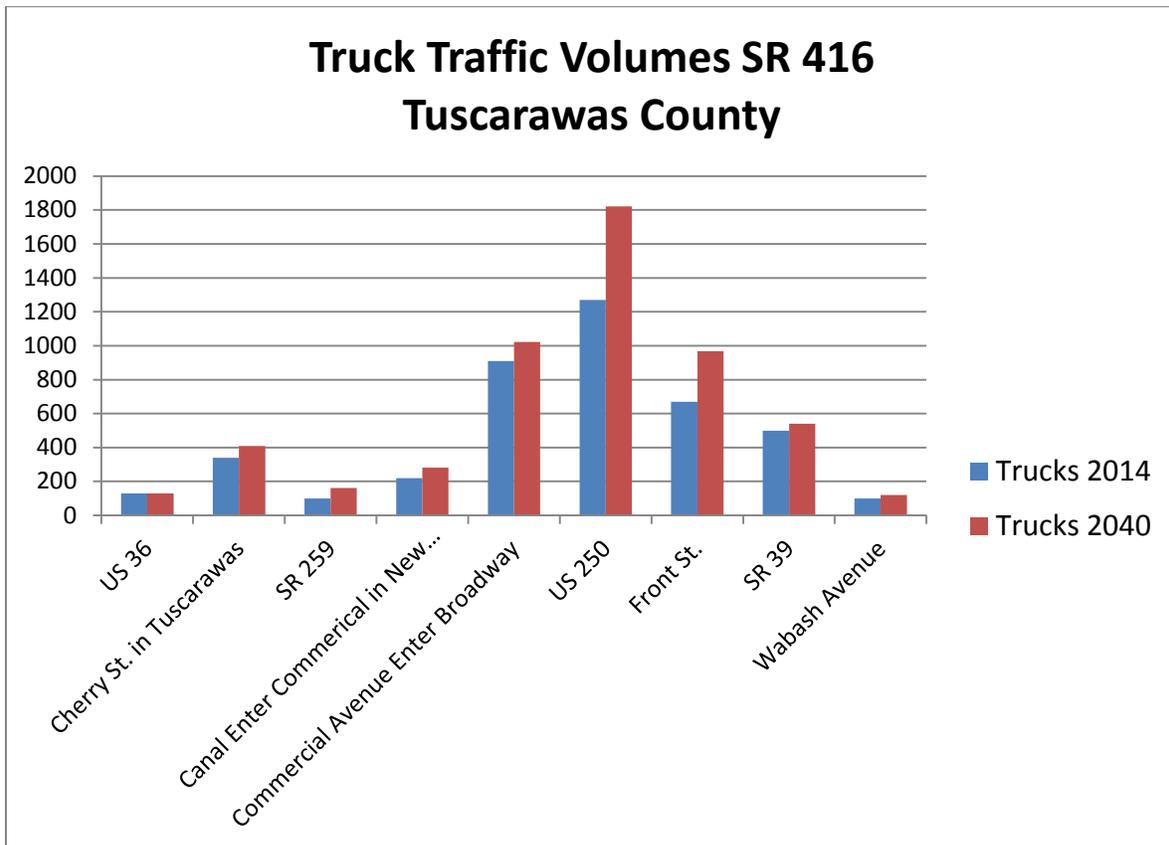


**FIGURE 4-45: SR 800 TUSCARAWAS COUNTY**



As seen in Figure 4-46, truck volumes along SR 416 from US 36 to New Philadelphia are projected to increase. Although the total volume is much higher for car rates, growth in truck volume is projected as well. This volume is highest at the US 250 intersection in New Philadelphia, which could raise questions about congestion within this part of the city as well, especially at the on-ramps between these two routes.

**FIGURE 4-46: TRUCK VOLUMES SR 416 TUSCARAWAS COUNTY**



#### 4.2.1.9 County Summary

According to the 2040 projections, increases in vehicle growth rates and daily vehicle volumes will be of concern in several areas of our region. Concern will need to be placed not only on high volume routes such as the I-70 corridor, but also on the state and US routes that are expected to experience growth that has not yet been witnessed. Many of the small villages and cities within these systems will likely have congestion issues from this projected growth more so than the areas that normally have high volumes of traffic.

Projections may not accurately reflect volumes in the coming years, especially for areas involved with shale development. A comparison of recent traffic counts to the projected data indicates that the projections may be underestimating the impact of shale development activities on traffic volume. Shale

development activities in Carroll, Columbiana, Guernsey, Harrison, and Tuscarawas Counties are expected to increase in the future with corresponding increases in traffic volumes. Careful consideration of the most recent traffic count data should be addressed when planning improvements for these areas in the future.

The projected increases in the total volume of vehicles and trucks may adversely impact pavement condition, congestion, and safety. More frequent pavement maintenance, the addition of vehicle lanes or turn lanes to add capacity, or implementation of appropriate countermeasures to address safety issues may be required in the RTPO. Shale development, tourism, and other economic development in the region are contributing factors to the projected growth. The national and state highway corridors, such as I-70, I-77, US 30, and US 250 within the RTPO are also factors in the projected growth of the region as the proximity to these corridors of national and state significance help to drive economic development in the region. Monitoring change within these regional activities and the roadway systems that encompass them will be of chief concern when addressing actions for the future conditions of this region.

