CONNECT MID-HUDSON

Transit Study

Market Analysis

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1. MARKET ANALYSIS

In all communities where it is available, transit provides a mobility option for those who cannot or choose not to drive. To be most effective, however, transit must serve areas with relatively high population and/or employment density. As the three counties look toward the future, they must understand where potential customers live and work both within each of the three counties and outside of them. The purpose of the Market Analysis is to understand both the need and potential for transit service by examining the following market characteristics:

- Population and employment density: These are the strongest indicators of transit demand. Larger numbers of people living and working near each other and along specific corridors leads to a stronger market for transit and indicate transit ridership potential.
- Demographic characteristics: Concentrations of commuters, including those that do not use single-occupancy vehicles, and households with vehicle limitations are more likely to use transit services.
- Major activity centers: These locations represent major daily destinations, as well as potential transit partners.
- Travel flows: The most prevalent travel flows in the region can be indicators of potential successful transit routes.

Each of these factors indicates demand for transit, but the potential for fixed-route ridership is also affected by existing land use and other factors. Additionally, areas with minimal traffic congestion and ample (and cheap) parking will have a more difficult time attracting transit riders than areas with heavy traffic or expensive and limited parking.

The Market Analysis presented in this chapter is a starting point that broadly identifies regions, cities and towns, neighborhoods, activity centers, and travel patterns that may be supportive of fixed-route transit service. Population and employment density, demographic characteristics, and major activity centers will be identified in each of the three counties in order to identify transit need internal to the three-county study area. Employment concentrations at a larger scale and the travel flow analysis will also include areas outside of the study area to help capture the need for services which connect to surrounding counties and cities.

Data sources include the U.S. Census 2012-2016 American Community Survey (ACS), the 2010 U.S. Census, the U.S. Census Longitudinal Employer-Household Dynamic (LEHD), LEHD Origin-Destination Employment Statistics (LODES), and online research.

1.1. Transit Potential

Transit service is generally most efficient in areas with high concentrations of people and/or jobs. The reach of local fixed-route transit is generally limited to within ¼ to ½ mile of the transit line (depending on the built environment), or a 10-minute walk. For regional commuter services, the reach is much larger, with many people willing to drive up to five miles to access a commuter service. Combining both residential and employment densities yields a transit potential index. This index shows where the conditions are most suitable for transit service based on the number of jobs and people per acre. While commuter services can also draw from areas of lower density, this analysis will be useful to help determine where specific concentrations of people and jobs are in the study area that commuter services could draw from.

1.1.1. Population Density

Areas of high population density can support more frequent transit service, whether it is local service or regional commuter service. Figure 1 shows the population density by Census block in the study area. Blocks

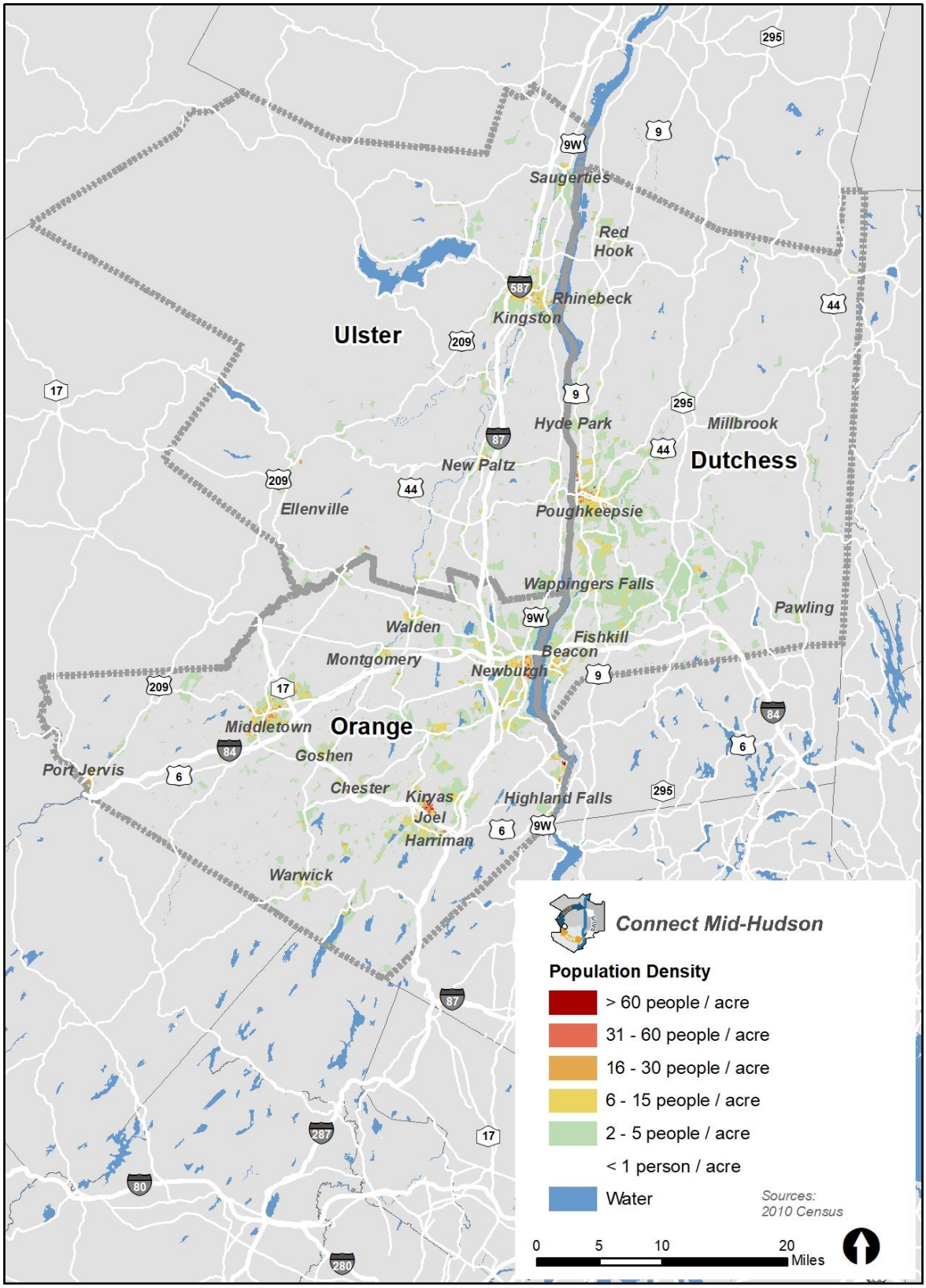
with densities greater than six people per acre are indicative of areas that would not only support local fixed-route transit service, but also areas from which commuter services would draw ridership[1]. Population data is based on the 2010 Census; as such, these maps do not reflect housing developments built since 2010.

Key findings from the Population Density map include the following:

- In Ulster County, the transit-supportive densities are clustered in the communities of Kingston, Saugerties, New Paltz, with smaller concentrations in the Shawangunk and Ellenville areas.
- In Dutchess County, the transit-supportive densities are clustered along the US-9 corridor in the communities of Hyde Park, Poughkeepsie, Wappingers Falls, Fishkill, and Beacon. The more urban areas of Poughkeepsie and Beacon have the highest concentrations.
- In Orange County, the transit-supportive densities are spread throughout the county in the following communities: Newburgh, Walden, Montgomery, Washingtonville, Middletown, Goshen, Port Jervis, Kiryas Joel, Harriman, Warwick, and Cornwall. The more urban areas of Middletown and Newburgh have the highest overall concentrations.

[1] The TCRP Transit Capacity and Quality of Service Manual suggests 3 households per acre (approximately 6 people per acre) or 4 jobs per acre can support hourly transit service. Figure is based on these findings and the consultant's prior experience with transit service planning.

Figure 1: Population Density



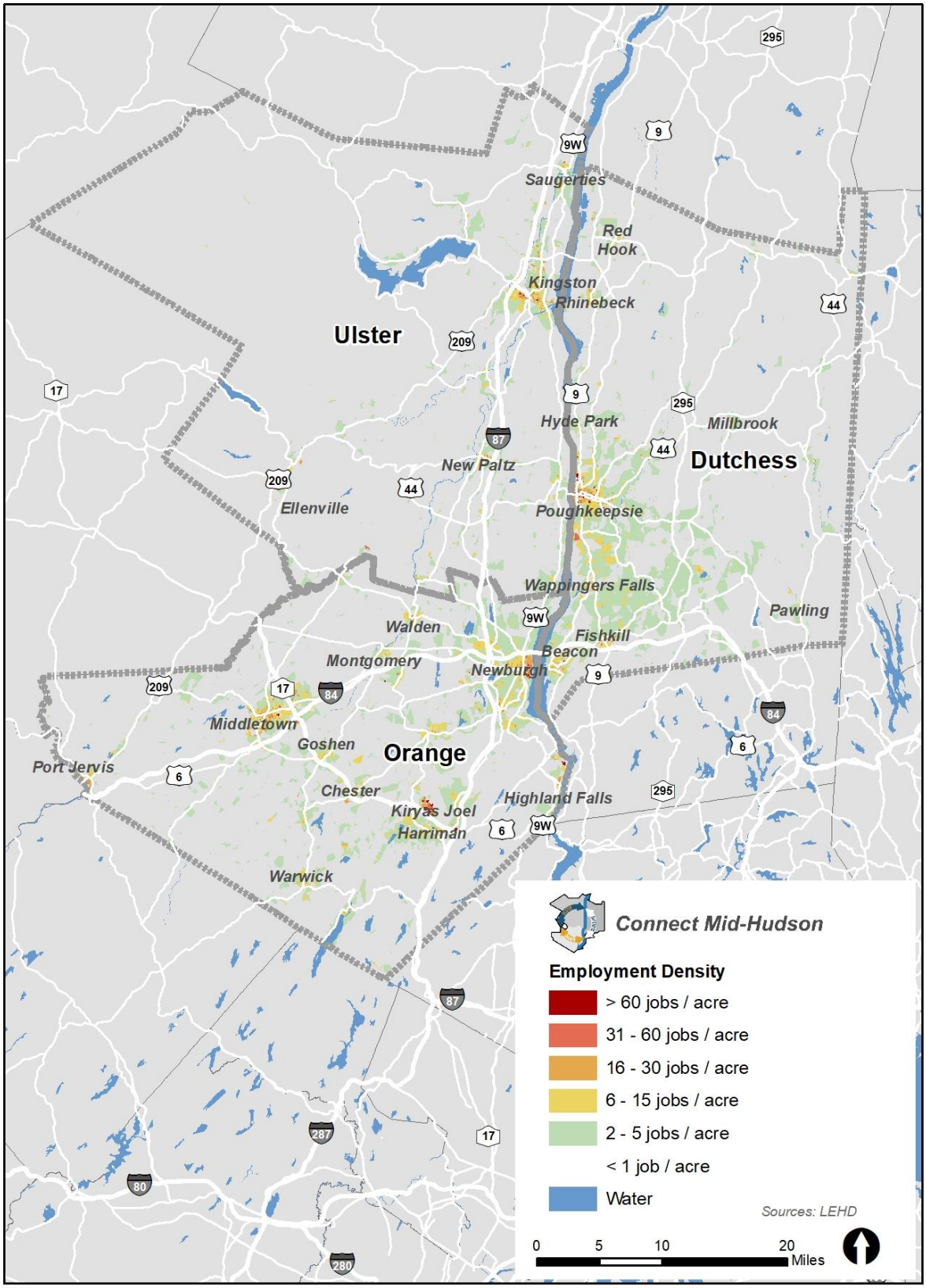
1.1.2. Employment Density

The location and number of jobs is a second strong indicator of transit demand, as traveling to and from work accounts for the largest single segment of transit trips in most markets. Additionally, transit that serves areas of high employment density provides key connections to job opportunities. The minimum level of employment density that is typically needed to support hourly, local transit service is six jobs per acre. Higher densities can support greater frequency and commuter services need this type of density so that they can drop off the most workers possible within ¼-mile to ½-mile of their job. The employment data used in these maps is from the 2015 Longitudinal Employer-Household Index (LEHD); as such, the maps may not reflect jobs added or lost since then. Combining employment data with a review of major employers provides a comprehensive overview of the study area's existing workforce and employment centers.

Many of the same communities that have high population density also have high employment density. The employment density presented in Figure 2 reveals several findings:

- In Ulster County, the transit-supportive densities are clustered in the communities of Kingston, Saugerties, New Paltz, with smaller concentrations in the Shawangunk and Ellenville areas. These areas also have high population density in close proximity.
- In Dutchess County, the transit-supportive densities are clustered along the US-9 corridor in the communities of Rhinebeck, Hyde Park, Poughkeepsie, Wappingers Falls, Fishkill, and Beacon. The more urban areas of Poughkeepsie and Beacon have the highest concentrations – particularly the south side Poughkeepsie around the Galleria and IBM, and north of downtown around Marist College. Rhinebeck generally has higher employment densities than population densities, driven by the presence of the Northern Dutchess Hospital and businesses on US-9.
- In Orange County, the transit-supportive densities are spread throughout the county in the following communities: Newburgh, Walden, Montgomery, Washingtonville, Goshen, Middletown, Port Jervis, Kiryas Joel, Harriman, Woodbury, Warwick, and Cornwall. The more urban areas of Middletown and Newburgh have the highest overall concentrations, along with Kiryas Joel. The area around New York-Stewart Airport has high employment however blocks are larger in this area so calculated densities are lower (6 to 15 jobs per acre).

Figure 2: Employment Density



1.1.3. Transit Potential Index

The Transit Potential Index (shown in Figure 3 for the entire study area and in Figure 4 through Figure 6 for each county) is a composite of the population and employment densities and is an indicator of the viability of transit (both local fixed-route and regional service) in a particular area. While the focus of this study is on regional commuter service, these areas are important to note since commuter services would draw ridership from them. A higher Transit Potential Index score for a Census block points to a higher likelihood of generating substantial transit ridership in that block. For the transit potential of an area to be fully realized, however, the area must also have transit-supportive infrastructure such as sidewalks and crosswalks or more importantly for this study, park and ride facilities that are properly located nearby. Actual ridership is also highly dependent on service characteristics such as schedule and routing.

A review of the Transit Potential Index for the study area indicates the following:

- In Ulster County, densities above 30 people plus jobs per acre are found in the following areas:
  - Kingston in the Stockade District and the neighborhoods between US-9W and SR-32
  - Saugerties along US-9W
  - New Paltz around SR-32 and SR-299 where SUNY New Paltz is located
  - Throughout the Village of Ellenville
  - The Watchtower Complex in Shawangunk
- In Dutchess County, densities above 30 people plus jobs per acre are generally found in communities along the US-9 corridor but also in Millbrook:
  - Poughkeepsie area in the downtown area, IBM, Marist College, and the Culinary Institute
  - Rhinebeck along US-9W
  - Hyde Park along SR-9G
  - Wappingers Falls along US-9W north of SR-93
  - Fishkill along US-9 north of I-84 (warehousing and retail)
  - Beacon
  - Millbrook along Franklin Ave
- In Orange County, densities above 30 people plus jobs per acre are found in the following areas:
  - Newburgh in the downtown area and along the SR-52 corridor near the Thruway
  - Walden Village near the intersection of SR-52 and SR-208
  - Montgomery/Maybrook along Neelytown Road and SR-208
  - Middletown throughout the downtown, around Orange County Community College and near the I-84/SR-17 interchange (Orange Regional Medical Center, Galleria, and other retail and warehousing)
  - Goshen along the SR-207 corridor
  - Chester along the SR-17 corridor
  - Throughout Kiryas Joel
  - Harriman along SR-17
  - Woodbury near Woodbury Commons
  - Port Jervis along SR-209 and US-6
  - Warwick along SR-94 and Forester Ave

- Highlands along SR-218 and at West Point

Figure 3: Transit Potential

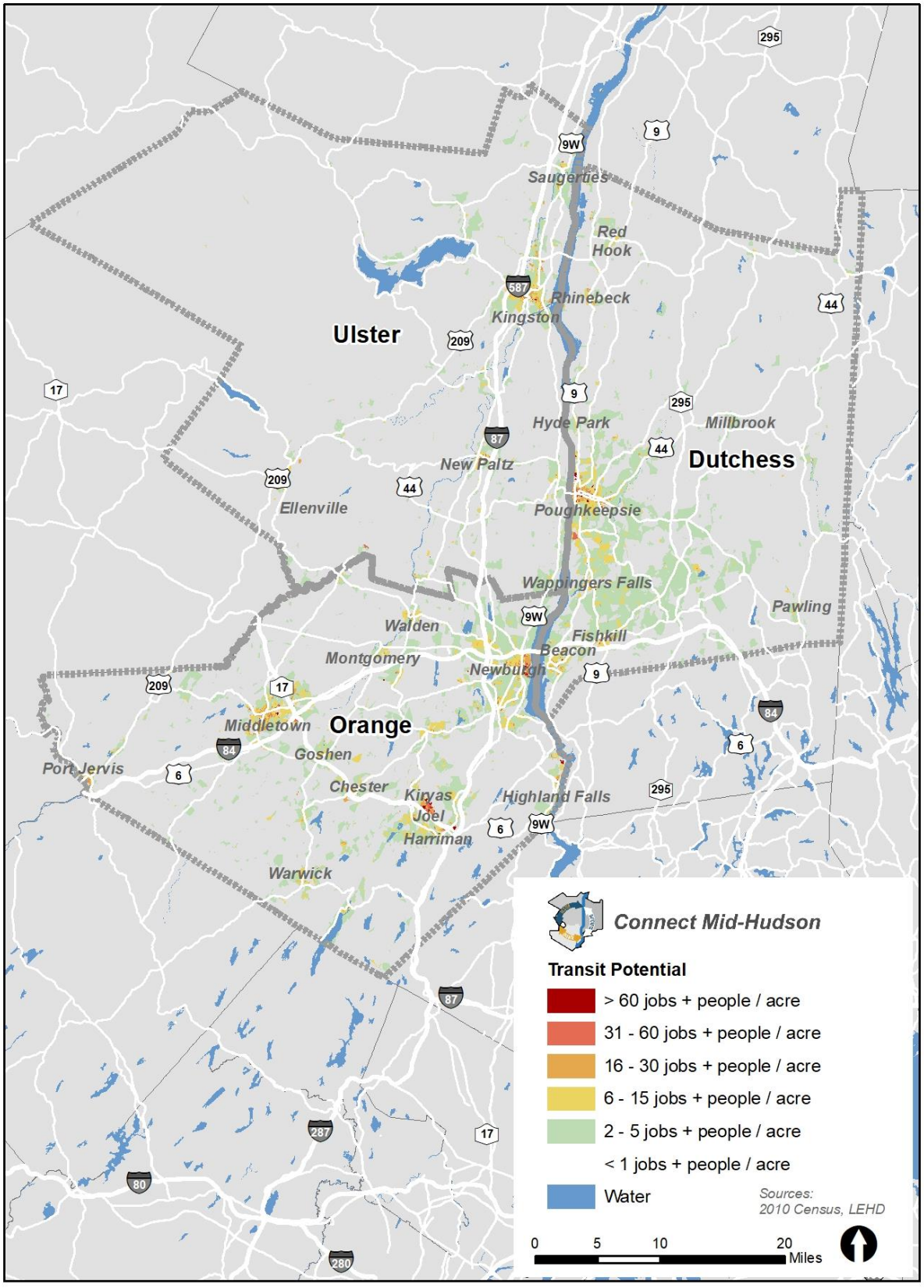


Figure 4: Transit Potential – Dutchess County

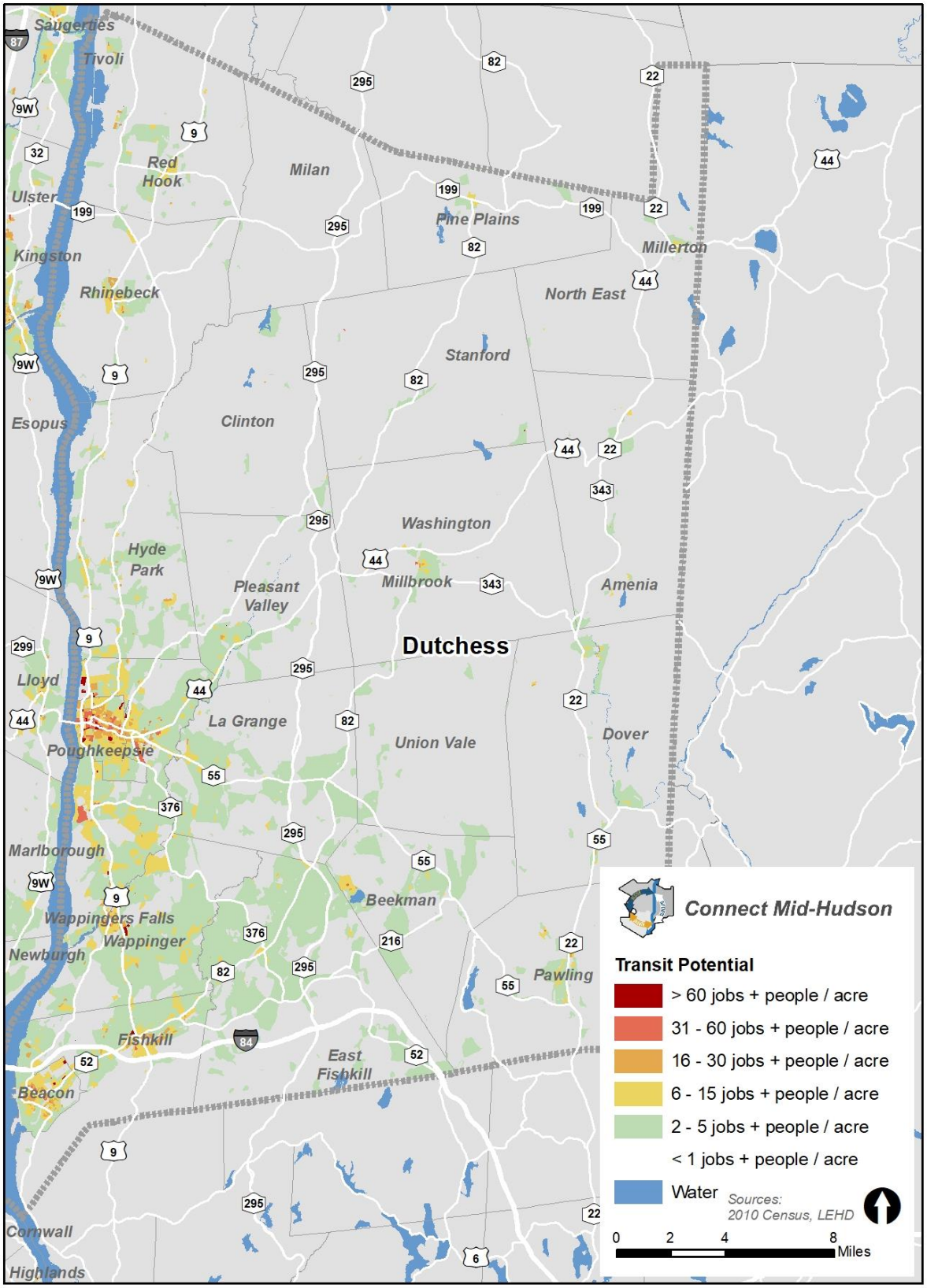


Figure 5: Transit Potential – Orange County

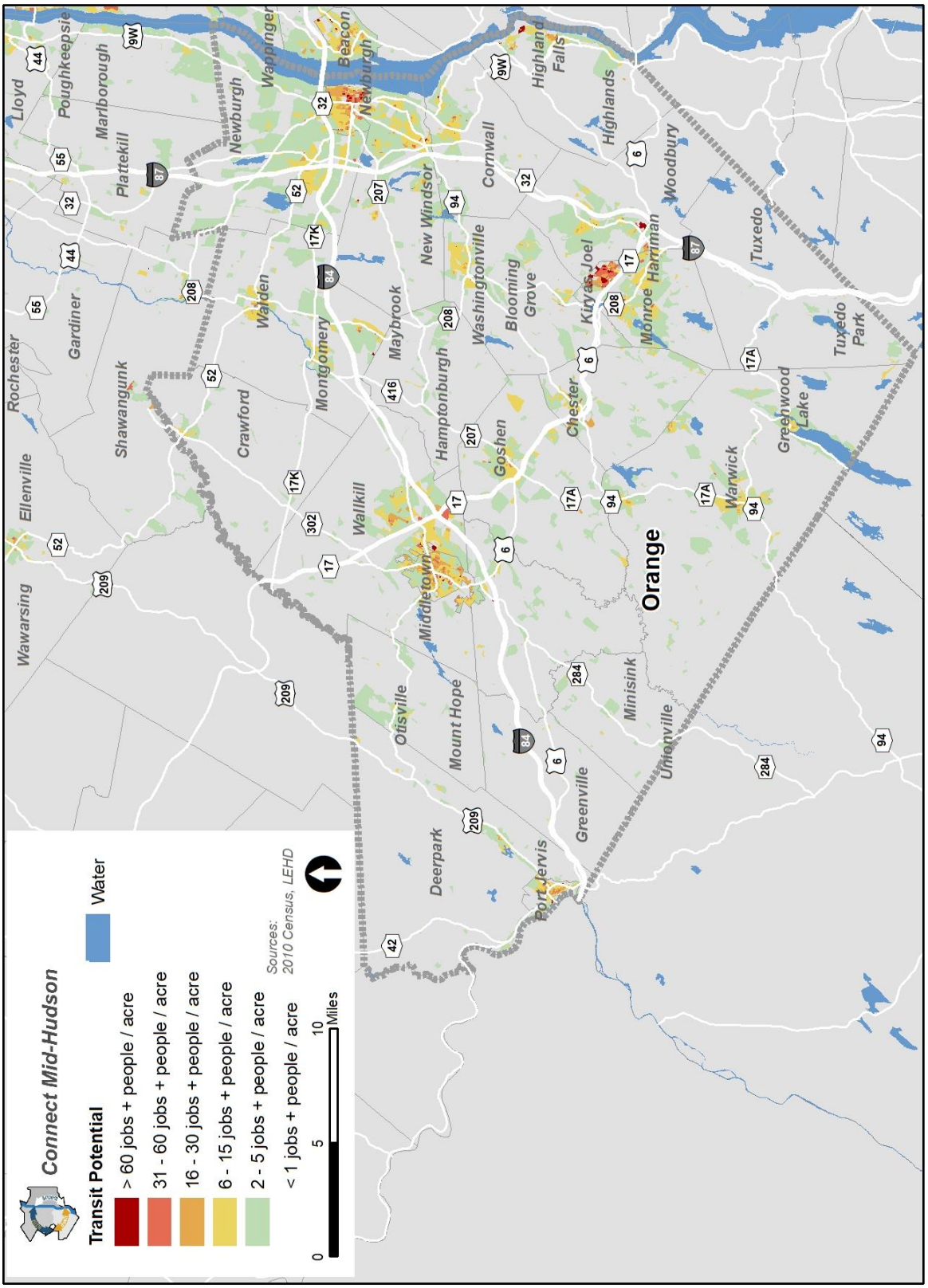
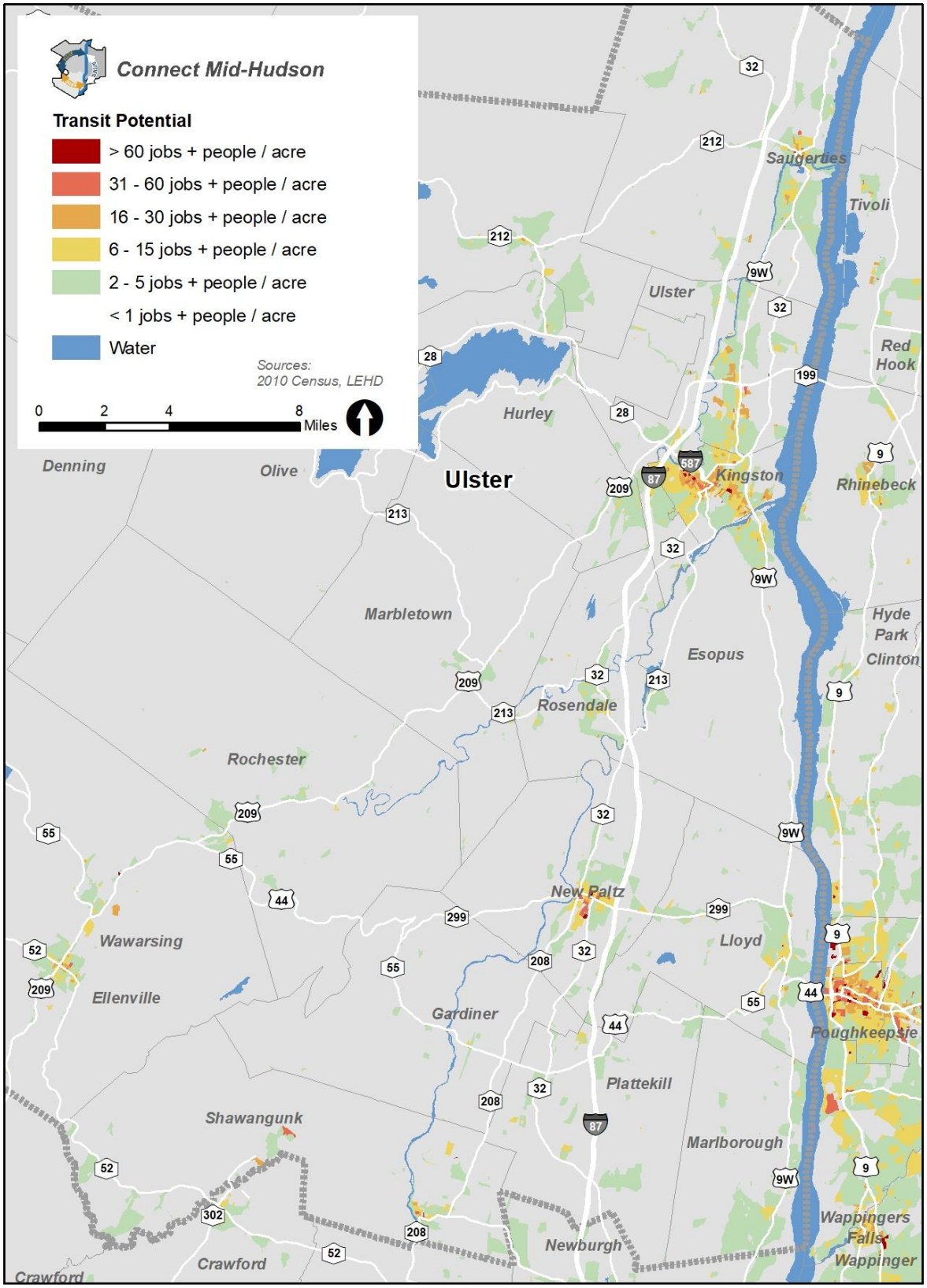


Figure 6: Transit Potential – Ulster County



1.2. Commuter Transit Need

Above all else, public transportation is a mobility tool. While the Transit Potential Index in the previous section highlights areas where fixed-route transit service could be viable based on density, it does not necessarily show where concentrations of potential commuter route users live. In order to find these concentrations, a Commuter Transit Need analysis was conducted using Census tracts. Many users of commuter services access them via park-and-rides or kiss-and-rides, so these services can draw from larger geographic areas than local services, which people tend to primarily walk to. Census tracts are a much larger unit of geography, and therefore provide a better fit for this type of analysis. They also have lower margins of error due to their larger size.

The maps that follow (Figure 7 through Figure 9) show the density of all commuters, commuters who use non-single-occupancy vehicles, and households without access to a private vehicle or with access to only a single private vehicle. The data source used in this analysis is the 2012-2016 American Community Survey (ACS). Commuters are defined as those in the labor force who commute to a workplace.

Overall, these three groups represent those that are likely to use commuter transit services. While most transit demographic analyses also include low-income persons, zero and one-car households typically include low-income persons in addition to those with higher incomes that still have an incentive to try a commuter transit service. The maps utilize a Jenks Natural Breaks Classification Method[2] to assign each tract to one of five density categories. The density ranges differ for each, as some measure individuals while others measure households; and some are simply more common (e.g. commuters in general) than others (e.g. zero-vehicle households).

For each demographic analysis, a score of 1-5 is assigned to each Census tract depending on which natural break category it falls into. If a Census tract falls into the highest density category for a category, it is assigned five points for that particular analysis. Tracts that fall into the lowest-density natural break category for a particular category receive one point for that analysis.

The Commuter Index maps (Figure 10 through Figure 13) show the composite score for each tract based on the sum of its scores in each individual category. If a tract falls in the highest density category for each of the three categories, it will end up with a value of 15 (5+5+5). The lowest possible score is 3 (1+1+1).

1.2.1. Commuters

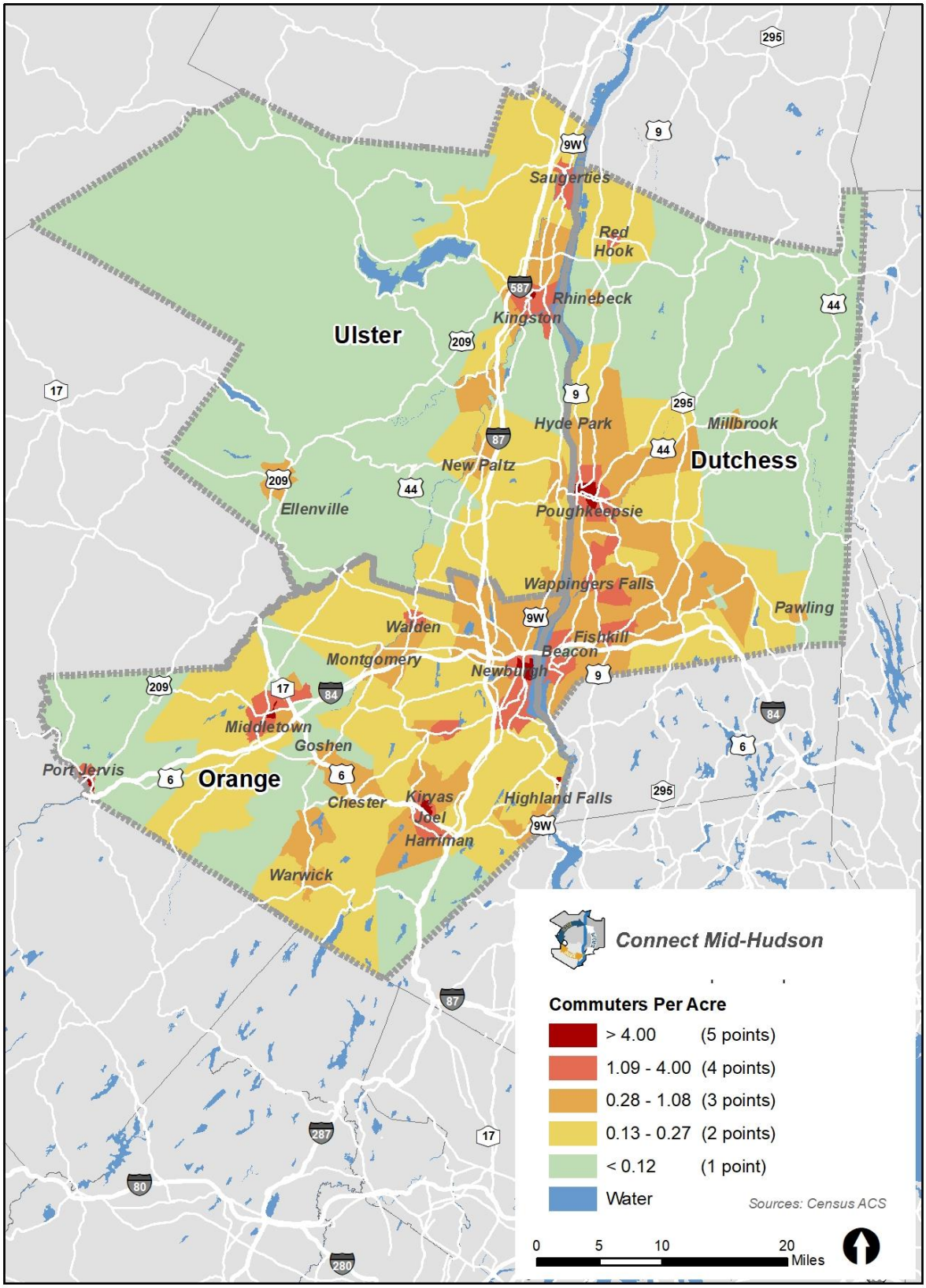
The density of commuters by tract are illustrated in Figure 7. This category represents anyone in the labor force who identifies as commuting to a workplace, as defined by the U.S. Census. Overall, the key takeaways from this map include:

- In Ulster County, the highest densities of commuters can be found along the I-87 and US-9W corridors in the communities of Saugerties, Kingston, Ulster, and New Paltz, and also in Ellenville.
- In Dutchess County, the highest densities of commuters can be found along the US-9 corridor in the communtities of Red Hook, Rhinebeck, Hyde Park, Poughkeepsie, Wappingers Falls, Fishkill, and Beacon, and also in Pawling and Millbrook.

[2] Jenks Natural Breaks are designed to determine the best arrangement of values into different groups by minimizing each group's average deviation from the group mean, while maximizing each group's deviation from the means of the other groups.

- In Orange County, the highest densities of commuters can be found in Newburgh, Walden, Middletown, Port Jervis, Washingtonville, Cornwall, Kiryas Joel, Goshen, and Warwick. These concentrations follow the I-87, I-84, and I-86 (US-6) corridors.