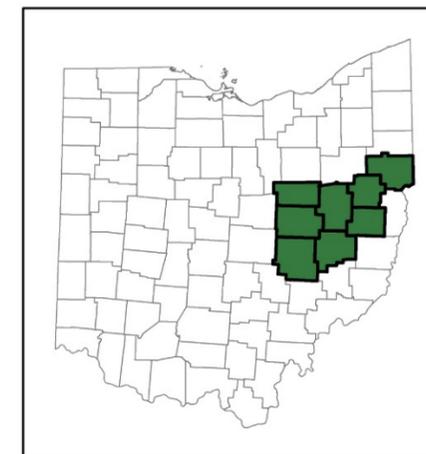
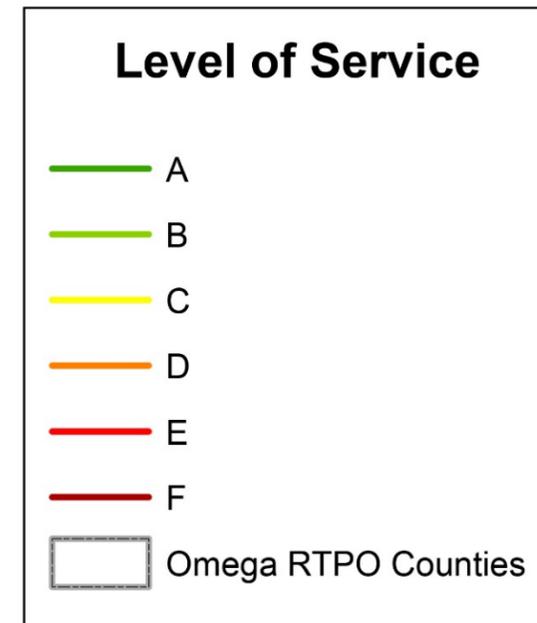
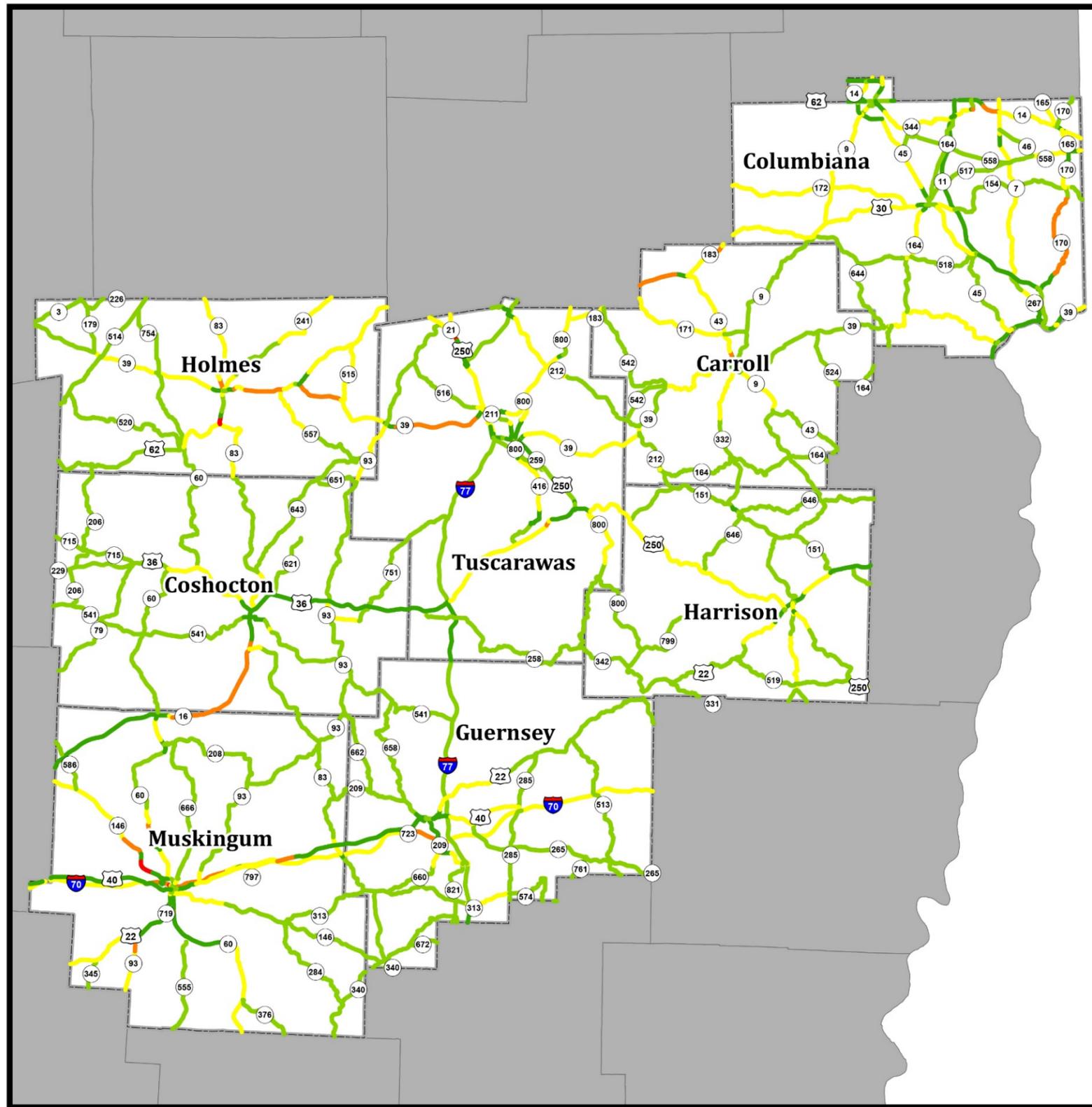
#### **4.2.2 Level of Service**

ODOT has conducted statewide modeling to assess the potential for congestion along state and federal routes. Two measures commonly used to assess congestion are Level of Service and Volume to Capacity ratio. Level of Service is graded on a scale of A through F. A means free flow, little traffic at or above the posted speed limit and F is forced or breakdown flow resulting in a constant traffic jam and is indicative that the demand exceeds capacity. Roads are typically designed for a Level of Service C. As shown in Figure 4-47, most roads in the OMEGA region currently have a level of service of C (yellow) or better (green). Currently, most of I-70 through Guernsey and Muskingum Counties has a Level of Service of C. All counties except Harrison have some routes that have a level of service of D or E. Currently, the OMEGA RTPO region does not have any roads with a level of service of F.

The 2040 projected Level of Service for the RTPO Region is provided in Figure 4-48. As shown in Figure 4-48, the Level of Service for most state and federal routes will continue to be C or better. However, there are some major routes within our region where the Level of Service is expected to decline dramatically by 2040, most notably I-70 where the Level of Service is projected to decline to Level D through Guernsey and Muskingum Counties including a section in Zanesville where the Level of Service is projected to decline to Level F and a section near Cambridge where the Level of Service is projected to decline to Level E which indicates that the road is at capacity. Routes projected to have a Level of Service of D or worse by 2040 are highlighted in Figure 4-49.

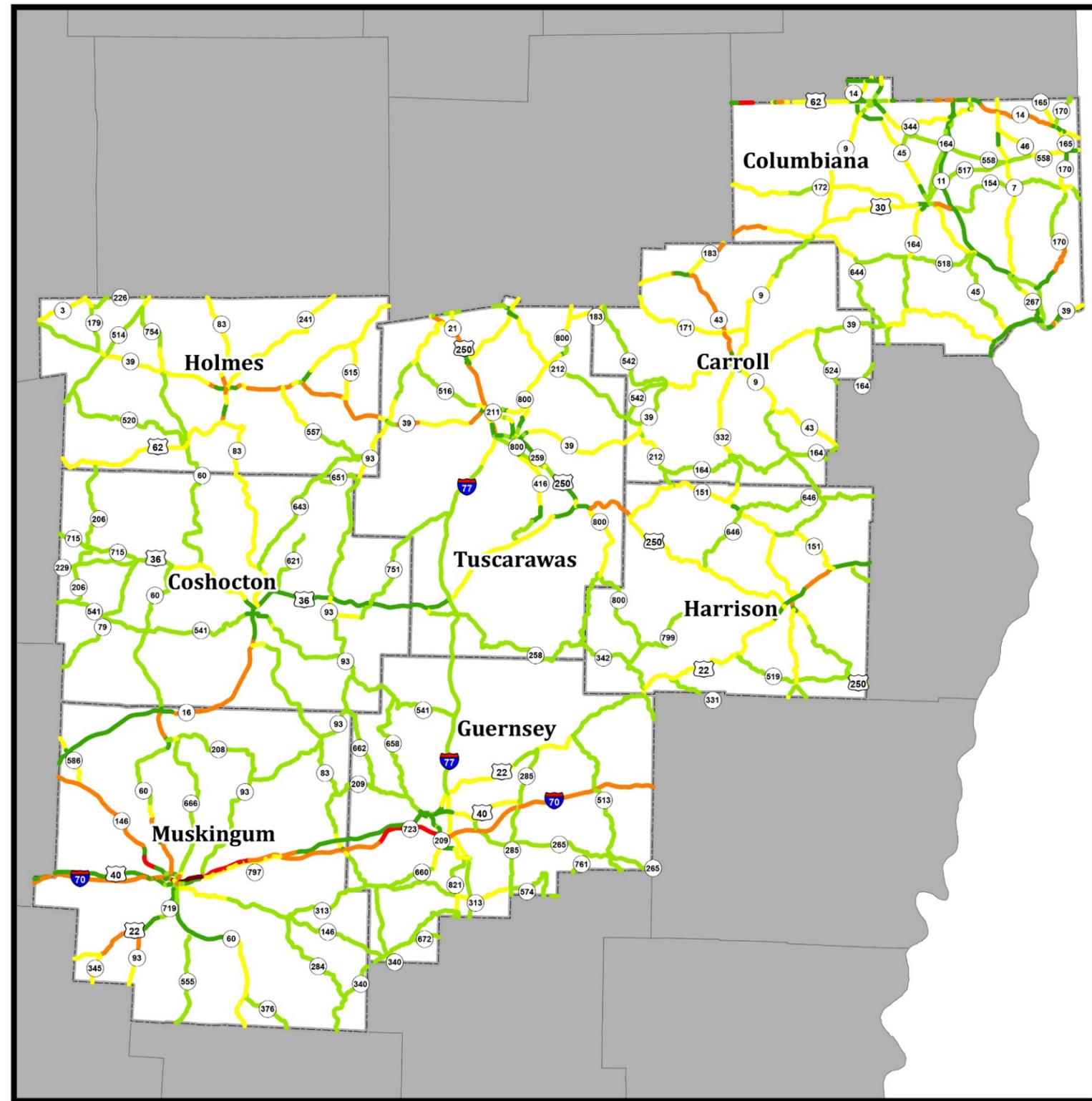
FIGURE 4-47: OMEGA REGION LEVEL OF SERVICE 2013/2014

# OMEGA RTPO Region Roadway Congestion 2013/2014 Projection

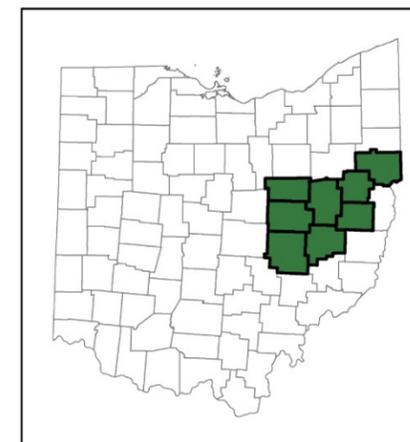
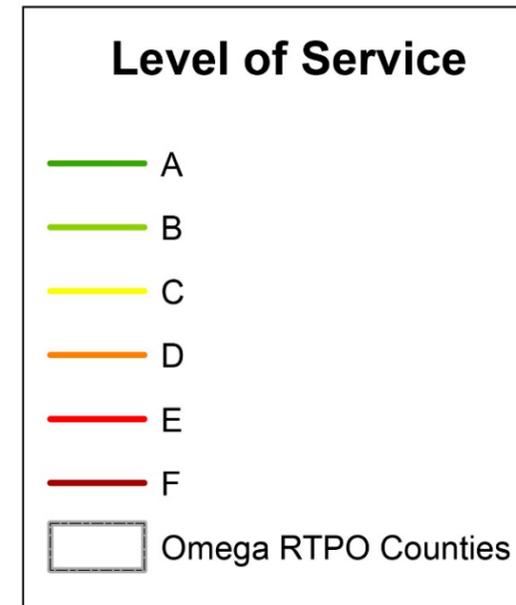