Figure 7: Commuter Density

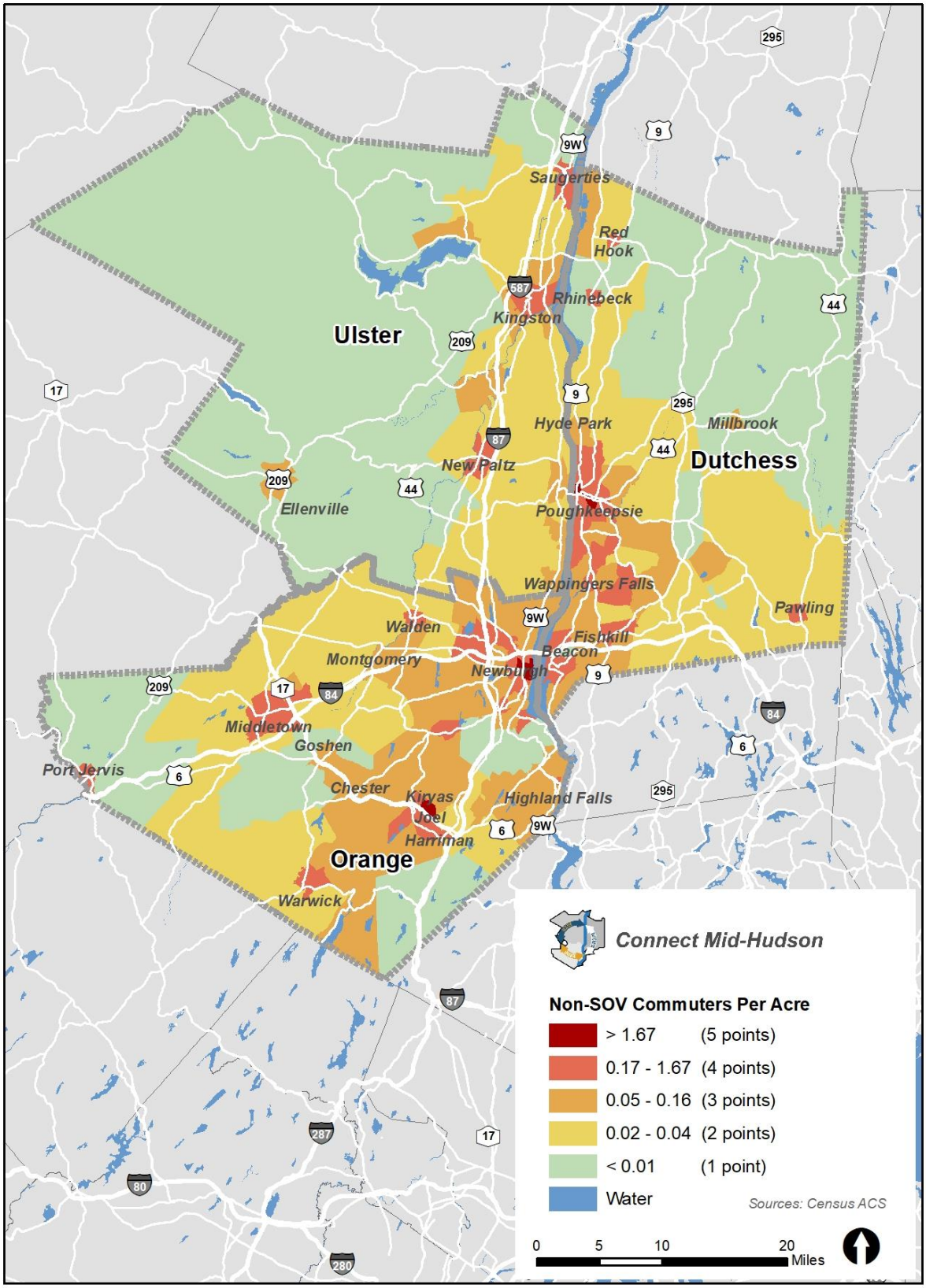


1.2.2. Non-Single-Occupancy Vehicle Commuters

The density of commuters who do not use single-occupancy vehicles are illustrated in Figure 8. These commuters include those that use public transit or vanpools, taxis, carpools, bicycles, or walk to work. The key takeaways from this map include:

- In Ulster County, the highest densities of these commuters can be found along the I-87 and US-9W corridors in the communities of Saugerties, Kingston, Ulster, and New Paltz, and also in Ellenville and Hurley.
- In Dutchess County, the highest densities of these commuters can be found along the US-9 corridor in the communtities of Red Hook, Rhinebeck, Hyde Park, Poughkeepsie, Wappingers Falls, Fishkill, and Beacon, and also in Pawling, Millbrook, and East Fishkill. Several of these communities have existing rail service to New York City and therefore have high concentrations of non-SOV commuters.
- In Orange County, the highest densities of these commuters can be found in Newburgh, Walden, Montgomery, Middletown, Port Jervis, Washingtonville, Cornwall, Kiryas Joel, Harriman, Goshen, and Warwick. These concentrations generaly follow the I-87, I-84, and I-86 (US-6) corridors.

Figure 8: Non-SOV Commuter Density

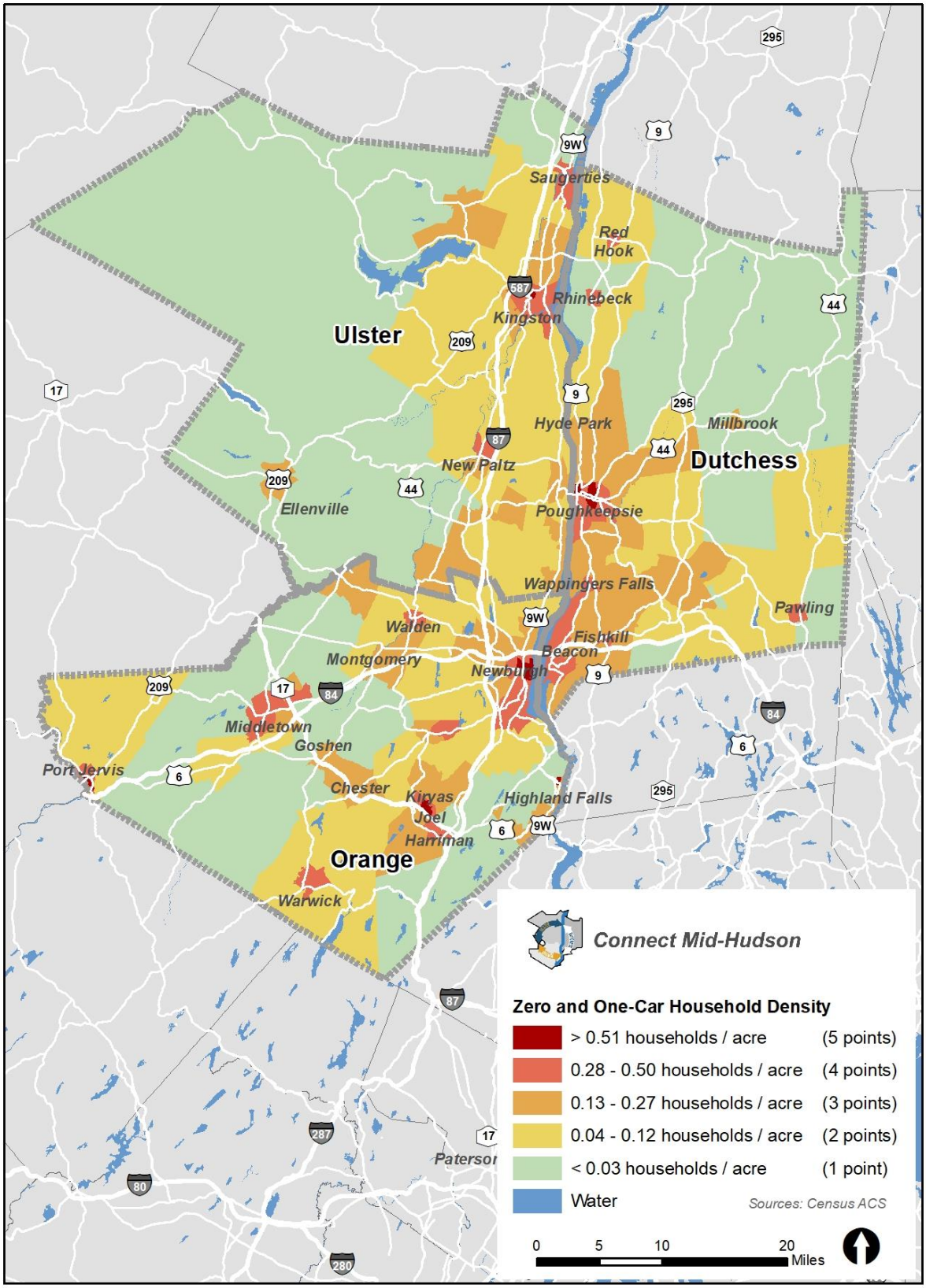


1.2.3. Zero and One-Car Households

The density of households without access to a vehicle or those with access to only a single vehicle are illustrated in Figure 9. These households could include families with multiple commuters, but only a single vehicle or any size household without a vehicle. The key takeaways from this map include:

- In Ulster County, the highest densities of these households can be found along the I-87 and US-9W corridors in the communities of Saugerties, Kingston, Highland, and New Paltz, and also in Ellenville, Woodstock, West Hurley, and Wallkill.
- In Dutchess County, the highest densities of these households can be found along the US-9 corridor in the communtities of Red Hook, Rhinebeck, Hyde Park, Poughkeepsie, Wappingers Falls, Fishkill, and Beacon, and also in Pawling, Millbrook, and East Fishkill.
- In Orange County, the highest densities of these households can be found in Newburgh, Walden, Montgomery, Middletown, Crawford, Port Jervis, Washingtonville, Cornwall, Kiryas Joel, Harriman, Goshen, and Warwick. These concentrations generally follow the I-87, I-84, and SR-17 corridors.

Figure 9: Zero and One-Car Household Density



1.2.4. Commuter Index

The composite Commuter Index for the entire study area is illustrated in Figure 10 and for each county in Figure 11 through Figure 13. Overall, the census tracts with the highest possible score of 15 were all located in Poughkeepsie (along US-44 – East West Arterial), Kiryas Joel, and Newburgh. The key takeaways from this analysis include:

- In Ulster County, the highest commuter indexes can be found along the I-87 and US-9W corridors in the communities of Saugerties, Kingston, Ulster, and New Paltz, and also in Ellenville, Woodstock, Hurley, and Shawangunk.
- In Dutchess County, the highest commuter indexes can be found along the US-9 corridor in the communtities of Red Hook, Rhinebeck, Hyde Park, Poughkeepsie, Wappingers Falls, Fishkill, and Beacon, and also in Pawling, Millbrook, and East Fishkill.
- In Orange County, the highest commuter indexes can be found in Newburgh, Walden, Montgomery, Middletown, Crawford, Port Jervis, Washingtonville, Cornwall, Kiryas Joel, Monroe, Harriman, Highland Falls, Goshen, and Warwick. These concentrations generally follow the I-87, I-84, and I-86 (US-6) corridors.

Figure 10: Commuter Index

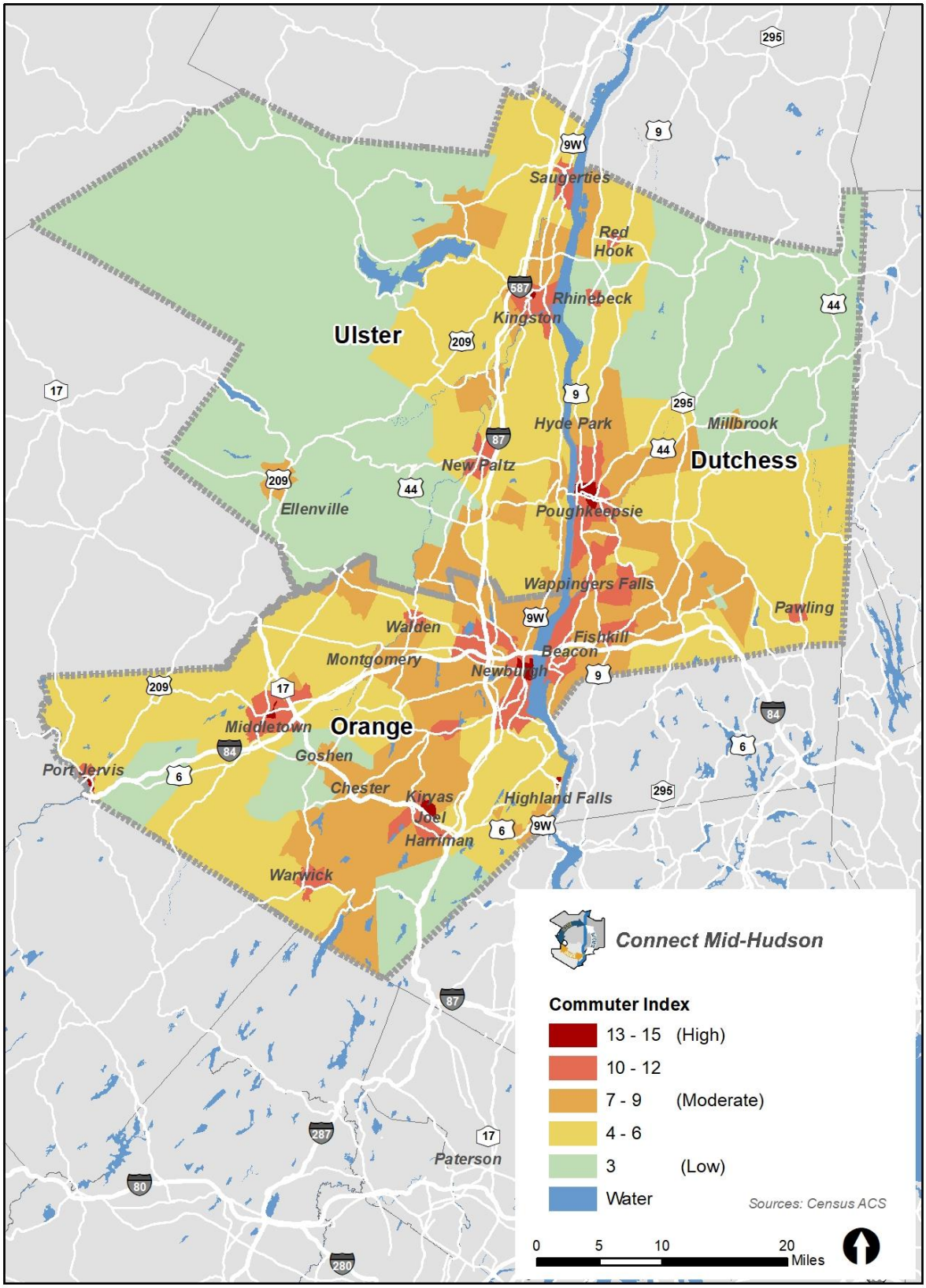


Figure 11: Commuter Index – Dutchess County

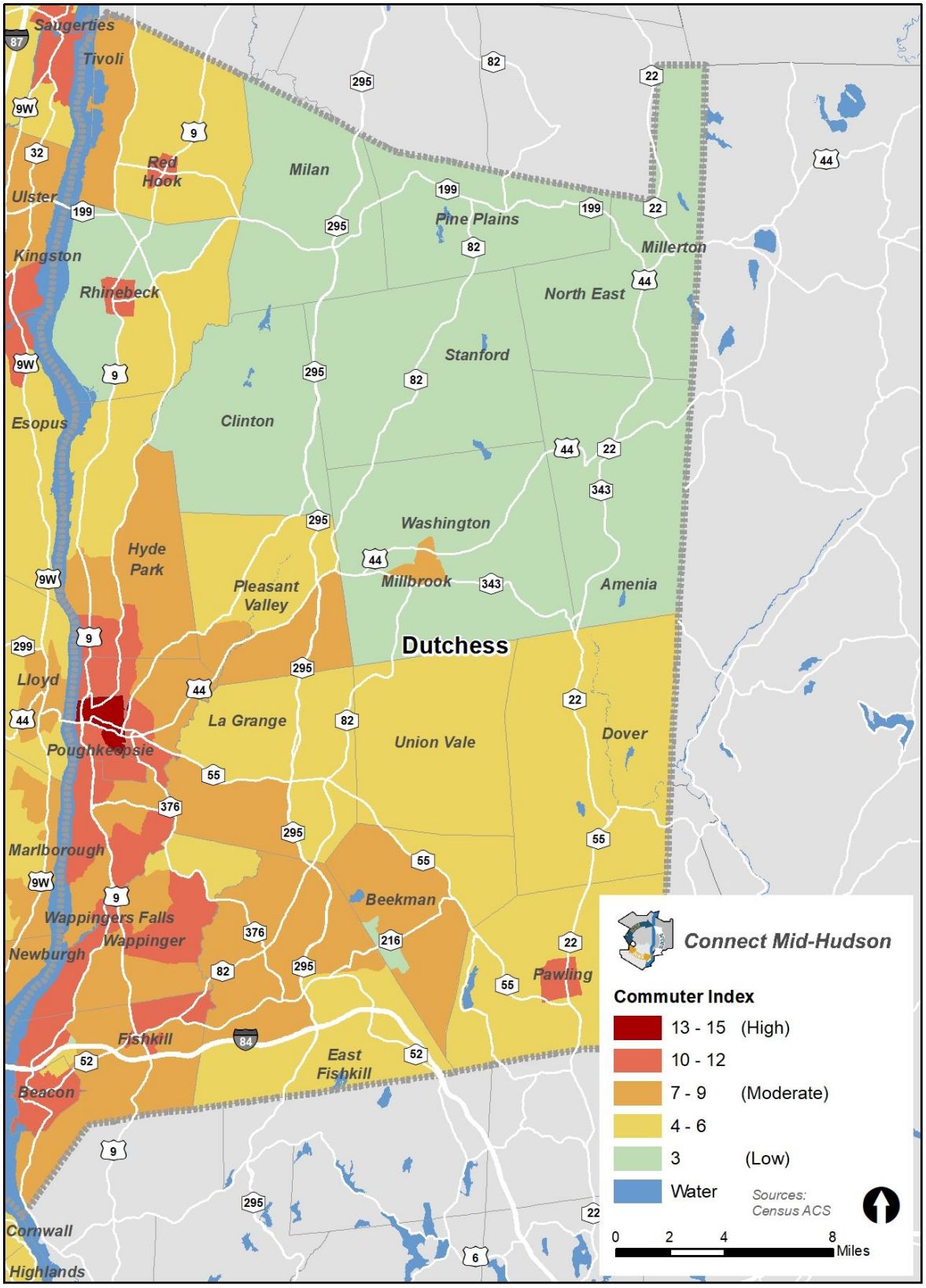


Figure 12: Commuter Index – Orange County

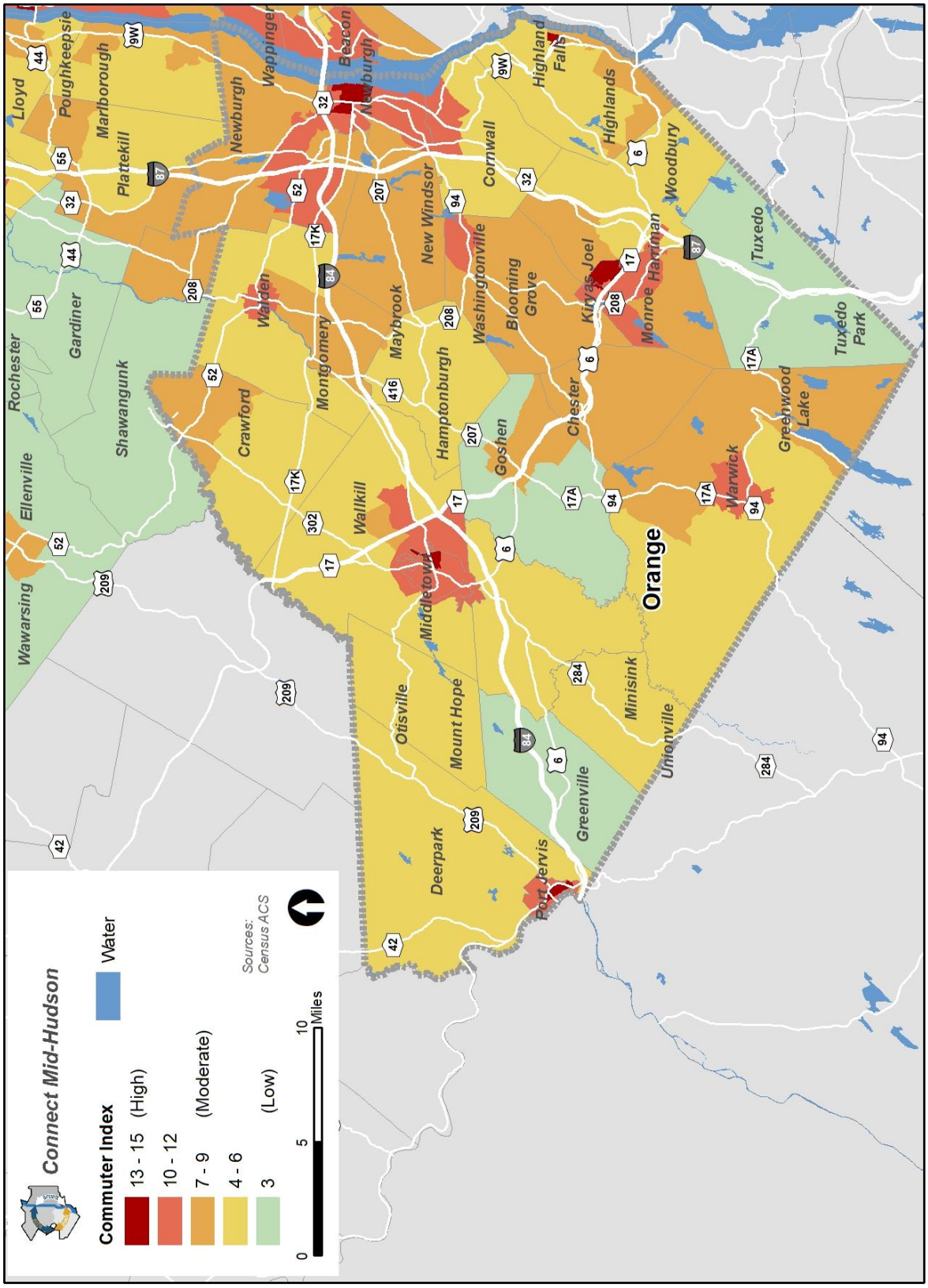
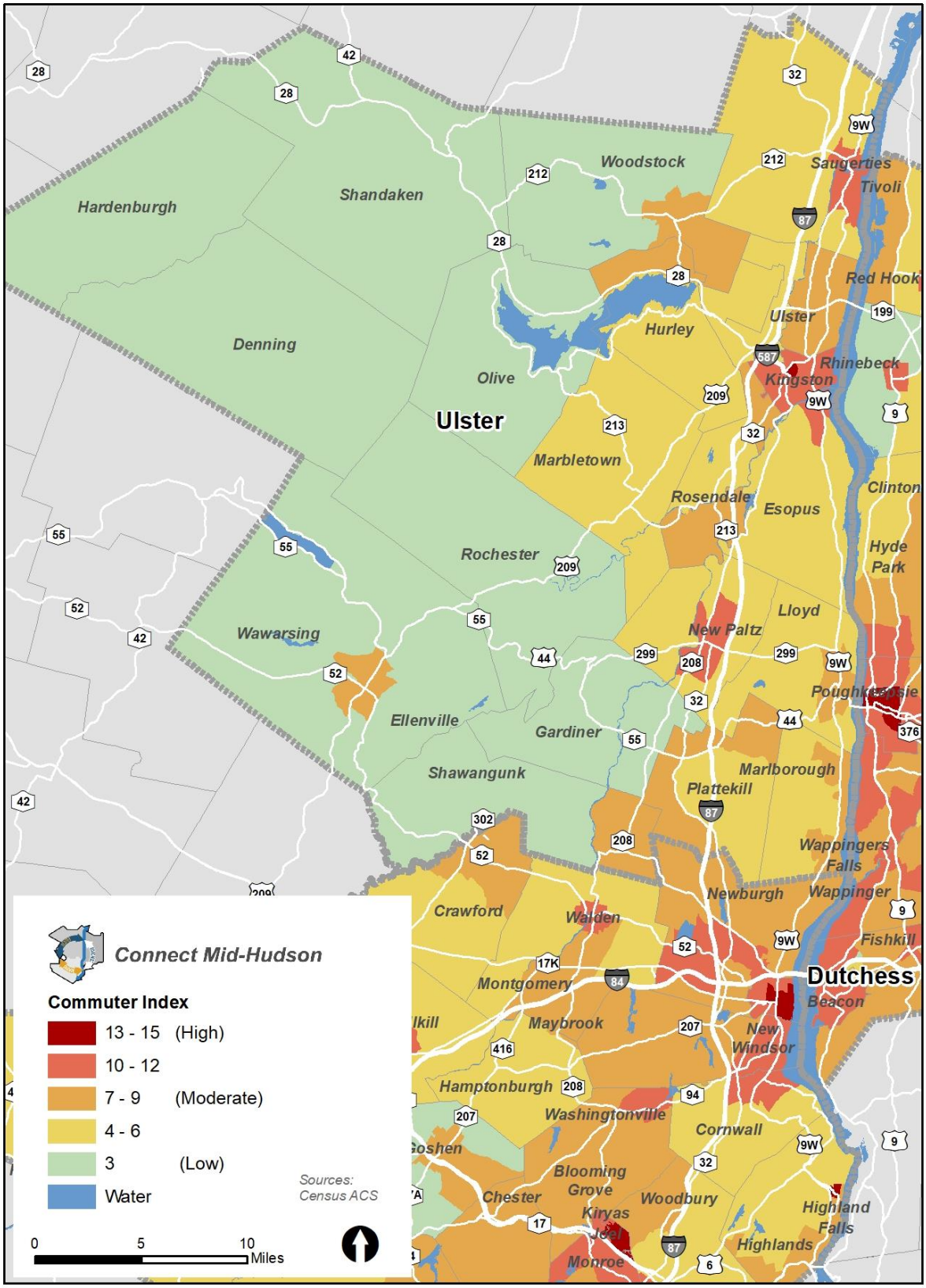


Figure 13: Commuter Index – Ulster County



1.3. Activity Center and Travel Analysis

In general, transit users want to access the same regional destinations as travelers who use other modes. In most communities, the majority of transit trips are either work-related or have destinations at key activity centers such as shopping centers, educational institutions, medical facilities, and community centers. This section summarizes major employment concentrations, activity centers, and the major travel patterns involving the study area.

1.3.1. Employment Concentrations

While the Transit Potential Index showed where employment densities were high enough to support fixed-route transit, this section summarizes employment density at the larger census tract level and includes other adjacent counties in New York, New Jersey, and Connecticut. This analysis coupled with the travel flow analysis that follows helps identify broader areas where study area residents may be commuting to.

Figure 14 illustrates employment density at the census tract level between the study area and New York City and Figure 15 illustrates the same between the study area and the greater Albany area. The key takeaways from these maps include:

- Employment density within the three-county study area at the tract level is significantly lower than in the counties in the greater Albany area, northeast New Jersey, the lower Hudson Valley and New York City. While densities at the smaller block level in the study area are much higher, no census tracts exceed a density of 15 jobs per acre.
- The highest employment densities (greater than 60 jobs per acre) are found in midtown and downtown Manhattan, followed by downtown Brooklyn, Long Island City in Queens, and portions of the Bronx, Hoboken, NJ, Jersey City, NJ, Newark, NJ, Albany, NY, and Schenectady, NY.
- Densities decrease through Rockland and Westchester counties; however they are still considerably higher than in the three-county study area.
- Densities in the greater Albany area are higher than in the study area counties, but not as high as those in the greater New York City area. Portions of downtown Albany have more than 60 jobs per acre, and portions of Schenectday have more than 30 jobs per acre.
- The highest densities in the three-county study area include many of the locations identified in the Transit Potential analysis such as Newburgh, Middletown, Kiryas Joel, Beacon, Poughkeepsie, Fishkill, and Kingston.

Figure 14: Employment Density by Census Tract – Study Area and South

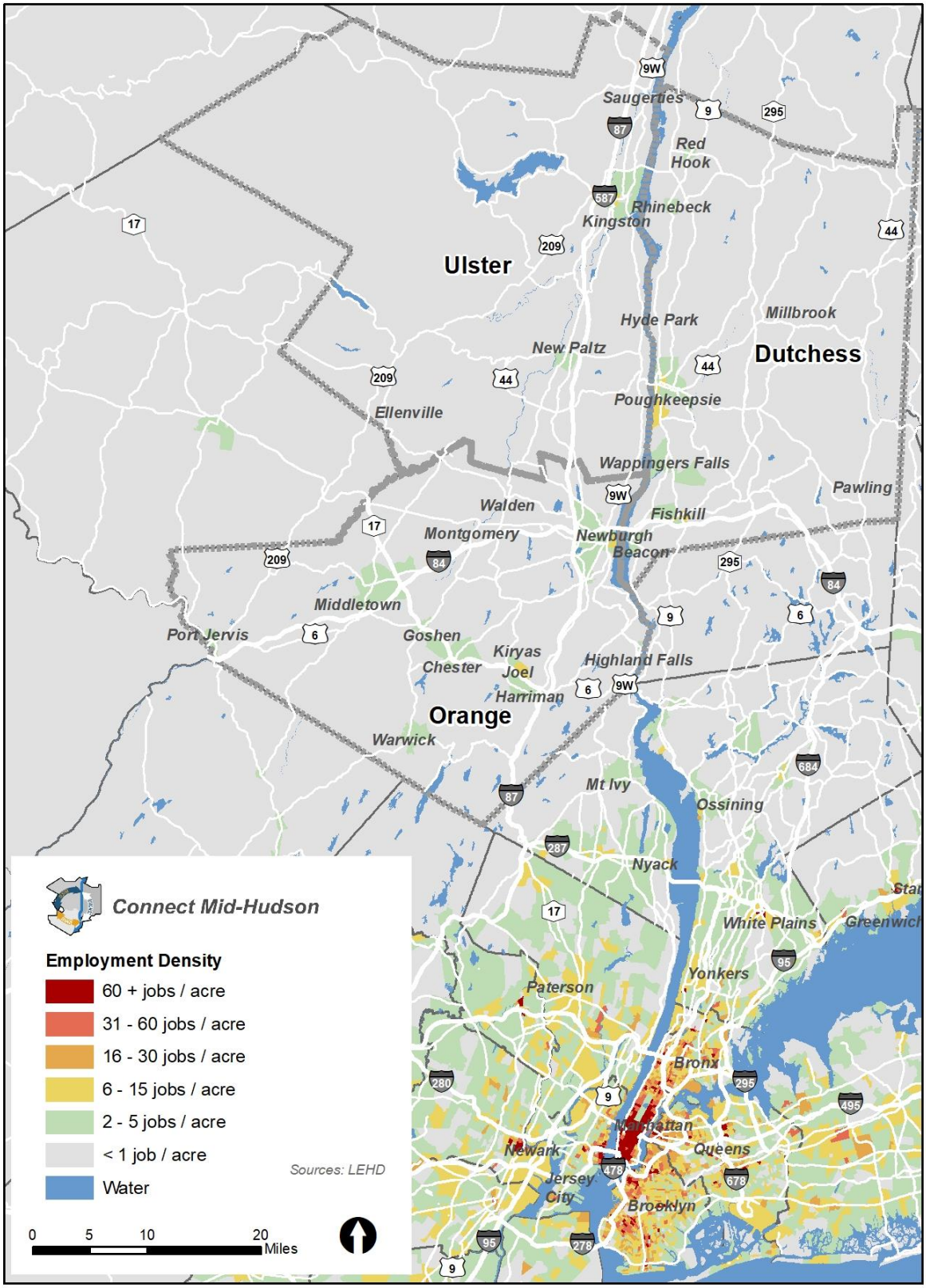
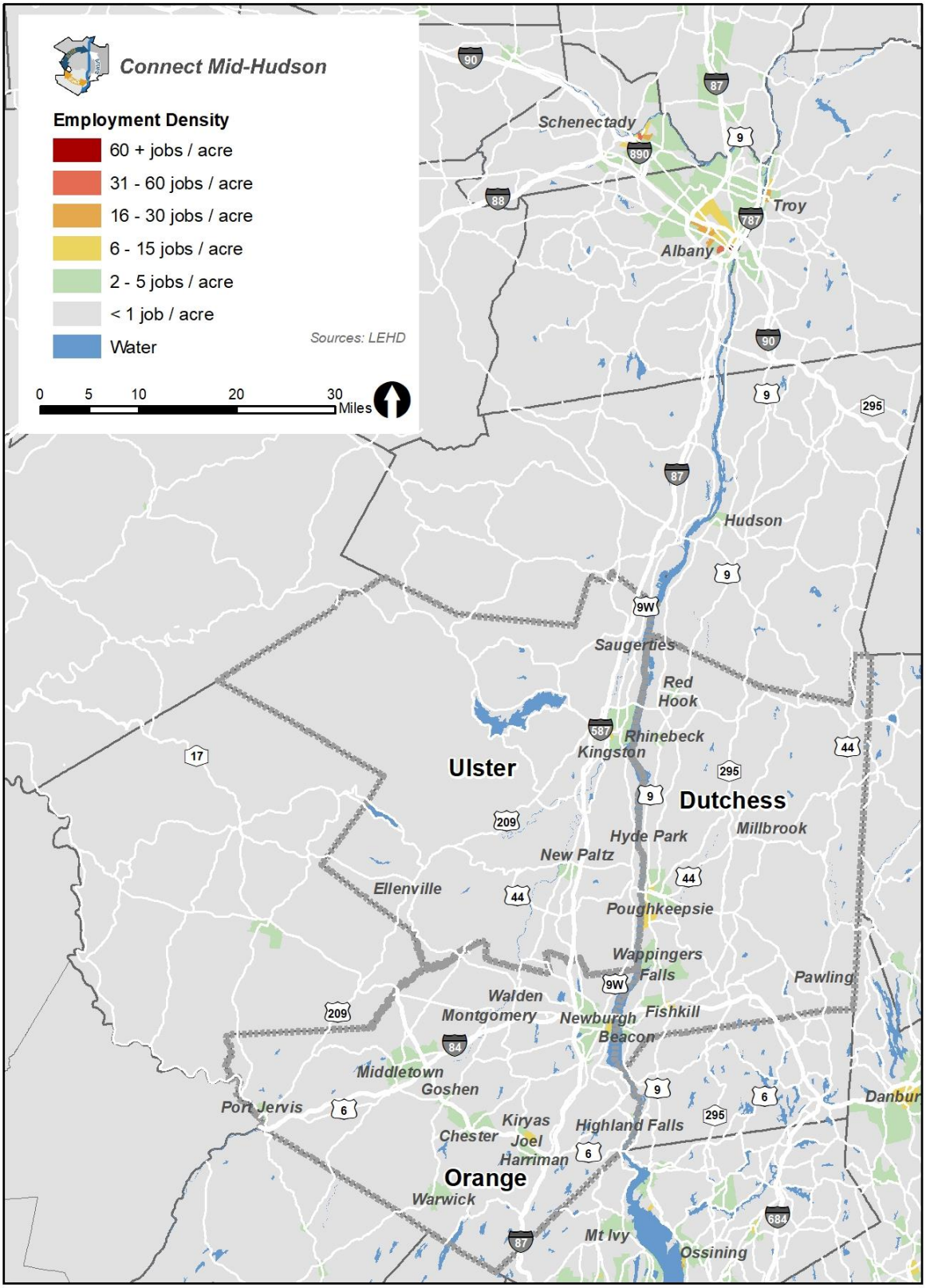


Figure 15: Employment Density by Census Tract – Study Area and North



1.3.2. Major Activity Centers

The major concentrations of employment in the study area (identified in the previous section) are a good indicator of where the major activity centers are located. Generally, high employment numbers, particularly in the service sector, also generate high amounts of activity with people making non-work trips to access shopping, medical services, social services, government services, and for recreational purposes.

Table 1 summarizes areas with high concentrations of employment within the three-county study area. Overall, these areas could serve not only as transit destinations for people residing in the three counties, but also for people outside of them. Therefore, they could serve as destinations for reverse commutes to the study area on transit routes designed primarily to carry study area residents to employment and activity centers outside the study area.