Date: 12/19/2014  
Source: ODOT

FIGURE 4-48: OMEGA REGION LEVEL OF SERVICE 2040

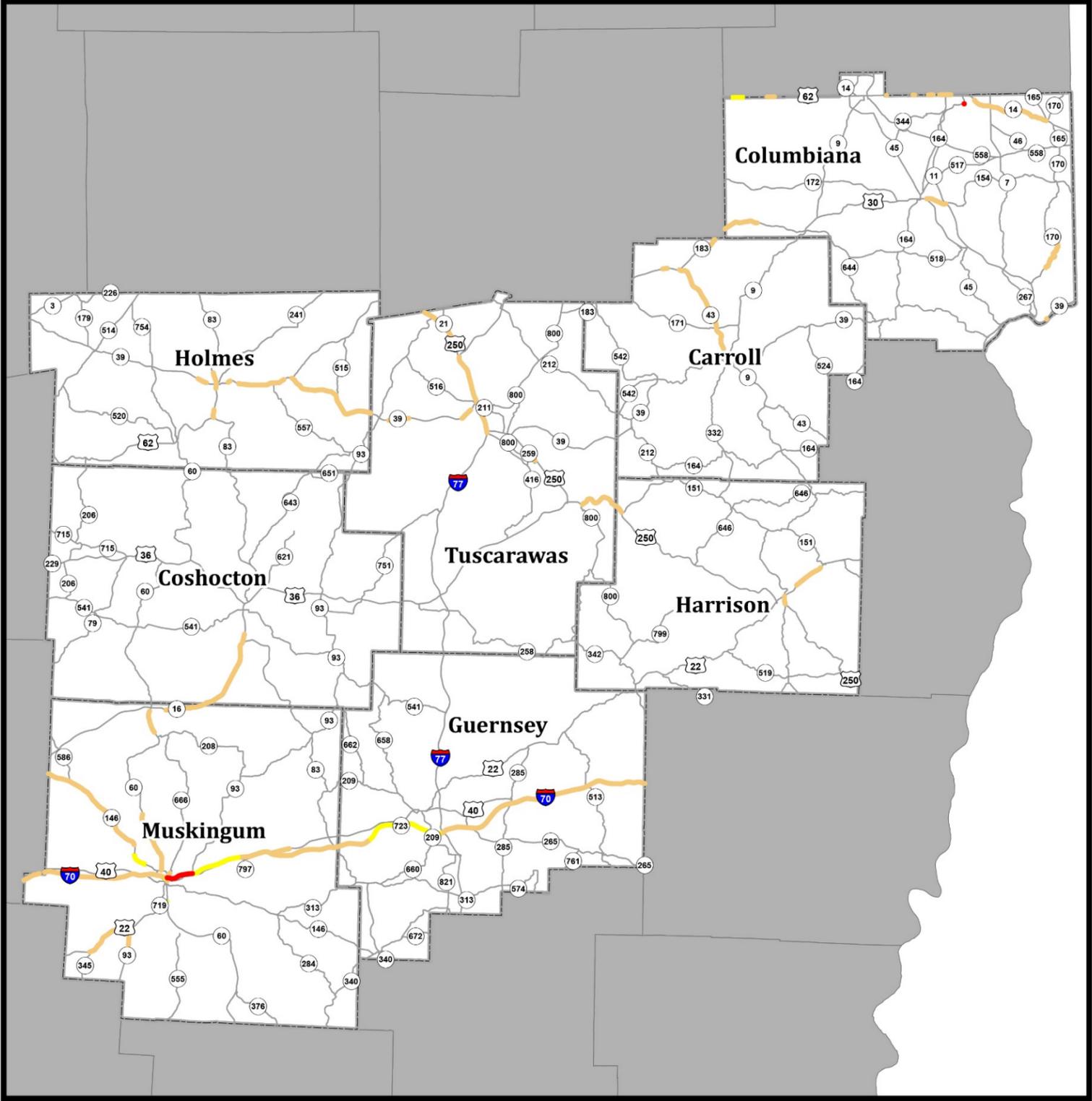


# OMEGA RTPO Region Roadway Congestion 2040 Projection



Date: 12/19/2014  
Source: ODOT

FIGURE 4-49: OMEGA REGION 2040 PROJECTION POOR LEVEL OF SERVICE



# OMEGA RTPO Region Roadway Congestion 2040 Projection

Roads with  
Poor Level of Service

- D
- E
- F
- Omega RTPO Counties



Date: 12/19/2014  
Source: ODOT

### 4.2.3 Volume to Capacity Ratio

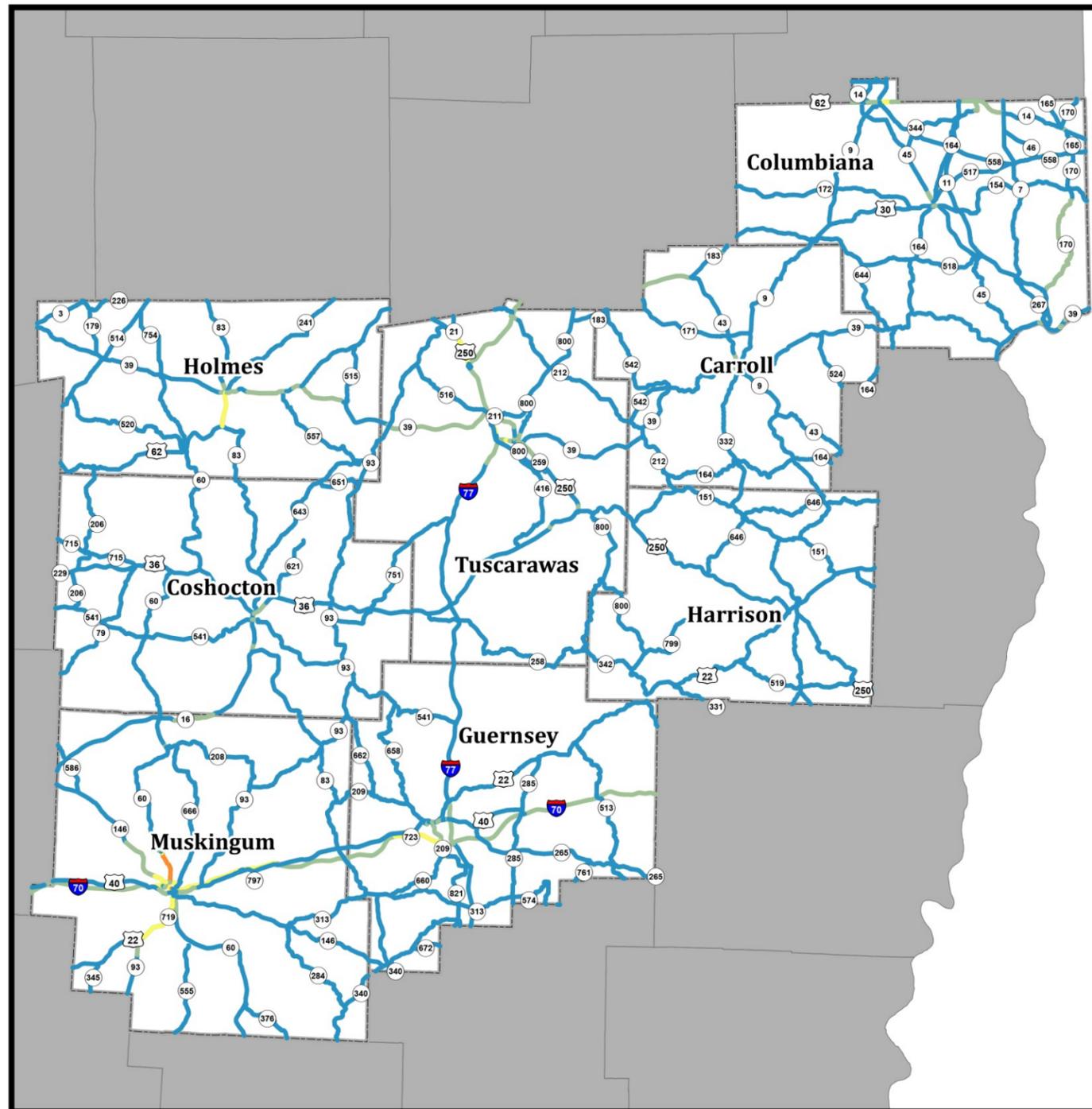
Another indication of congestion is the volume to capacity ratio (V/C). For OMEGA's RTPO region, the V/C ratio and corresponding levels of congestion are as follows:

<u>V/C Ratio</u>	<u>Congestion Level</u>
<0.5	Little or No Congestion
0.5 to 0.74	Moderate Congestion
0.75 to 1.0	Heavy Congestion
>1.0	Severe Congestion

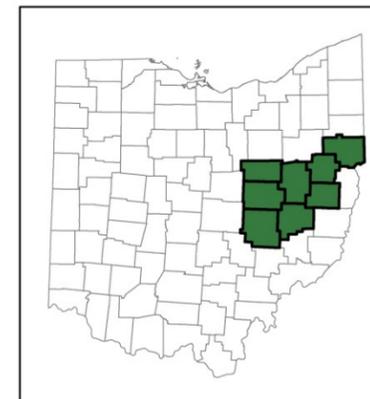
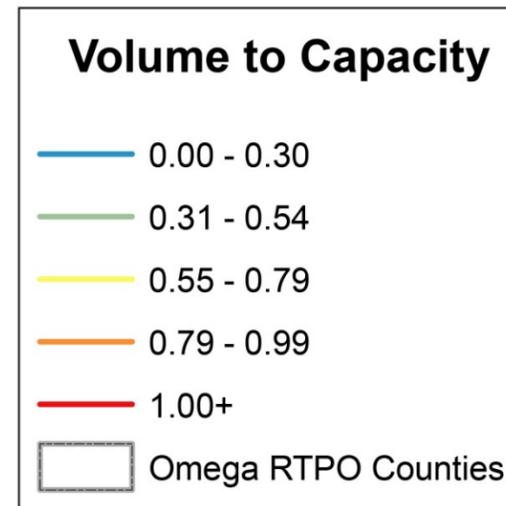
As shown on Figure 4- 50, the current V/C for most of the roads in the RTPO region is less than 0.5. Currently, SR 60, within the City of Zanesville is the only road in our region that is almost at capacity, with a V/C ratio of 0.83.