Table 1: Major Activity Centers in the Study Area

County	Area	Description
Dutchess	US-9 corridor in southern Poughkeepsie (Town)	Retail (Galleria), IBM
	US-9 corridor in downtown Poughkeepsie (City)	Vassar Brothers Medical Center
	Downtown Poughkeepsie City (Main Street/Market Street corridor)	Retail, office, government
	US-9 corridor in northern Poughkeepsie (Town)	Mid-Hudson Regional Hospital and Marist College
	US-9/I-84 area of Fishkill	Retail, office, Gap/Old Navy Distribution Center
Orange	Downtown Newburgh	Retail, government, Mount Saint Mary College
	SR-17k/I-87/Stewart Airport area of Newburgh	Retail, office, warehousing, airport
	Kiryas Joel	Retail
	I-87/US-6/SR-17 area of Harriman and Woodbury (Woodbury Commons)	Retail (Woodbury Commons)
	I-87/SR-17 area of Middletown	Retail (Galleria), Orange Regional Medical Center
	Downtown Middletown	Retail, SUNY Orange
	SR-17/SR-17A/SR-207 area of Goshen	Retail, government, medical
	SR-17/SR-94 area of Chester	Retail, warehousing
Ulster	Stockade District of Kingston along the I-587 and Broadway corridors	Retail, county government
	New Paltz	Retail, SUNY New Paltz

1.3.3. Travel Patterns

To identify connections that may warrant transit service, it is important to understand the study area's most prevalent travel patterns, regardless of mode. For this analysis, LEHD Origin-Destination data (LODES) was used. LODES data aggregates individual persons' home and work locations up to the Census block level and

therefore can be used to represent home-to-work (one-way) trips. The data can then be further aggregated to any Census geography, including census tracts and counties. Census ACS data also includes information about commuters however it does not include home and work locations at the same level of detail as LODES data. Census ACS data does however tend to include commuters that may be omitted from LODES data due to its under-reporting of federal jobs in particular. This is important to acknowledge when working with LODES data. For the three study area counties ACS commuter totals are five percent or less more than LODES commuter totals, as summarized in Table 2.

Table 2: Comparison of ACS and LODES Commuter Totals by County

County	2015 LODES Commuters	2016 ACS Commuters	Difference
Dutchess	126,989	132,445	4%
Orange	160,508	163,475	2%
Ulster	74,205	78,175	5%

Overall, there are three parts of this analysis that look at home-to-work travel at two different levels: the county level and the Census tract level:

1. **County level home-to-work trips:** this analysis summarizes the top 10 counties that people in each study area county commute to for work.
2. **Census tract level internal home-to-work trips:** this analysis summarizes the top tract-to-tract home-to-work trips that are internal to the study area.
3. **Census tract level home-to-work trips by county:** this analysis first identifies the top three counties that residents in each of the three study area counties commute to for work. It then identifies the top tract-to-tract home-to-work trips between each study area county and its top three work destination counties.

Overall, the analysis at the county level illustrates the general regional home-to-work travel patterns. The census tract analyses are meant to illustrate the more detailed home-to-work travel patterns of study area residents. Census tracts are small enough for some specificity, but large enough to cluster neighborhoods of commuters together. According to the U.S. Census, Census tract population can range from 1,200 to 8,000 people, with the optimal number being 4,000[3].

1.3.3.1. County-to-County Home-to-Work Trips

The top counties that people residing in each of the three study area counties work in are summarized in Figure 16 through Figure 18. Additionally, the top county-to-county home-to-work trips for people residing anywhere in the three-county study area are illustrated in Figure 19. The key takeaways from these figures include:

- Overall, there are nearly 362,000 home-to-work trips that originate in the three county study area. Of these, 214,000 (59 percent) are internal to the three county study area.
  - Additionally, home-to-work trips internal to each of the three study area counties make up nearly 50 percent of each county's total home-to-work trips.

[3] U.S. Census Bureau, 2012. Geographic Terms and Concepts – Census Tract. Available at: https://www.census.gov/geo/reference/gtc/gtc_ct.html

- Following the home-to-work trips that are internal to the three county study area, the next most prevalent are Dutchess County to Westchester County and Orange County to New York County (Manhattan).
- Dutchess and Orange County residents primarily work to the south of the study area. Ulster County residents do as well, however Albany County and Sullivan County are also in the top 10 counties in which Ulster County residents work.

Overall, the high percentage of people who both live and work in the three county study area is particularly meaningful considering the major employment concentrations that are clustered to the south in New Jersey, Westchester County, and New York City. The three-county study area appears to have the capacity to support the employment needs of the local labor force. From a transit perspective, this means there may be a need for more regional services that cross county boundaries but stay within the study area.

Figure 16: Counties where Dutchess County Residents Work

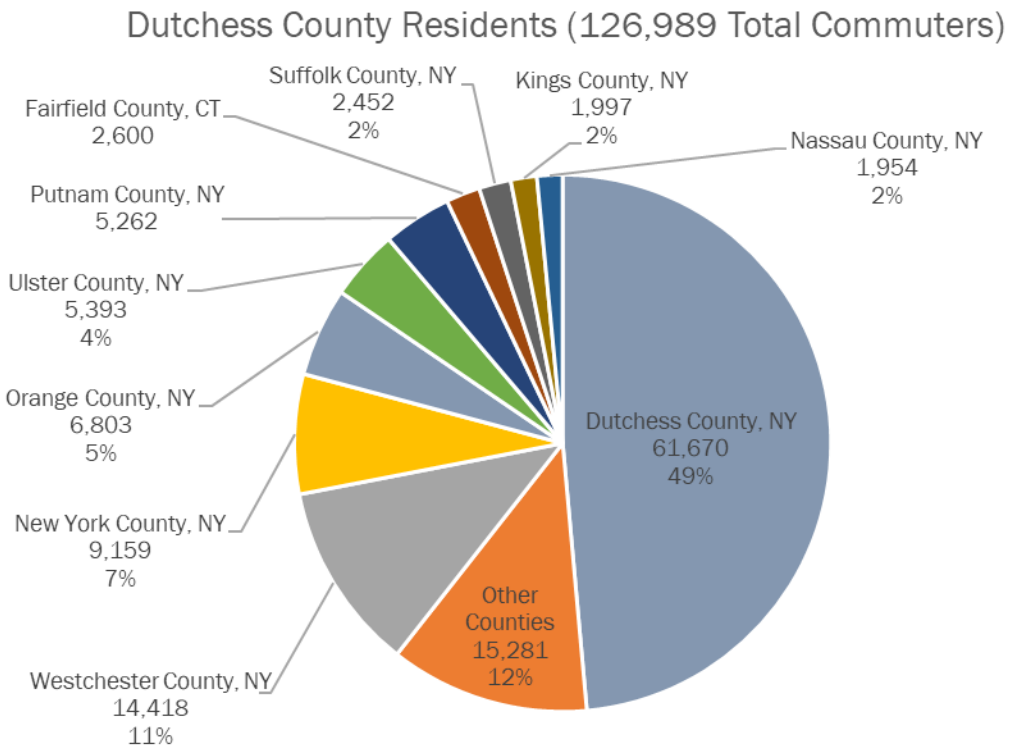


Figure 17: Counties where Orange County Residents Work

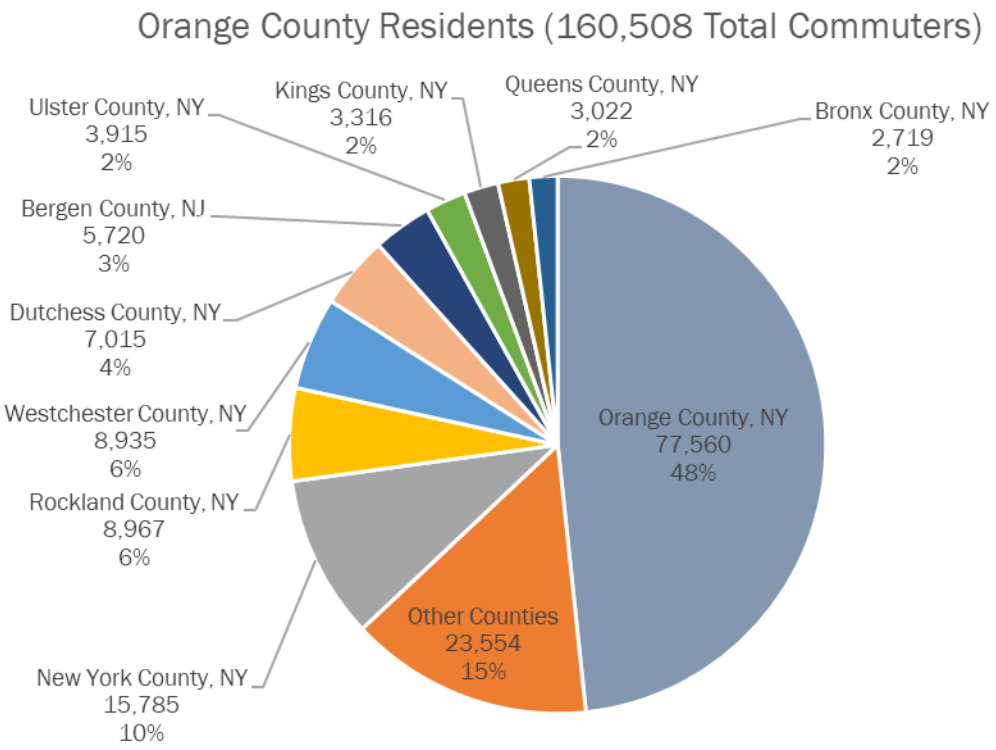


Figure 18: Top 10 Counties where Ulster County Residents Work

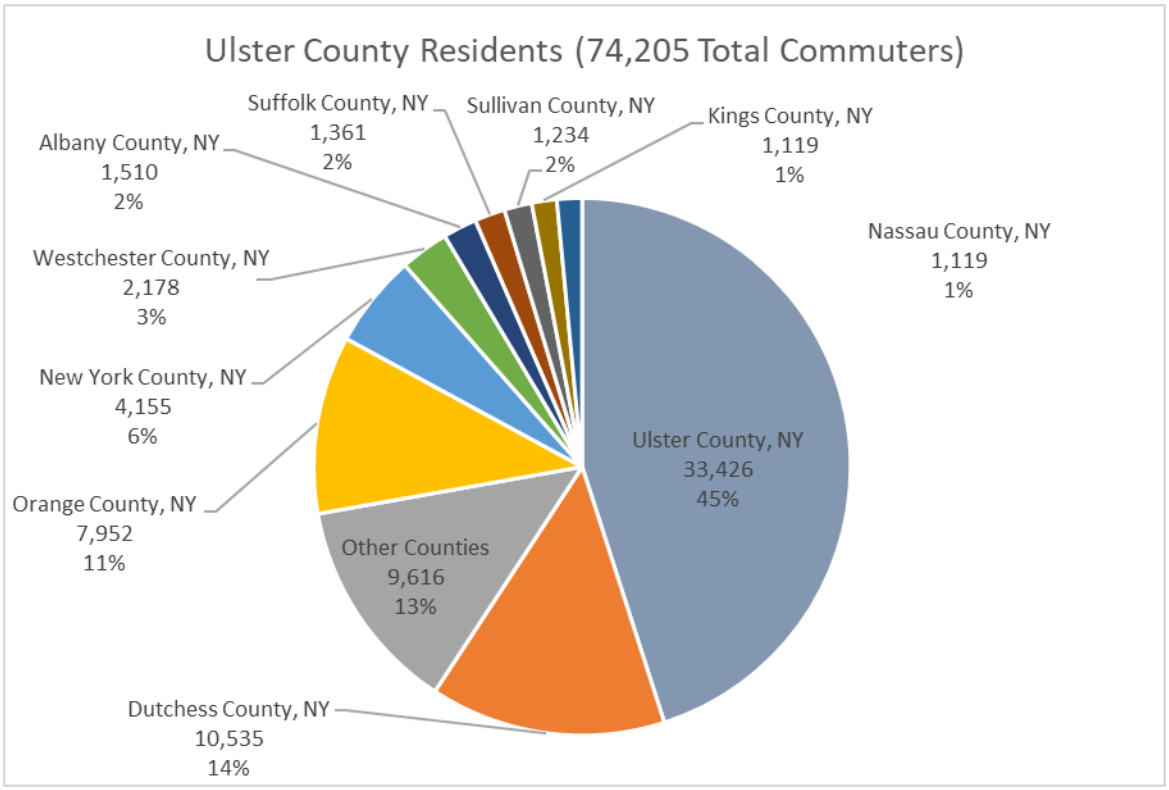
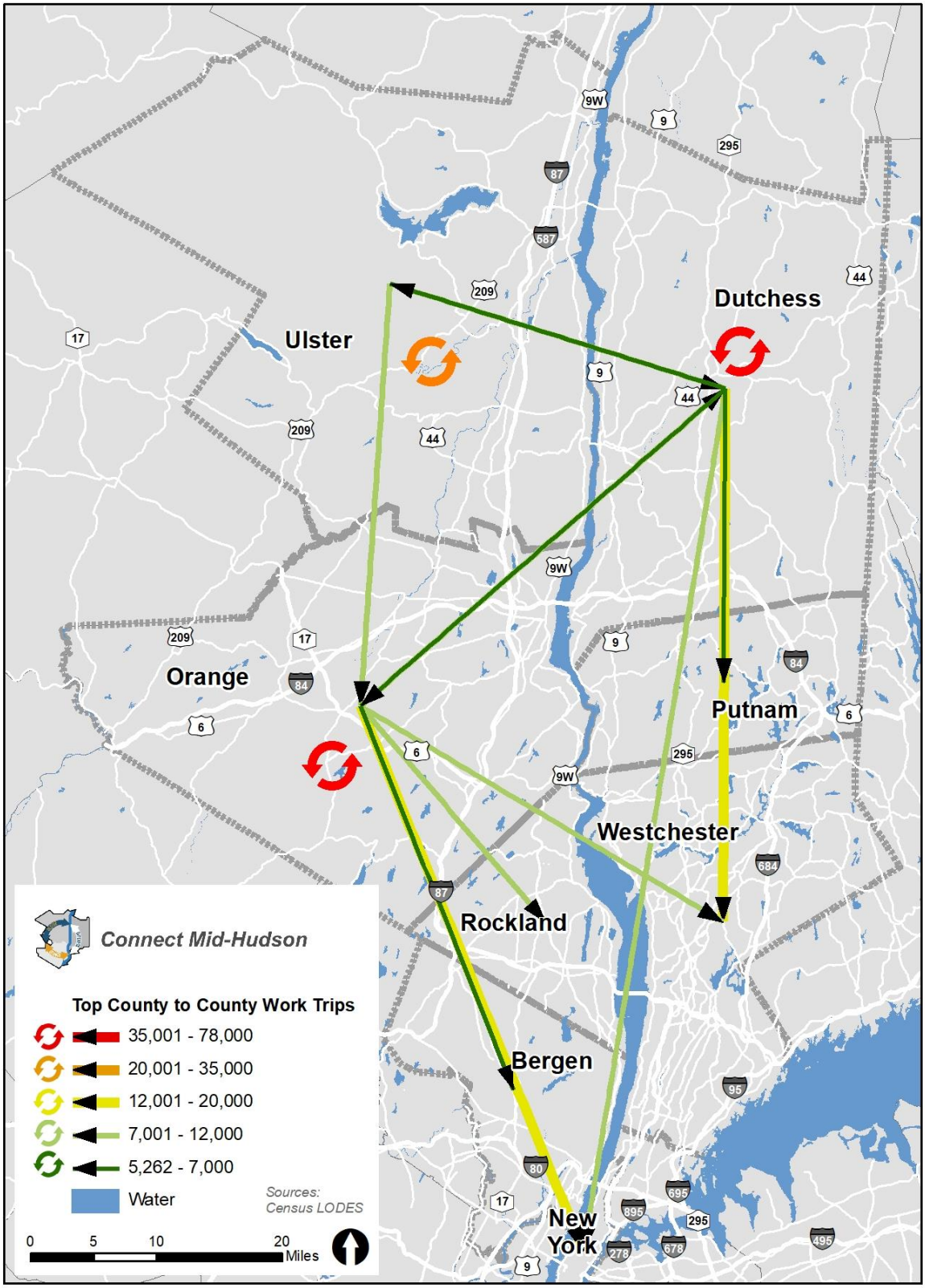


Figure 19: Top County-to-County Home-to-Work Trips for Dutchess, Orange, and Ulster Counties



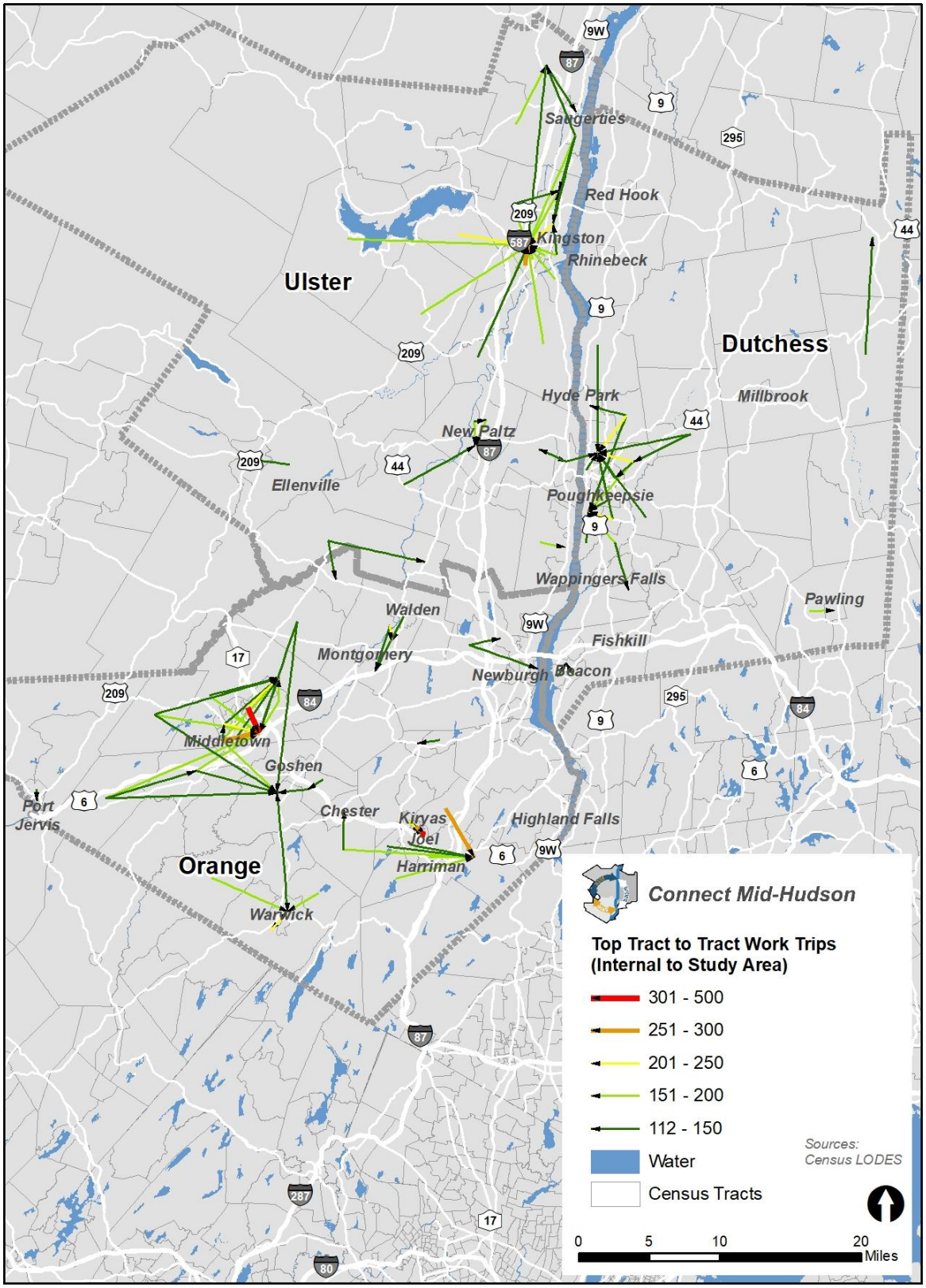
1.3.3.2. Study Area Internal Tract-to-Tract Home-to-Work Trips

Given the considerable amount of commuting that takes place internal to the three county study area, it is important to examine these trips at a more detailed level. This analysis looks at Census tract to Census tract home-to-work trips that are entirely internal to the three-county study area (home and work locations are within Dutchess, Orange, and Ulster counties). The most common trips (where more than 120 people from Census tract commute to another Census Tract) are illustrated in Figure 20. Key takeaways from this map include:

- The vast majority of these top internal trips are also internal to each county – the only trips that cross a county line are between Highland and Poughkeepsie (the Marist College area).
- Most trips are centered on the major hubs in the study area, including Kingston, Poughkeepsie, and Middletown, and come from Census tracts within a 10-mile radius.
- The top trips overall (greater than 250 people) are between adjacent census tracts in Kingston (centered on the I-587 corridor), Middletown, Kiryas Joel, and Woodbury.