As shown in Figure 4-51, the V/C by 2040 is projected to exceed **1.0** along sections of I-70 and SR 60 in Zanesville (shown in red). The volume to capacity ratio along I-70 between the SR 723 interchange and I-77 in Guernsey County, and SR 83 in Millersburg are also expected to approach 0.9 (orange). Other projected areas of heavy congestion (V/C ratio  $\geq 0.75$ ) are also shown in Figure 4-51. These projected increases in V/C also illustrate the need for long term planning to prevent congestion from occurring on these roads.

FIGURE 4-50: OMEGA REGION VOLUME TO CAPACITY 2013/2014

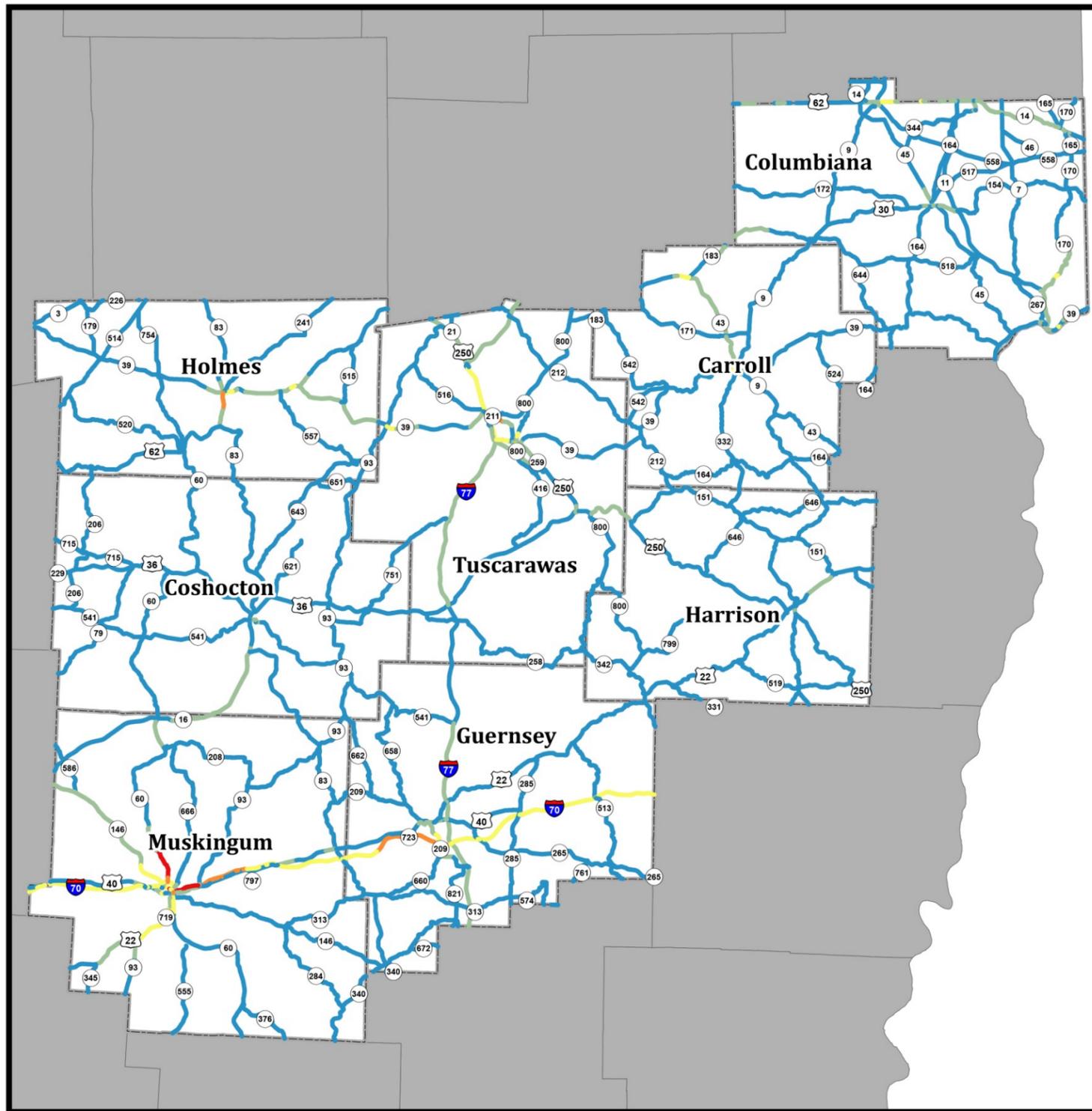


## OMEGA RTPO Region Roadway Congestion 2013/2014 Projection

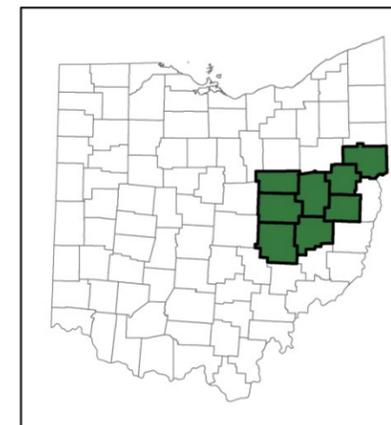
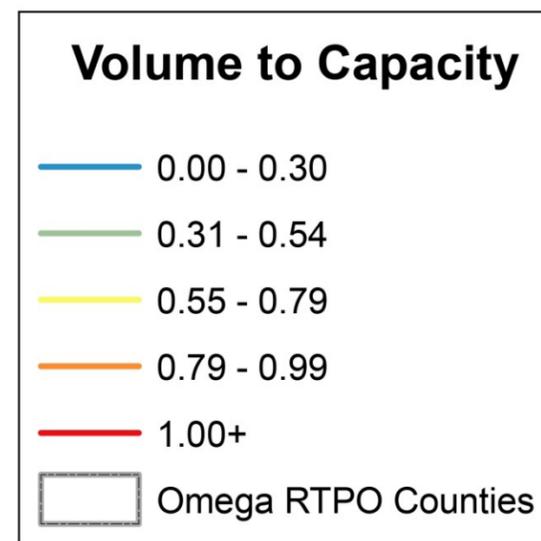


Date: 12/19/2014  
Source: ODOT

FIGURE 4-51: OMEGA VOLUME TO CAPACITY 2040 PROJECTION



## OMEGA RTPO Region Roadway Congestion 2040 Projection



Date: 12/19/2014  
Source: ODOT

### 4.3 BRIDGES

As indicated in Section 3.4 of the Existing Conditions Section, 138 or approximately 8% of the bridges under local jurisdiction have a General Appraisal Rating of 4 or less. Of these 138 bridges with a General Appraisal Rating of 4 or less, 29 have a span of less than 20 feet and are not eligible for federal funding. Bridge replacement costs may range from \$100 to over \$400 per square foot of deck area depending upon the type of bridge and span. Replacement costs were based upon \$150 per square foot of deck area for bridges with a span of less than 20 feet, \$200 per square foot of deck area for bridges spanning between 20 and 60 feet, and \$400 per square foot of deck area for those bridges with a span of 60 feet or greater. These costs were based upon information presented by one of the county engineers in the RTPo region at the November 2014 ODOT Local Public Agency Day meeting in Zanesville. Using these costs, the estimated total cost to replace the bridges under local jurisdiction with a general appraisal rating of 4 or less is approximately \$35.35 million which includes approximately \$1.3 million for replacement of bridges with a span of less than 20 feet. These bridges should be replaced within the next five years or by 2020.



To project future needs, the number of bridges that were constructed in 1950 or earlier and which have not had any major reconstruction or rehabilitation were also reviewed. Although these bridges may now be adequate, by 2040, these bridges will be 90 years or older and approaching the end of their useful life. Since the older bridges with a general appraisal rating of 4 or less were already included in the above analysis, they were not included in the projection of future needs beyond 2020. In the RTPo region, there are 266 bridges that were built in 1950 or earlier, 132 of which have a span of 20 feet or more. Using the same costs as listed above, the total cost to replace these older bridges is approximately \$37.8 million which includes approximately \$6.4 million for replacement of bridges with a span of less than 20 feet.

One major bridge in our region under local jurisdiction is the Philo Bridge (CR 32) in Muskingum County which has an estimated replacement cost of approximately \$15.3 million and is currently scheduled for replacement in 2019. Therefore the estimated total cost to replace bridges under local jurisdiction in the OMEGA RTPo is approximately **\$88.5 million**. As also noted in Section 3.4 of the Existing Conditions Section, the original data provided by ODOT does not appear to include all bridges under local jurisdiction. ODOT is currently updating the bridge data in TIMS and OMEGA will revise the bridge data when updates to the database to include General Appraisal Ratings become available. Several bridges in our region have also recently been closed based upon recent inspections so the replacement cost for bridges in the region will continue to climb. For these reasons, the current estimate of \$88.5 million may underestimate the cost for bridge repairs and replacement as all bridges under local jurisdiction may not be included in this analysis.

On the state system, there are a total of 65 bridges with a general appraisal rating of 4 or less and 64 bridges that were constructed in 1950 or earlier which currently have a general appraisal rating of 5 or higher. Costs for repair or replacement of these bridges have not been included in this analysis.

#### 4.4 TRANSIT

Transit within the OMEGA region will face a number of challenges in the upcoming years. Changing demographics, increased ridership, and funding will likely be the primary issues concerning the four transit agencies and two coordinated transportation agencies within OMEGA's RTPO.



As outlined in the Ohio Statewide Transit Needs Study, poverty levels in the state are highest in rural Appalachia. According to the 2009 to 2103 ACS data, poverty levels for the OMEGA region, range from 14.6% in Tuscarawas County to 20.3% in Guernsey County. Typically lower income households do not own vehicles and as the number of lower income households increase, public transit ridership is projected to rise.

As the population ages, demand for services is also projected to increase. As indicated in Section 4.1, by 2040, the number of people age 60 and over is expected to increase by 13.5% from 98,636 to 112,000 and the number of people age 85 and older is expected to dramatically increase by 69.3% from 9,526 to 16,130 within the RTPO region. Additionally, as indicated in the Ohio Statewide Transit Needs Study, approximately 14% of the population in the RTPO region may be classified as disabled. Even though the number of disabled persons may remain relatively constant throughout the planning period, ridership is projected to increase as the population ages.

With the projected increased ridership, the need for both fixed route and on demand services will increase resulting in the need for more vehicles and drivers. To address this need in a more efficient manor, transit agencies may need to consider new innovative alternatives to providing on demand services. Concerns about wait times, the need to call 24 to 48 hours in advance for service, weekend service, and service outside the normal 8 to 5 workday will need to be addressed. In addition, approximately 25% of the fleet used by the four transit agencies has reached the end of its useful life.

In 2013, 368,100 passengers were served by the four transit agencies and two coordinated transportation agencies in the RTPO. According to the Ohio Statewide Transit Needs Study, the average ridership for demand response services by the four transit agencies in the RTPO increased by approximately 29% or 5% per year for the period between 2008 and 2012. Please note that this study did not include the ridership provided by the coordinated transportation agencies in Coshocton and Tuscarawas Counties. This study also indicated that the overall ridership for the Southeastern Area Transit (serving Guernsey and Muskingum Counties) actually decreased while the demand services ridership increased.

As outlined in the Ohio Statewide Transit Needs Study, the transit systems and coordinated transportation agencies within the RTPO region are facing the following challenges:

- Reduced funding for vehicle replacement, staff, and equipment
- Low population density outside the cities and major villages
- Increase in passengers from human service agencies as population ages
- Increased truck traffic and congestion by shale development is slowing transit vehicles and reducing services
- Scheduling
- Transportation for medical services (long distance to Columbus, Cleveland, and in some cases out of county for dialysis)
- Effective and efficient coordination with other counties and agencies
- Service to higher poverty levels
- Difficulty finding drivers especially with competition from the oil and gas (shale) industry

Funding will remain an integral concern to transit operators in our region. As outlined above, increased ridership demand will come from heightened poverty levels, an ageing population, low population densities within municipalities, and accommodations to and from medical services. Additionally, costs required to operate transit systems (insurance, fuel, general upkeep, wages, etc.) are expected to continue to increase. Funding, however, has gradually decreased, despite the introduction of additional funding opportunities over the last decade; according to the Statewide Transit Needs Study, funding for both rural and urban transit has declined since 2009. Heightened need for public transit within our region and the lessened availability of funding will present obstacles for both transit agencies and residents within the OMEGA region in the future.

To summarize, additional revenue streams are needed to meet the projected transit demands in the future and additional interagency coordination is needed to improve service efficiency and effectiveness especially for out of county trips.

## 4.5 RIVERS AND PORTS

Three major rivers pass through the OMEGA RTPO region, the Ohio, Muskingum, and Tuscarawas Rivers. Of these three rivers, only the Ohio River is suitable for commercial shipping while the Muskingum and Tuscarawas Rivers are used primarily for recreation.

### 4.5.1 Commercial

Of primary importance to the OMEGA RTPO region is the Intermodal Facility in Wellsville, the New Cumberland Pool Terminals between River Miles 40 and 54.3, and the New Cumberland Lock at River Mile 54.3. Approximately 15 million tons of materials are currently shipped within the New Cumberland Pool. The material shipped through this region will most likely increase as a result of the shale industry.

The need to ship materials for well development such as aggregate, sand, steel, etc. as well as product will increase. As the economy increases, businesses located in adjacent counties may also have a need to ship their products and to receive raw materials by barge and then transport those materials by either rail or truck to the final destination. Transportation systems to support these businesses, such as the US 30 Ohio's Energy



Corridor, as well as rail may need to be upgraded in the future to meet the increased demand. Barriers to full utilization of these port facilities along the Ohio River will need to be identified and addressed.