Overall, this analysis shows that internally, residents are generally not commuting long distances but rather are commuting less than 10 miles to one of the study area's hubs. Many of these trips could be taken via the local transit services that currently exist. However, there might be opportunities for more regional commuter routes to satisfy some of these trips along their way.

Figure 20: Top Tract-to-Tract Home-to-Work Trips for Dutchess, Orange, and Ulster Counties



1.3.3.3. Orange County Tract-to-Tract Home-to-Work Trips

The top three counties that Orange County residents commute to for work (64 percent of county commuters) include Orange County, Rockland County, and New York County (Manhattan). Figure 21 illustrates the top Census tract to Census tract trips between Orange County and these counties, and Figure 22 through Figure 24 zoom into each county for more detail. The key takeaways from these maps include:

- Orange County to New York County (10 percent of county commuters):
  - A fairly equal number of people commute to midtown Manhattan as downtown Manhattan.
  - Commuters to midtown Manhattan tend to live in southeast portions of the county along I-87 south of Woodbury and to some extent from the Newburgh area.
  - Commuters living in western portions of the county (Middletown and Warwick) tend to commute more to downtown Manhattan than midtown Manhattan.
- Orange County to Rockland County (6 percent of county commuters):
  - Commuters to Rockland County are generally clustered in southeast portions of the county, particularly Kiryas Joel, Woodbury, Harriman, and the SR-17 corridor.
  - Destinations in Rockland County are distributed across it, with concentrations in New City and Suffern.
- Orange County Internal (48 percent of county commuters):
  - There are four major concentrations of trips centered on Middletown, Warwick, Montgomery, Kiryas Joel, and Woodbury (including Woodbury Commons).
  - Many of the top trips are to eastern Middletown near the I-84/SR-17 interchange from nearby neighborhoods and communites, including Wallkill and the I-84 corridor.
  - There are a significant number of trips internal to Kiryas Joel.
  - There are a significant number of trips between Monroe and the Woodbury Commons area near the I-87/SR-17 interchange.

Figure 21: Top Tract-to-Tract Home-to-Work Trips From Orange County

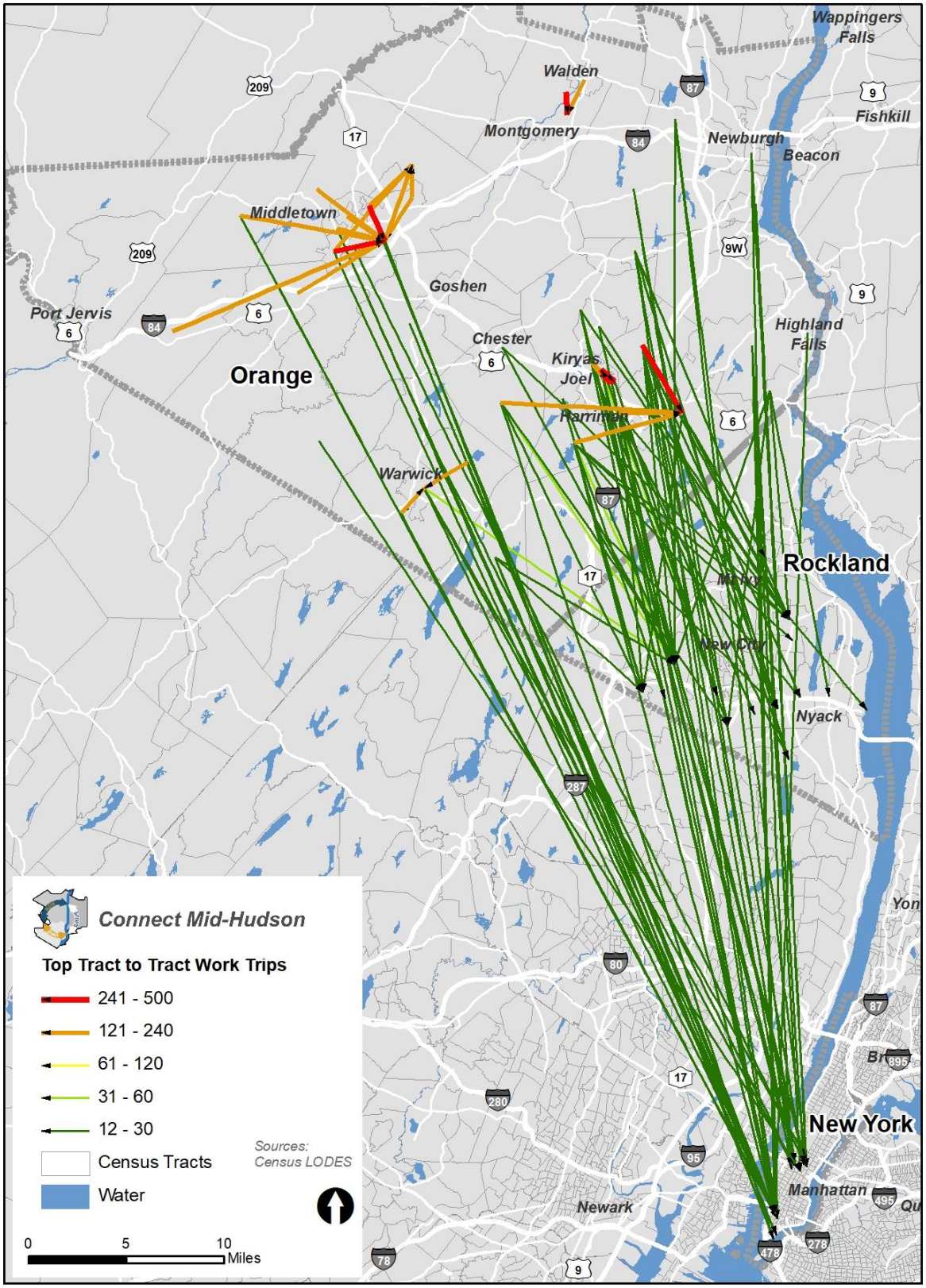


Figure 22: Top Tract-to-Tract Home-to-Work Trips – Orange County to New York County

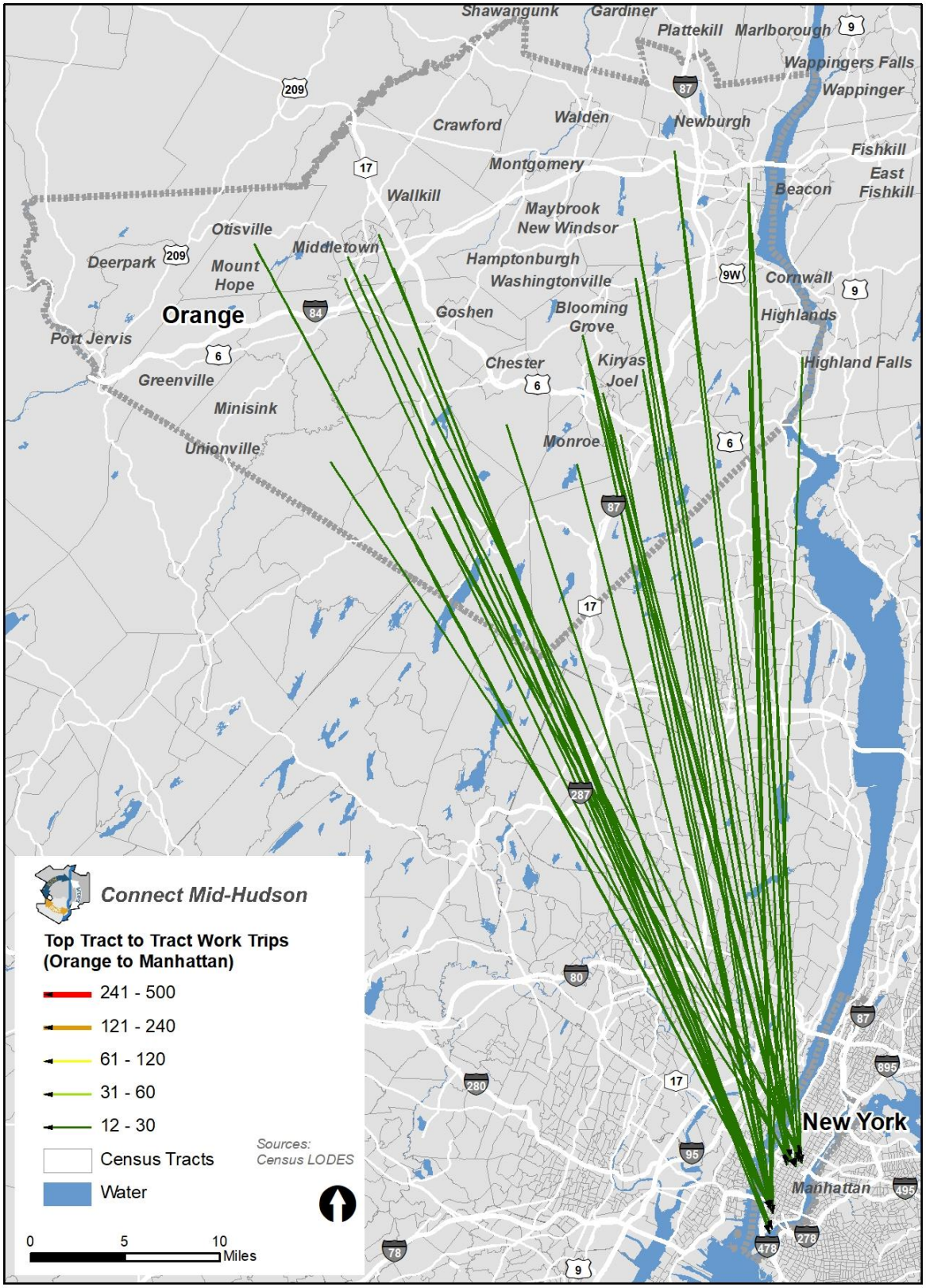


Figure 23: Top Tract-to-Tract Home-to-Work Trips Orange County to Rockland County

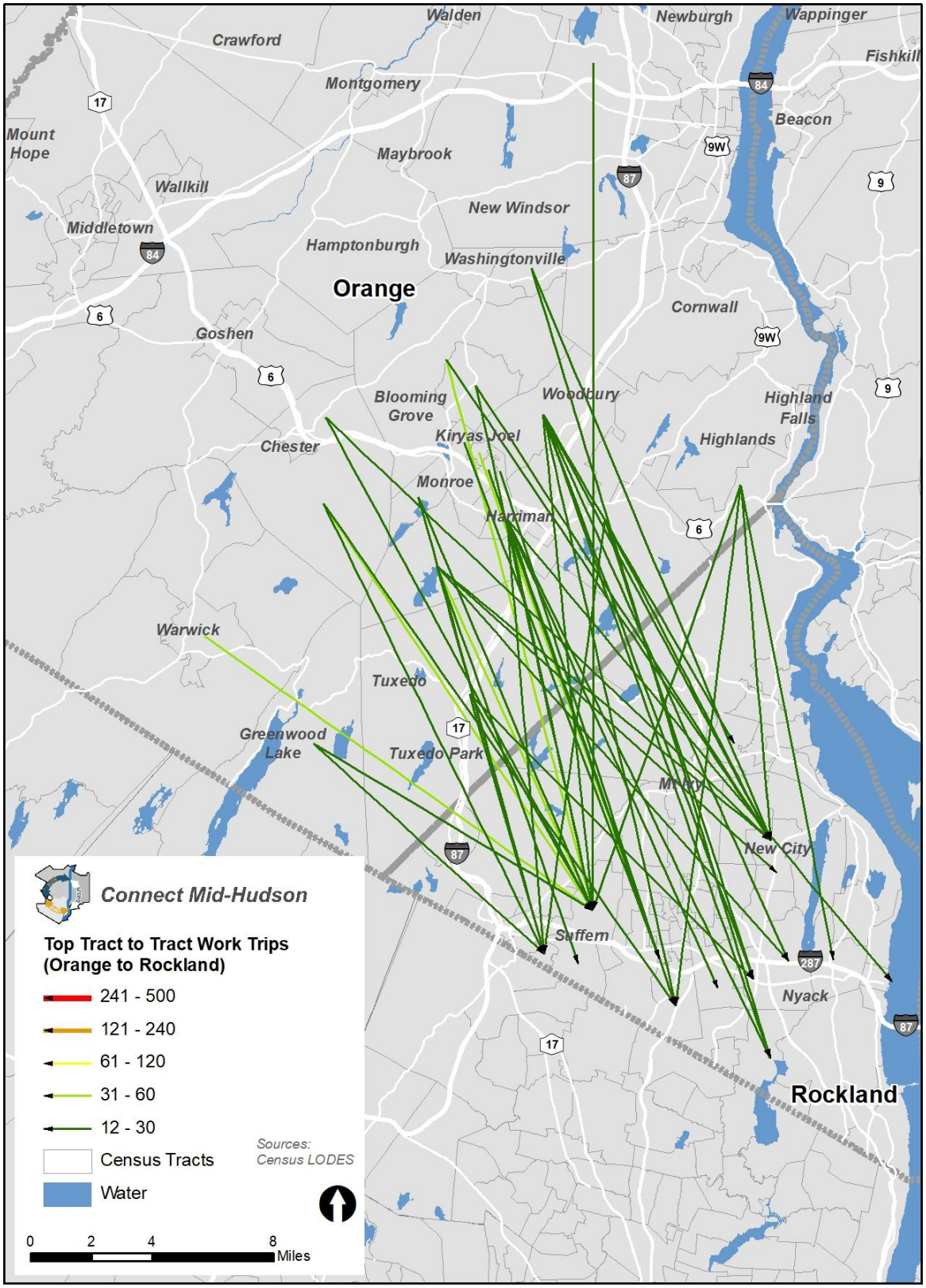
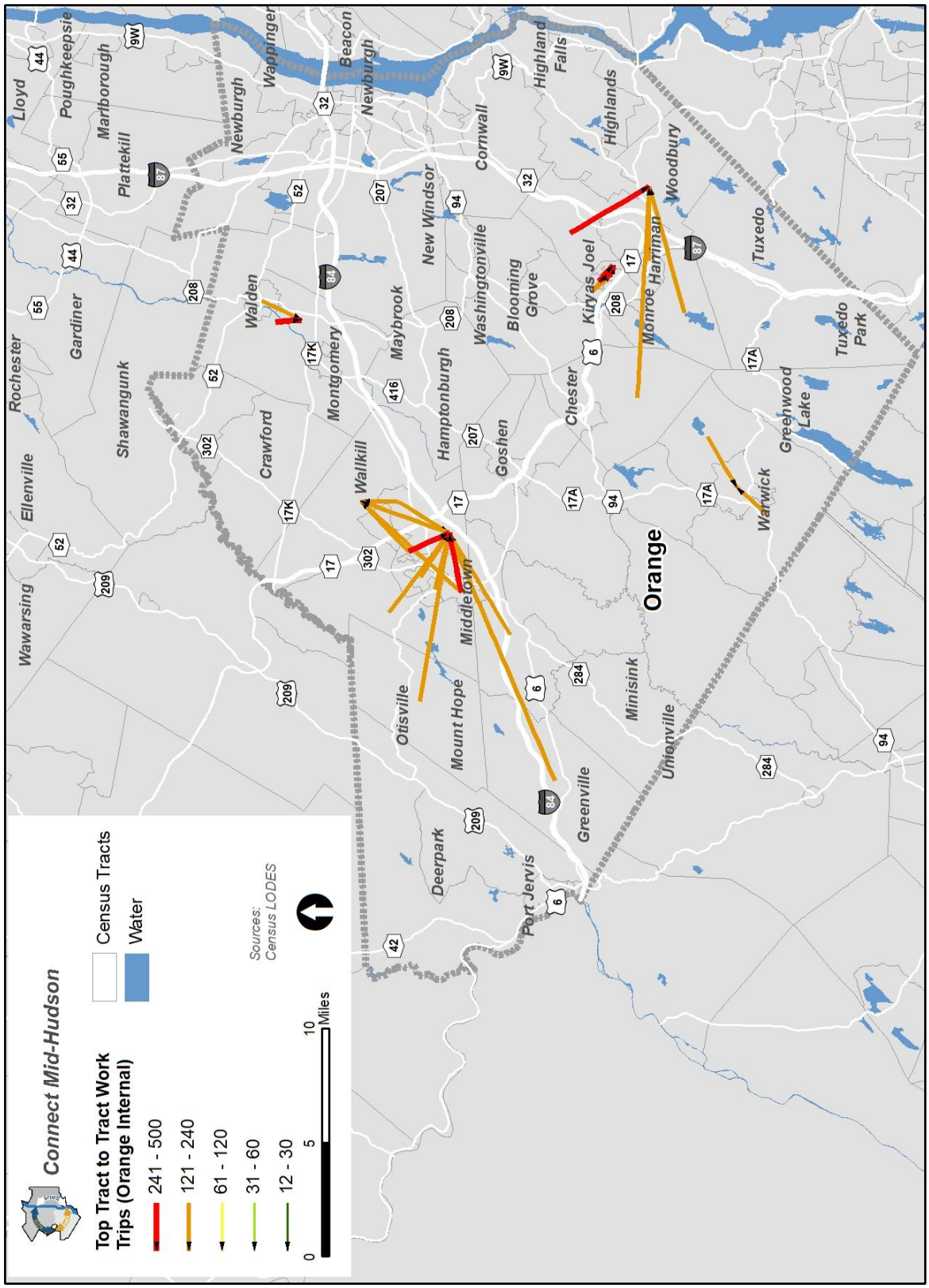


Figure 24: Top Tract-to-Tract Home-to-Work Trips Orange County Internal



1.3.3.4. Dutchess County Tract-to-Tract Home-to-Work Trips

The top three counties that Dutchess County residents commute to (67 percent of county commuters) include Dutchess County, Westchester County, and New York County (Manhattan). Figure 25 illustrates the top Census tract to Census tract home-to-work trips between Dutchess County and these counties, and Figure 26 through Figure 28 zoom into each county for more detail. The key takeaways from these maps include:

- Dutchess County Internal (49 percent of county commuters):
  - The majority of trips are to the Poughkeepsie area (city and town) from the surrounding communities of Hyde Park, Pleasant Valley, and Wappingers Falls. Within Poughkeepsie, the majority of trips are to the Marist College area and the US-9 corridor south of downtown where IBM is located.
  - There are over 120 trips internal to Beacon and the Town of Pawling (each).
  - There are over 120 trips between Millerton and Amenia and Amenia and Wassaic (each) in the northeastern portion of the county.
- Dutchess County to Westchester County (11 percent of county commuters):
  - The majority of trips are to White Plains, followed by Yorktown Heights, Katonah, Buchanan, and Peekskill.
  - The majority of trips begin in the southwest portion of the county, including from Beacon, Poughkeepsie, Wappingers Falls, and East Fishkill.
  - While commuters from Poughkeepsie, Wappingers Falls, and Hopewell Junction tend to commute mostly to Katonah, Yorktown Heights, and White Plains, commuters from Beacon tend to commute more to Buchanan and Peekskill.
- Dutchess County to New York County (7 percent of county commuters):
  - The majority of trips are to midtown Manhattan, with a smaller number going all the way to downtown.
  - The majority of trips that do go to downtown Manhattan are from the Beacon area.
  - Nearly all of the top trips begin along the US-9 corridor between Poughkeepsie and Beacon, or from the East Fishkill and Fishkill areas.