As indicated in Section 3.6.2 of the Existing Conditions, restoration of the Ellis Lock and Dam is needed in order to once again open the transportation corridor along the Muskingum River from the City of Coshocton to the Ohio River. This may provide the opportunity for limited commercial shipping using quarter barges. The need for dredging sections of the Muskingum to accommodate commercial shipping may also be required.

### 4.5.2 Recreation

The Muskingum River has been formally designated as a water trail by the Ohio Department of Natural Resources (ODNR). This designation has and will continue to increase the recreational use and tourism opportunities along the Muskingum River. Repair of the Ellis Lock and Dam will also enhance these opportunities.

As indicated in Section 3.6.3 of the Existing Conditions, the Tuscarawas River is used primarily for recreation. This river begins in Summit County and extends through Stark, Tuscarawas, and Coshocton Counties before joining with the Walhonding River to form the Muskingum River. ODNR is currently in the process of developing a water trail for the Tuscarawas River. Once the Tuscarawas River is designated as a water trail by ODNR, opportunities for recreation and tourism will increase. Additional

boat ramps and launch areas are needed to expand these opportunities as well as coordination of these access areas with regional trails in order to expand the recreational opportunities of the region.

## 4.6 AVIATION

ODOT is currently conducting a statewide study on the General Aviation Airports in Ohio. The purpose of this study is to optimize investment in Ohio's general aviation systems by focusing on safety, efficiency, and economic growth. Identification of system improvements, information to assist decision makers in prioritizing projects, and an assessment of the economic impact of each publicly owned airport are included in the Ohio Airports Focus Study. Findings in this report will assist ODOT and the Federal Aviation Administration (FAA) in making decisions on proposed airport improvements in a period of limited funding.

Although the study has not as yet been finalized, ODOT has prepared draft compliance and benchmark system recommendations (August 2014) for each general aviation airport in Ohio. Copies of these summaries for each of the eight general aviation airports in the OMEGA RTPO region are provided in Appendix A and summarized herein.

In addition to the recommendations provided in the draft Ohio Airports Focus Study, the following airports plan to expand the primary runway to 5,000 feet:

- Carroll County - Tolson
- Cambridge Municipal
- Harry Clever Field (New Philadelphia)

These runway extensions are needed primarily to meet current demand for turbine powered aircraft and smaller corporate aircraft and jets. In the last year, the Cambridge Municipal Airport has experienced a significant increase in the number of corporate jets. Much of this increase is directly or indirectly attributable to the shale industry.



Currently, the Cambridge Municipal Airport is classified as a Level 3; however, airport officials disagree with this classification and believe that the airport is more appropriately classified as a Level 2. Although the Cambridge Municipal Airport lacks an on-site maintenance facility for servicing planes, airport officials are able to provide this service by contacting off-site service providers.

The Critical Compliance Factors are implemented by the FAA to describe the manner in which general aviation airport runways comply with their given classification level. This includes the runway safety areas (RSA), runway protection zones (RPZ), and the general pavement condition index (PCI) of the runway and surrounding pavement. In addition to these compliance factors, a section of recommendations is provided to illustrate the method in which additional compliance may be met. Estimates for each addition are included, as well as a combined total for all recommendations is

provided. Specific improvements related to compliance and benchmark system recommendations are summarized in Tables 4-1 and 4-2, respectively.

As shown in Table 4-1, the total estimated cost for these eight airports to maintain system compliance with the current classification level is approximately \$33 million. Approximately **\$31 million (94%)** will be needed over the next 20 years for maintenance of the primary runway and other pavements and approximately \$1.47 million will be needed for land acquisition for runway protection zones. The remaining \$443,000 is needed for the primary runway safety area for the Harry Clever Field in New Philadelphia.

Improvements needed to comply with system benchmarks are summarized in Table 4-2. In addition, to the benchmarks identified in the Ohio Airports Focus Study, runway extensions have also been added to the list of projects included for the Carroll County - Tolson, Cambridge Municipal, and Harry Clever Field. Please note that costs are not yet available for the runway extensions for the Carroll County and New Philadelphia airports. Please also note that the improvements listed for the Holmes County Airport have been modified to incorporate the improvements that are currently under construction. These improvements include:

- Relocation and extension of runway to 4,400 feet x 75 feet
- Extension of three existing connecting taxiways to provide runway access
- Medium intensity runway edge lighting
- New Precision Approach Path Indicators
- New runway end identifier lights
- Relocation of Wind Cone and Wind Tee

The total cost of these improvements is approximately \$3.2 million. Since construction of these improvements is scheduled to be completed in 2015, these items have been deleted from the system benchmarks in Table 4-2. With these modifications, the estimated total cost may range from \$12.3 Million to \$23.1 Million depending upon whether or not the Richard Downing Airport decides to upgrade from an Airport Reference Code (ARC) B-II to C-II. This upgrade would allow the airport to increase the design aircraft's approach speed.

In summary, the total cost for the eight general aviation airports in the OMEGA RTPO to meet the FAA Critical Compliance Factors, System Benchmarks, and runway extensions over the next 20 years may range from \$45.3 to \$56.1 million.

**TABLE 4-1: AIRPORT SYSTEM COMPLIANCE PLAN SUMMARY**

County	Airport	Level	Compliance			
			Item	Status	Action	Cost
Carroll	Carroll County-Tolson	3	Primary RSA	Yes	No Action Required	
			Primary RPZ, %	10.0%	Land Acquisition	\$692,000
			PCI Primary Runway	79.1	20-year pavement maintenance	\$1,690,000
			PCI Other Pavement	75.8	20-year pavement maintenance	\$794,000
<b>Subtotal</b>						<b>\$3,176,000</b>
Columbiana	Columbiana County	4	Primary RSA	Yes	No Action Required	
			Primary RPZ, %	50.0%	Land Acquisition	\$62,000
			PCI Primary Runway	95.4	20-year pavement maintenance	\$593,000
			PCI Other Pavement	71	20-year pavement maintenance	\$1,293,000
<b>Subtotal</b>						<b>\$1,948,000</b>
Coshocton	Richard Downing	1	Primary RSA	Yes	No Action Required	
			Primary RPZ, %	50.0%	Land Acquisition	\$92,000
			PCI Primary Runway	79.6	20-year pavement maintenance	\$1,590,000
			PCI Other Pavement	78.8	20-year pavement maintenance	\$3,092,000
<b>Subtotal</b>						<b>\$4,774,000</b>
Guernsey	Cambridge Municipal	3	Primary RSA	Yes	No Action Required	
			Primary RPZ, %	100.0%	No Action Required	
			PCI Primary Runway	65.7	20-year pavement maintenance	\$1,421,000
			PCI Other Pavement	75.8	20-year pavement maintenance	\$816,000
<b>Subtotal</b>						<b>\$2,237,000</b>
Harrison	Harrison County	3	Primary RSA	Yes	No Action Required	
			Primary RPZ, %	57.0%	Land Acquisition	\$79,000
			PCI Primary Runway	79.7	20-year pavement maintenance	\$1,780,000
			PCI Other Pavement	72.9	20-year pavement maintenance	\$653,000
<b>Subtotal</b>						<b>\$2,512,000</b>
Holmes	Holmes County	2	Primary RSA	Yes	No Action Required	
			Primary RPZ, %	50.0%	Land Acquisition	
			PCI Primary Runway	100	20-year pavement maintenance	\$414,000
			PCI Other Pavement	70.1	20-year pavement maintenance	\$972,000
<b>Subtotal</b>						<b>\$1,386,000</b>
Muskingum	Zanesville Municipal	1	Primary RSA	Yes	No Action Required	
			Primary RPZ, %	100.0%	No Action Required	
			PCI Primary Runway	78	20-year pavement maintenance	\$3,624,000
			PCI Other Pavement	55.9	20-year pavement maintenance	\$9,283,000
<b>Subtotal</b>						<b>\$12,907,000</b>
Tuscarawas	Harry Clever Field	2	Primary RSA	No	Relocate Road & Declared Distances	\$443,000
			Primary RPZ, %	2.5%	Land Acquisition	\$546,000
			PCI Primary Runway	55.4	20-year pavement maintenance	\$1,984,000
			PCI Other Pavement	72.7	20-year pavement maintenance	\$1,128,000
<b>Subtotal</b>						<b>\$4,101,000</b>
<b>TOTAL</b>						<b>\$33,041,000</b>