Figure 25: Top Tract-to-Tract Home-to-Work Trips from Dutchess County

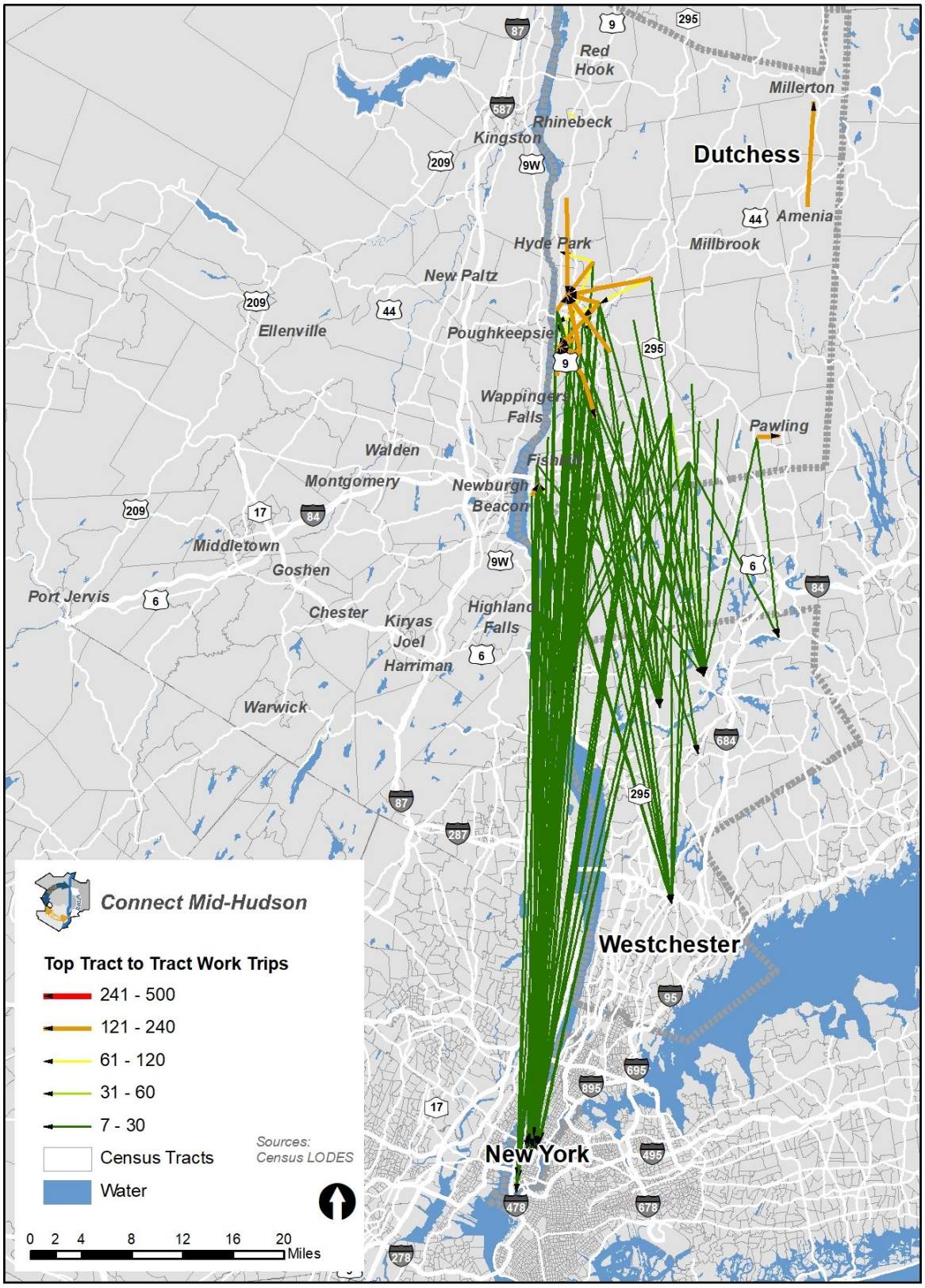


Figure 26: Top Tract-to-Tract Home-to-Work Trips Dutchess County to New York County

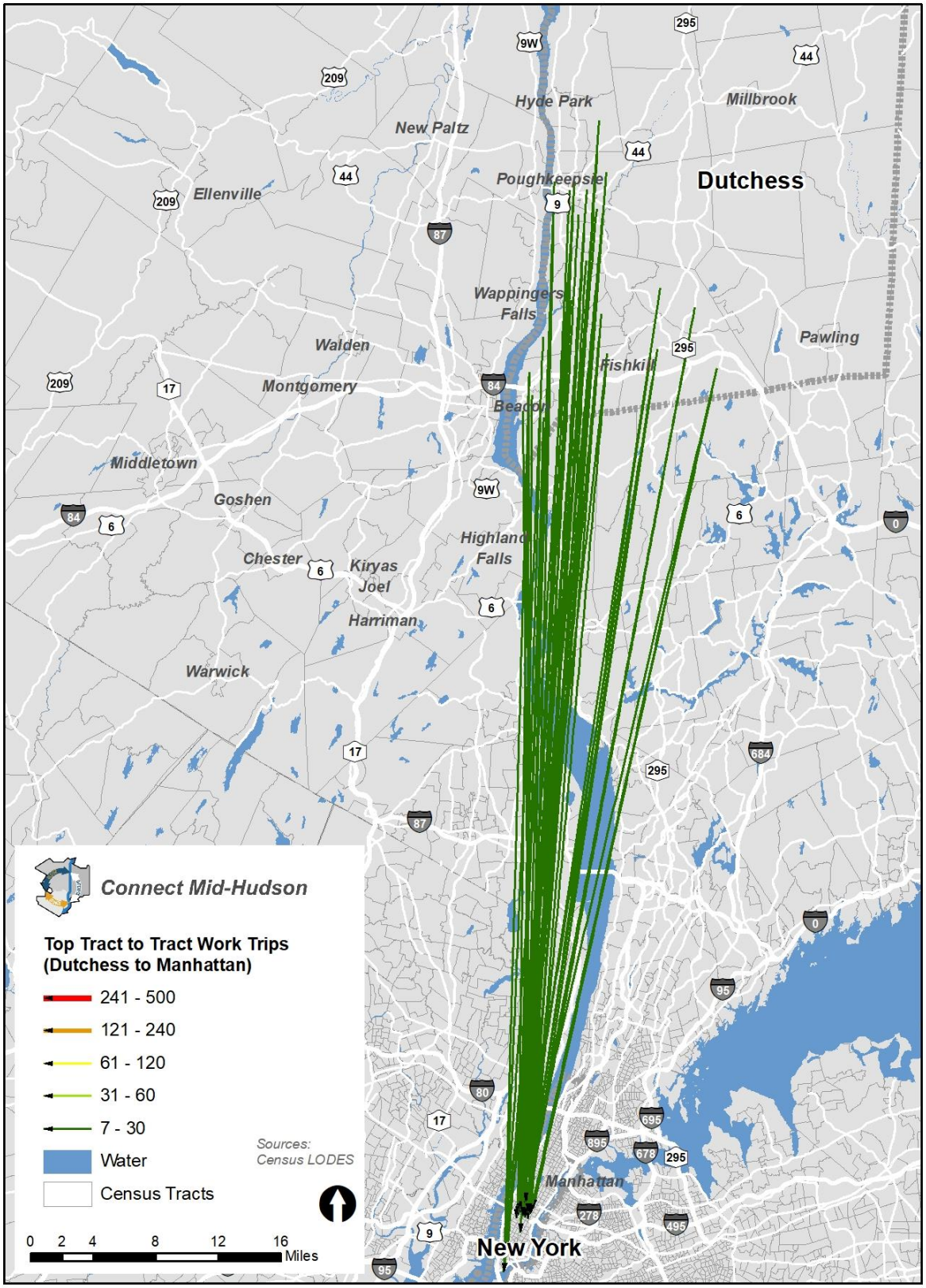


Figure 27: Top Tract-to-Tract Home-to-Work Trips Dutchess County to Westchester County

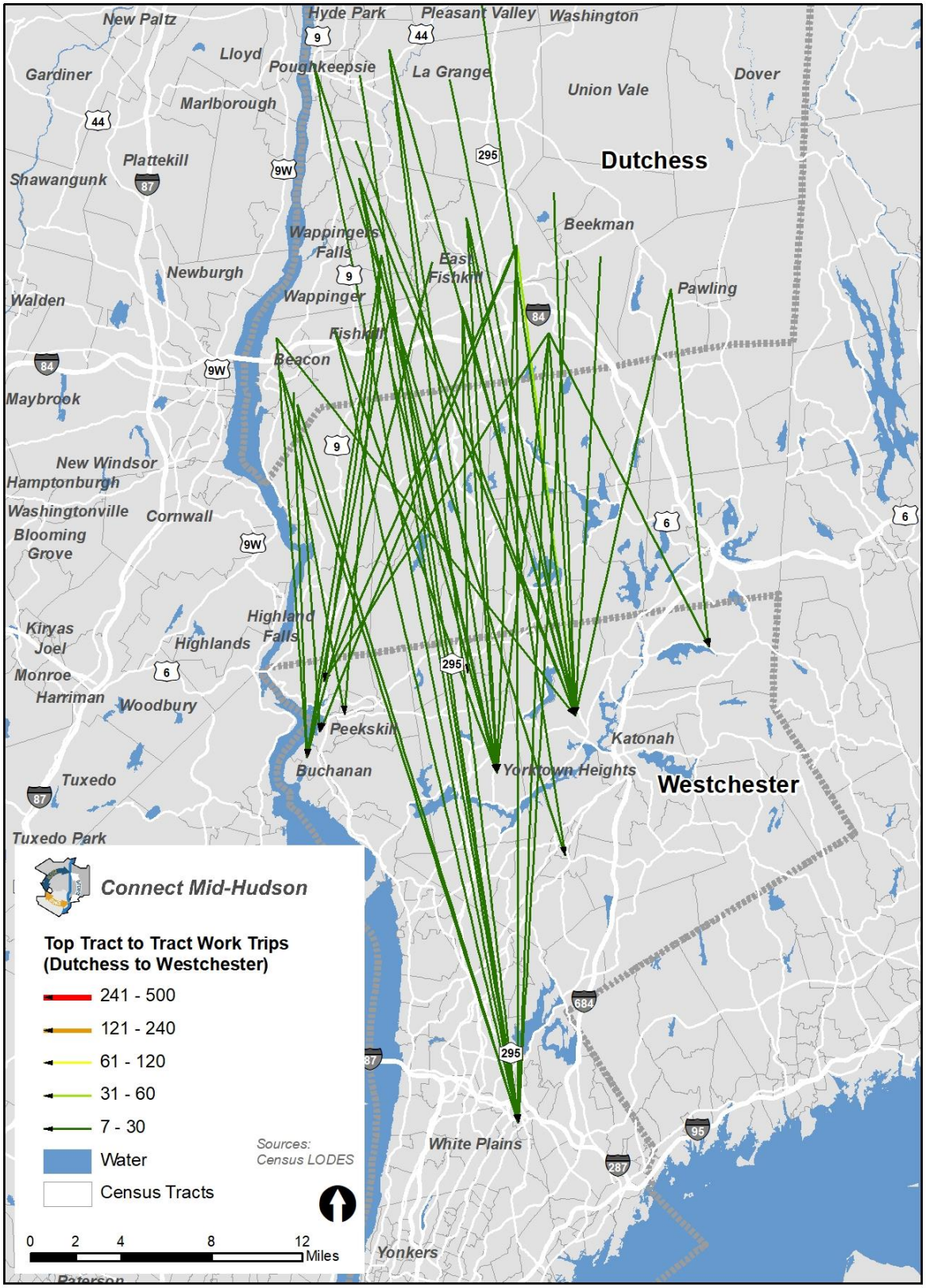
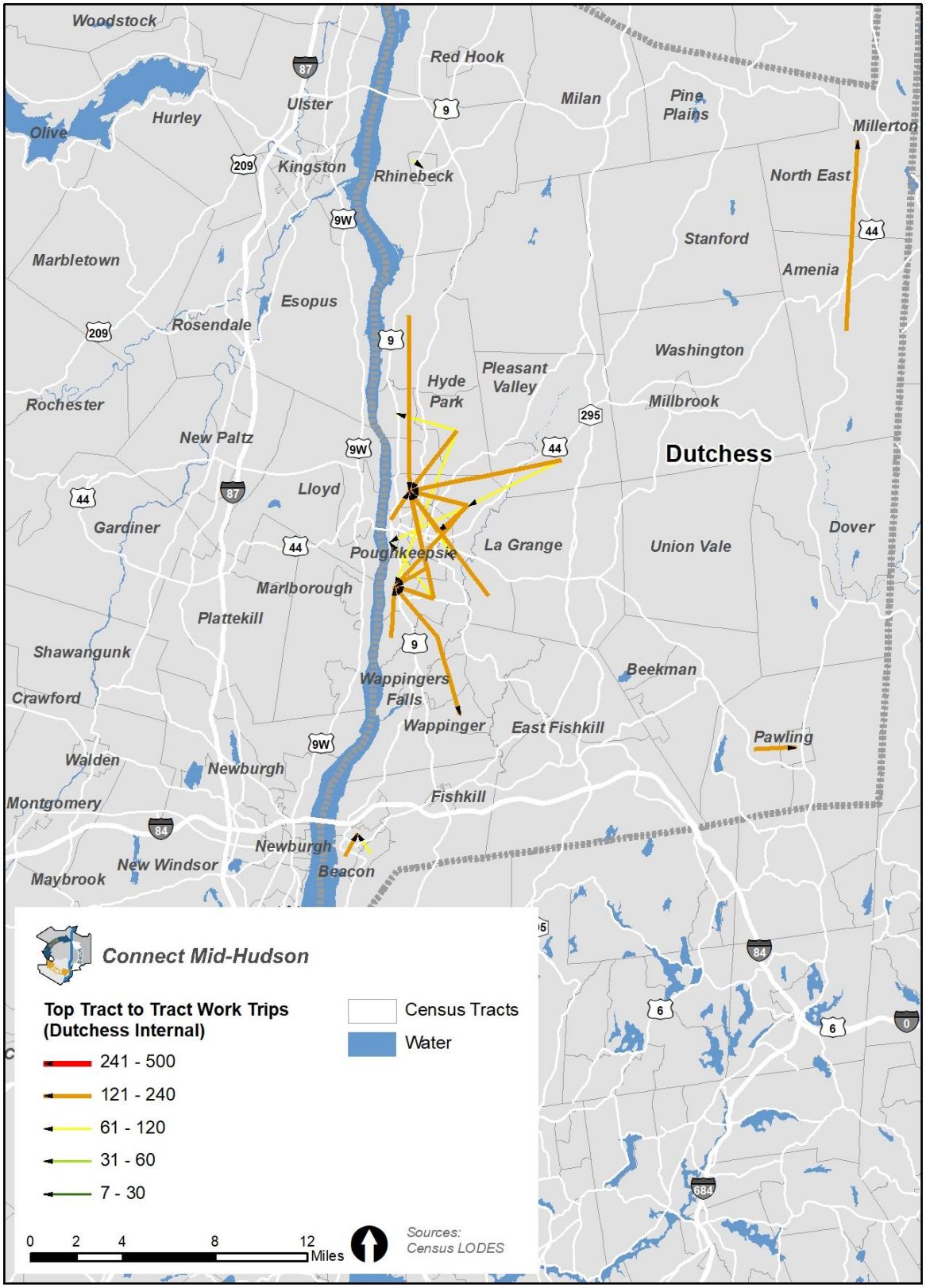


Figure 28: Top Tract-to-Tract Home-to-Work Trips Dutchess County Internal



1.3.3.5. Ulster County Tract-to-Tract Home-to-Work Trips

The top three counties that Ulster County residents commute to (70 percent of county commuters) include Ulster County, Dutchess County, and Orange County. Figure 29 illustrates the top Census tract to Census tract home-to-work trips between Ulster County and these counties, and Figure 30 through Figure 32 zoom into each county for more detail. The key takeaways for these maps include:

- Ulster County to Dutchess County (14 percent of county commuters):
  - The majority of trips are to the Rhinebeck and Poughkeepsie areas from communities directly across the river, including Kingston and Saugerties (to Rhinebeck) and Highland, New Paltz, and the US-44 corridor (Poughkeepsie).
  - Commuters from Highland and New Paltz mostly commute to the Marist College area of Poughkeepsie and the US-9 corridor just south of the downtown where IBM is located.
  - There are also a number of trips between the Kingston area and the Marist College/US-9 corridor north of downtown Poughkeepsie.
- Ulster County to Orange County (11 percent of county commuters):
  - The majority of the top trips to Orange County are less than 10 miles and are between the southern third of Ulster County and the northern half of Orange County.
  - A large number of trips are to northwest Orange County, including Pine Bush, Goshen, and Middletown from Wallkill where the Watchtower complex is located.
  - There are a significant number of trips between the Wallkill and Modena areas of southern Ulster County and the I-84 corridor from Newburgh west through the Stewart Airport area to Montgomery.
- Ulster County Internal (45 percent of county commuters):
  - The majority of the top trips are to Kingston, New Paltz and to a lesser extent Saugerties from adjacent communities.
  - Nearly all of the trips to Kingston are to the downtown area and just west along the Broadway and I-587 corridor.
  - There is also significant commuting along the US-9W corridor between Saugerties and the commercial district in Lincoln Park near the interchange with US-209.