**TABLE 4-2: FACILITY AND SERVICE BENCHMARK RECOMMENDATION SUMMARY**

County	Airport	Level	Recommendation	Cost		
Carroll	Carroll County-Tolson	3	Terminal Building	\$2,250,000		
			Automated Weather Reporting	\$231,300		
<b>Subtotal</b>				<b>\$2,481,300</b>		
Columbiana	Columbiana County	4	None	\$0		
<b>Subtotal</b>				<b>\$0</b>		
Coshocton	Richard Downing	1	Full Perimeter Fencing	\$792,500		
			Approaches with Vertical Guidance (APV)	\$62,500		
			Upgrade from ARC B-II to C-II			
			Widen Runway 4-22 25' (final width 100')	\$4,497,800		
			Runway Safety Area Improvements at Runway 22 End	\$270,500		
			Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) Runway 22	\$1,427,500		
			Non-Precision Runway Markings	\$162,800		
			REIL - Runway 4 End	\$43,800		
			Runway End Lights - Both Ends	\$67,500		
			Relocate Taxiway 300' from Runway Centerline	\$3,038,400		
			Relocation of 4 FBO Buildings/Hangars out of OFA	\$3,237,300		
			<b>OR</b>			
			Maintain ARC B-II			
			High Intensity Runway Lighting (HIRL)	\$500,100		
APV	\$106,300					
MALSR	\$1,427,500					
Install full perimeter fencing	\$792,500					
<b>Subtotal with Upgrade from ARC B-II to C-II</b>				<b>\$13,600,600</b>		
<b>Subtotal without Upgrade</b>				<b>\$2,826,400</b>		
Guernsey	Cambridge Municipal	3	Partial Parallel Taxiway	\$2,847,700		
			Precision Approach Path Indicator (PAPI)	\$100,000		
			Extend Runway to 5000 feet	\$955,000		
<b>Subtotal</b>				<b>\$3,902,700</b>		
Harrison	Harrison County	3	Automated Weather Reporting	\$231,300		
<b>Subtotal</b>				<b>\$231,300</b>		
Holmes	Holmes County	2	Primary Runway extension to <b>4,400</b> feet (under construction)	\$0		
			Full Parallel Taxiway (under construction)	\$0		
			APV (under construction)	\$0		
			PAPI (under construction)	\$0		
<b>Subtotal</b>				<b>\$0</b>		
Muskingum	Zanesville Municipal	1	MALSR	\$1,484,600		
			Full Perimeter Fencing	\$971,800		
<b>Subtotal</b>				<b>\$2,456,400</b>		
Tuscarawas	Harry Clever Field	2	Primary Runway extension to 4000 feet	\$323,400		
			APV	\$62,500		
<b>Subtotal</b>				<b>\$385,900</b>		
<b>TOTAL WITH RICHARD DOWNING ARC UPGRADE</b>				<b>\$23,058,200</b>		
<b>OR</b>						
<b>TOTAL WITHOUT RICHARD DOWNING ARC UPGRADE</b>				<b>\$12,284,000</b>		

#### 4.7 IMPACT OF SHALE DEVELOPMENT ON TRANSPORTATION SYSTEMS

The shale industry will continue to impact the transportation systems within the RTPO planning area. As of May 15, 2015, 1,456 wells in the Utica formation have been permitted, drilled, in the process of being drilled, or in production in the OMEGA RTPO. This represents an increase of 36% since June 2014. Currently 744 wells are in production in the region which is an increase of 90% since June 2014. The shale play appears to be moving south from Carroll County and extending into Harrison, Guernsey, Belmont, Noble, and Monroe Counties. The locations of these wells are shown in Figure 4-52.

This level of development is projected to continue well into the future and will extend further to the west as newer extraction technologies become more cost effective to implement. Approximately 3,300 trucks are needed per well from initial site development through the hydraulic fracturing process and placing the well into production. Section 4.2 has documented the increase in truck traffic that has occurred and which will continue well into the future as shale development continues. Although current statewide modeling conducted by ODOT does not yet indicate, that the increased volume of traffic will lead to congestion or capacity issues in the shale area, the increased volume of traffic is impacting pavement maintenance to include more frequent resurfacing, full depth pavement replacement, pavement markings, and guardrail replacement. Many of the direct impacts to local county and township roads are being addressed through Road Use Maintenance Agreements (RUMAs); however, the state system and some local roads not covered by RUMAs are being adversely impacted by this development. Enforcement of the RUMAs is needed so that trucks stay on the designated route and do not adversely impact roads not covered by the RUMAs. Pipeline construction is also adding to the increase truck volume in the region

As shown in Figure 4-52, six processing plants are now located in the RTPO region with a seventh being considered. Construction of these facilities also contributed to the increased truck traffic in the region along with a number of superload permits. Shipment of product from these processing facilities will also impact transportation systems as product and raw materials may be shipped by pipeline, truck, and rail. For instance, Momentum Utica East Ohio Midstream located in Scio in Harrison County has 10 rail lines and is currently able to fill 32 rail cars with product (such as propane) in 1-1/2 hours and when in full operation will be able to fill 64 rail cars with product in 1-1/2 hours. Both rail and road systems will need to be assessed so that product and raw materials can be shipped effectively and safely to and from these facilities.

In addition, 41 injection wells are currently located in the RTPO region, an increase of 28% since June 2014. The impact of the increased volume of trucks hauling wastes for disposal at these wells on local and state routes in close proximity to cities (such as the City of Cambridge) and commercial areas will need to be assessed.

FIGURE 4-52: SHALE DEVELOPMENT