Figure 29: Top Tract-to-Tract Home-to-Work Trips from Ulster County

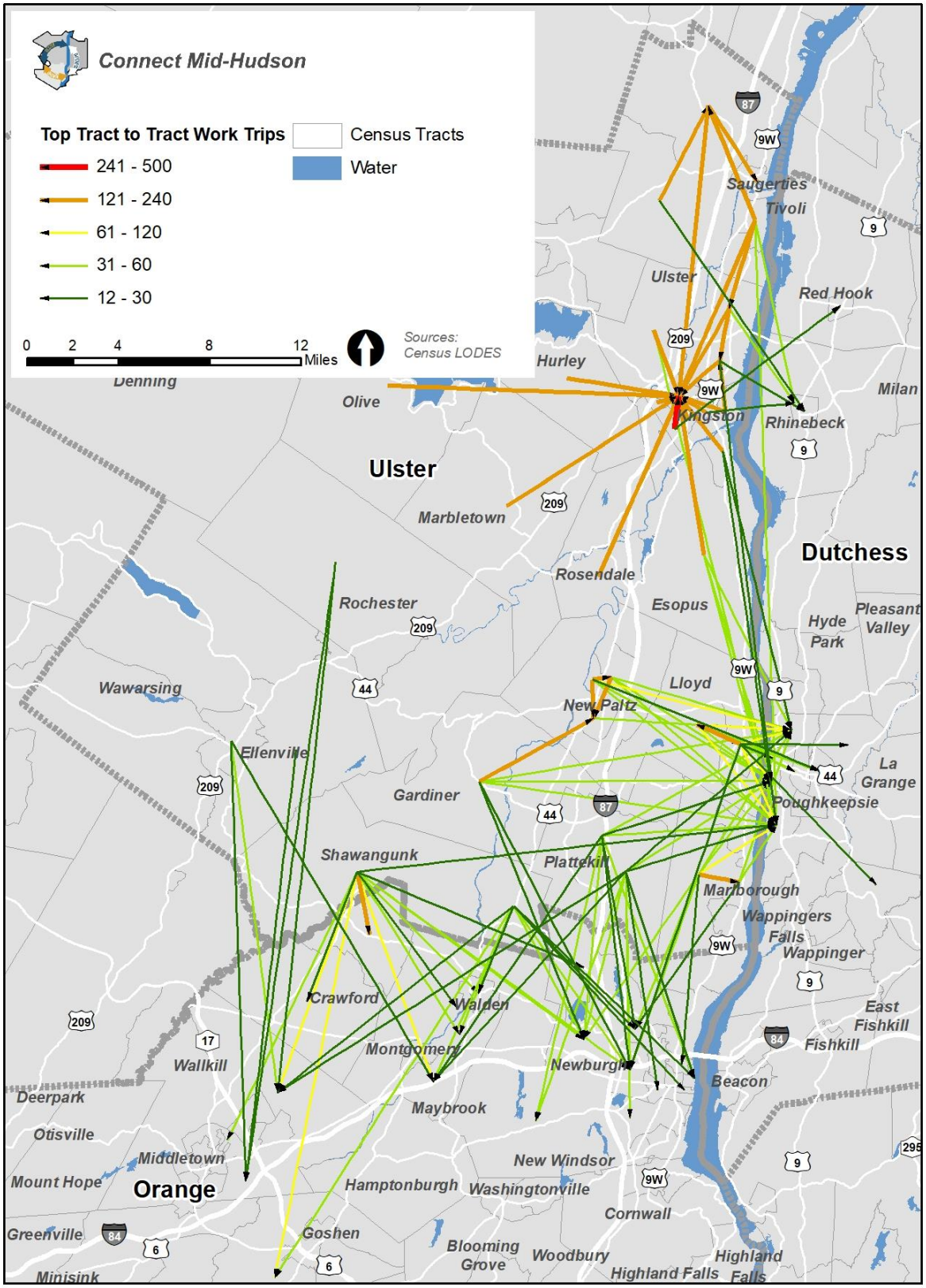


Figure 30: Top Tract-to-Tract Home-to-Work Trips Ulster County to Dutchess County

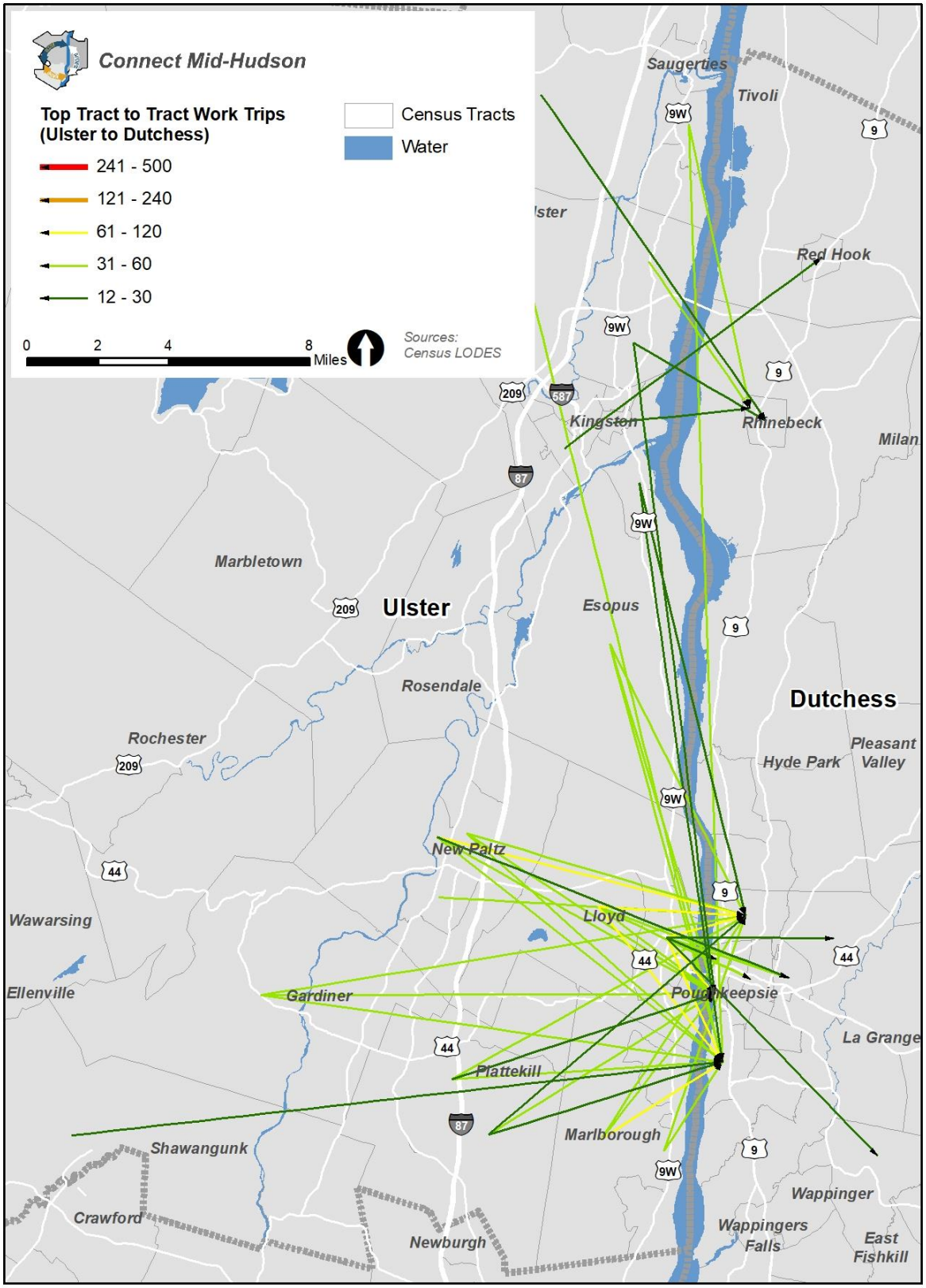


Figure 31: Top Tract-to-Tract Home-to-Work Trips Ulster County to Orange County

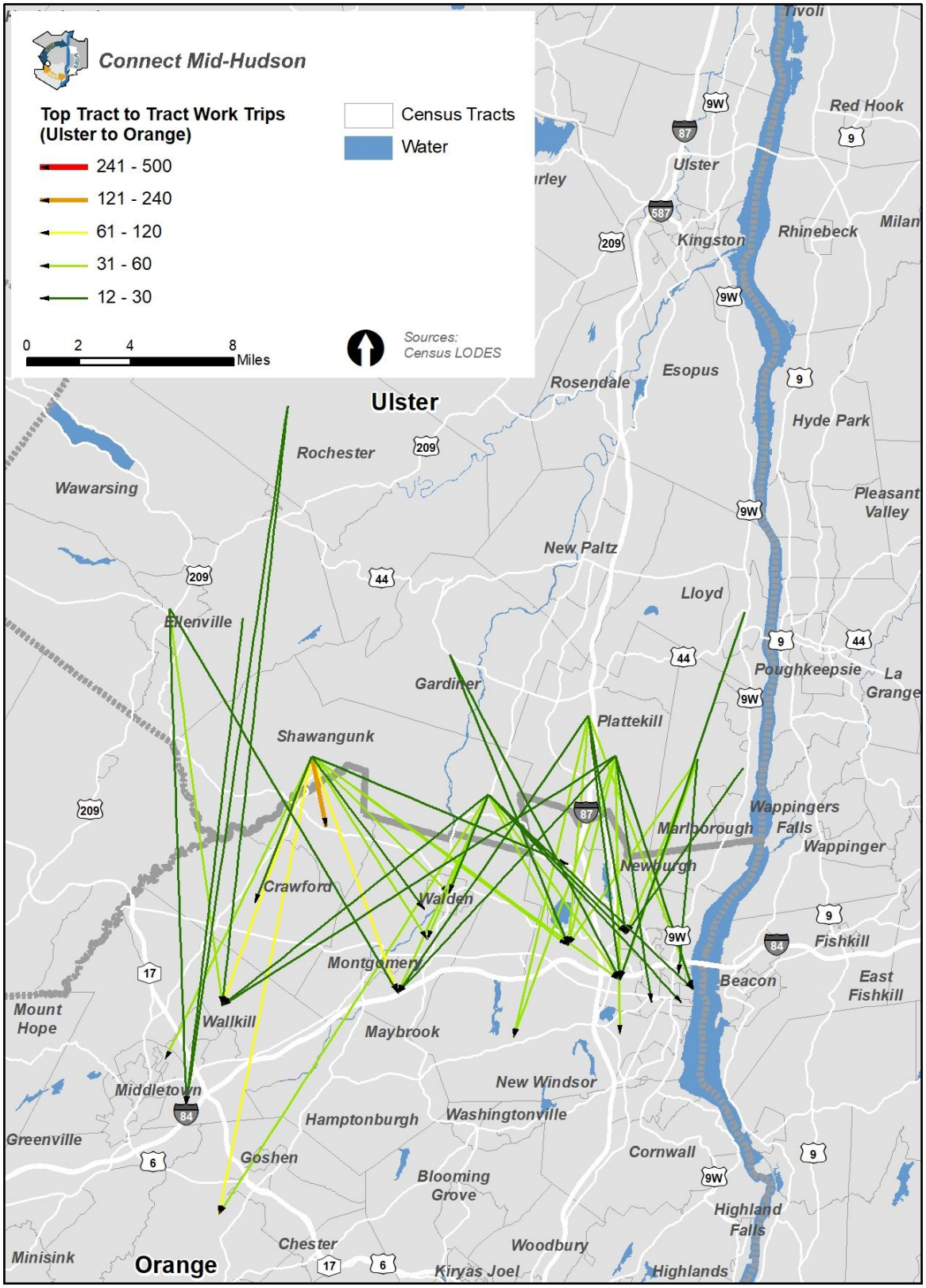
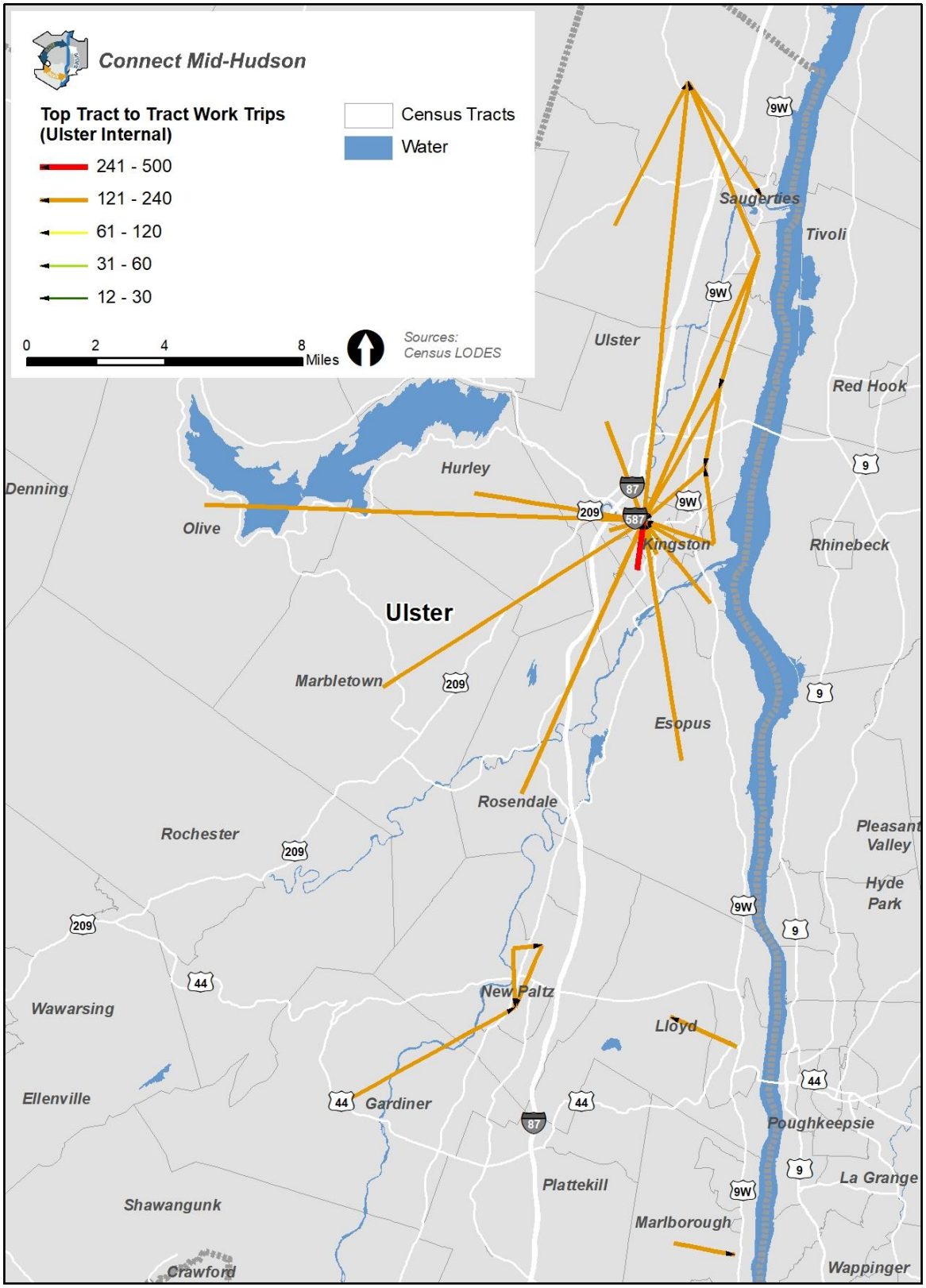


Figure 32: Top Tract-to-Tract Home-to-Work Trips Ulster County Internal



1.4. Summary and Conclusions

Overall, the market for commuter transit service in the three-county study area is concentrated along the major highway corridors including I-87, I-84, US-6/SR-17), US-9, and US-9W and to some extent along the rail corridors in Dutchess County (Poughkeepsie south to Beacon and Wassaic south to Pawling) and Orange County (Port Jervis southeast to Harriman). The key takeaways from this analysis include the following:

- Despite the major employment concentration in the lower Hudson Valley, northern New Jersey, and New York City, a significant number of people who live in the three-county study area also work in the three-county study area. This makes the case for more intraregional commuter transit services, as many of the existing services are focused on serving New York City.
- In addition to there being a significant number of people who both live and work in the three-county study area, there are also a signficant number of people who both live and work in the same county. Many of these trips could be accommodated using local transit networks, particularly those to Kingston and Poughkeepsie.
- Overall, the matrix presented as **Error! Reference source not found.** summarizes the connections that have prevalent home-to-work trips between them and therefore would benefit from having commuter transit service. Whereas Dutchess County and Orange County both have a significant number of work commutes to areas outside the three-county study area (mainly Rockland County, Westchester County, and New York County, which make up about 18 percent of workplaces for residents of each county), Ulster County work commutes are primarily contained to the three-county study area.

Table 3: Matrix of Potential Commuter Transit Connections

	From:	Dutchess County					Ulster County				Orange County					
To:		Rhinebeck	Poughkeepsie/ Hyde Park	Poughkeepsie/ Wappinger	Beacon/ Fishkill	East Fishkill	Saugerties	Kingston	New Paltz	Wallkill	Newburgh	Walden/ Montgomery	Middletown	Goshen	Kiryas Joel/ Harriman/ Woodbury	Warwick
Dutchess County	Rhinebeck	■					■	■								
	Poughkeepsie/Hyde Park		■	■					■							
	Poughkeepsie/Wappinger		■	■					■							
	Beacon/Fishkill				■											
	East Fishkill															
Ulster County	Saugerties															
	Kingston						■	■								
	New Paltz															
	Wallkill															
Orange County	Newburgh									■						
	Walden/Montgomery											■				
	Middletown									■			■			
	Goshen									■						
	Kiryas Joel/Harriman/Woodbury														■	
	Warwick															■
Westchester County	Peekskill/Buchanan				■	■										
	Katonah		■	■		■										
	Yorktown Heights		■	■		■										
	White Plains		■	■		■										
Rockland County	New City													■	■	
	Suffern													■	■	
New York County	Midtown Manhattan		■	■							■				■	
	Downtown Manhattan		■	■	■								■			■

Dark grey cells signify origins and destinations that have prevalent home-to-work trips between them and therefore would benefit from having commuter transit service