Section 4. County Profile

This profile describes the general information of the County (physical setting, population and demographics, general building stock, and land use and population trends) and critical facilities located within Monroe County. In Section 5, specific profile information is presented and analyzed to develop an understanding of the County, including the economic, structural, and population assets at risk and the concerns that may be present related to hazards analyzed (for example, a high percentage of vulnerable persons in an area).

4.1 General Information

4.1.1 History

Formerly a portion of Genesee and Ontario Counties, Monroe County officially became its own county on February 23, 1821, a namesake of President James Monroe. Following the Revolutionary War, people from New England, Maryland, and Pennsylvania came to settle the Genesee River Valley, bringing their knowledge of agriculture and methods of raising cattle and sheep. The settlers built flour and grist mills on the numerous small streams and along the Genesee River.

Prior to American settlement, the Algonquin, Seneca, and Iroquois tribes inhabited the land that is currently Monroe County. The Seneca, who joined the League of the Iroquois, controlled the major east-west and north-south trade routes in that region and were thus known as the "Keepers of the Western Door." Ownership of the land was taken from both tribes in the Phelps and Gorham Purchase in 1788 and the Treaty of Big Tree in 1797. The former was when the Iroquois sold all rights to their land between Seneca Lake and the Genesee River to Oliver Phelps and Nathaniel Gorham, both of Massachusetts, who later defaulted on the purchase. The latter agreement, the Treaty of Big Tree, was formed between the Seneca Nation and the United States, in which the Seneca signed over rights to all territory west of the Genesee River, excluding 12 small tracts of land, for the price of $100,000 (SUNY Oswego, Date Unknown).

Early European settlement in the County was divided by the Genesee River, with settlements in the east becoming part of the Town of Northfield and those to the west becoming the Town of Northampton. Rapid population growth in the ensuing years altered both towns. On the eastern side of the river, Northfield became Boyle, which split in 1810 to form Penfield, then Perinton in 1812, both Brighton and Pittsford in 1814, and then Henrietta in 1818. Mendon was formed from Bloomfield in 1812 and Rush was created out of Avon in 1818. Irondequoit was formed in 1839 and Webster in 1840. Similar divisions took place on the west side of the river as Northampton split to form Parma and Riga in 1808, Gates in 1812, Sweden in 1813, Ogden in 1817, Clarkson in 1819, and Greece and Chili in 1822. Wheatland was formed in 1821 by a split from Southampton. Union was formed in 1853, and later became Hamlin in 1861.

Before 1821, the towns on both sides of the river were all part of either Ontario or Genesee counties, requiring all transactions to be recorded in the County seats, far from their homes and businesses. The City of Rochester (at that time, known as the Village of Rochesterville) was already a booming mill town, the focal point of settlements and economies in the surrounding towns and villages. At the time of the County's founding, the Village of Rochesterville became the County seat and a Board of Supervisors was elected by the original 14 towns of the new county.

The year 1823 saw the birth of the City of Rochester and was also the year that the first 800-foot (244 m) Erie Canal aqueduct was constructed over the Genesee River, linking north-south trade along the Hudson River in eastern New York State to the potential of larger east-west trade through the Great Lakes and beyond. The completion of the Erie Canal in 1825 created unprecedented economic opportunity for Monroe County farmers

and mills in the City of Rochester. The importance of wheat farming grew as the Erie Canal facilitated the shipment of products to the Port of New York, allowing goods and commodities to be shipped by water almost anywhere in the world. Monroe County's canal system is 42.8 miles long, and has supported many industries in the County's history, from flour, lumber, and nursery flowers to the modern industries of technology, recreation, and innovation.

Soon after the Erie Canal east to the Hudson River was opened in 1825, the County's economy boomed around the burgeoning industries in the Rochester area, and the population soared accordingly. By 1830, the population of the City of Rochester hit 9,200, and the city gained national recognition as "The Young Lion of the West." The prosperous economy soon led to another nickname for the city, the Flour City, based on the numerous flour mills lining the Genesee River within its borders. Less than a decade after the opening of the Erie Canal, roughly 20 mills were producing 44,000 tons of flour annually; the population of Rochester reached 13,500; and the city area expanded to 4,000 acres (16 km²). By the mid-19th Century, Rochester was the 21st largest city in the United States. Westward expansion had shifted the focus of farming out of New York State and Monroe County's importance as the center for flour milling had deteriorated. However, a nursery and seed industry (started decades earlier by William A. Reynolds in Rochester) began to flourish, and several Rochester seed companies had grown to some of the largest in the world, the largest of which was the Ellwanger & Barry Nursery Co. As a result, the City of Rochester took yet another nickname, and was thereafter known as the Flower City.

Monroe County played an important history in the American abolition movement, and in the Civil War. In 1847, former slave and abolitionist leader Fredrick Douglass began publishing a newspaper "The North Star" out of Rochester. Douglass gave some of his most famous anti-slavery speeches while in Rochester, as did other renowned abolitionists including Susan. B. Anthony and William Lloyd Garrison. Elsewhere in the County in those years leading up to the Civil War, citizens were opening up their homes and places of business to shelter fugitive slaves as part of the Underground Railroad. Along with the City of Rochester, such safe houses were reportedly located in the Towns of Brighton, Pittsford, Mendon, Webster, and Chili (Coles 2005). Rochester had emerged as a center for culture, society, and education, and the University of Rochester was founded in 1850.

Later in the 19th century, another form of railroad made its mark on the County. Five freight and passenger railroads passed through Rochester by the middle of the 1890s, expanding on the County's already convenient systems of canals and roadways connecting Monroe County residents and businesses to cities and markets throughout the eastern United States. Inter-urban electric railroads came to Monroe County in the first decade of the 20th century, which included the Rochester, Lockport and Buffalo Railroad, and the Rochester, Syracuse and Eastern Rapid Railroad.

Modern-day Monroe County has come a long way from its early agricultural and milling start, and now prides itself on high-technology industries, manufacturing, and educational institutions. Both the Eastman Kodak and Bausch & Lomb Corporations have their world headquarters in the County, as do manufacturing facilities such as General Motors, Xerox, and ITT Automotive. Furthermore, the University of Rochester, the Rochester Institute of Technology, the National Institute for the Deaf, and five other institutions of higher learning are located in Monroe County.

Today, the County is comprised of 31 municipalities – one city, 20 towns, and ten villages (one of which, East Rochester, is conterminous with the town). The towns and villages of Monroe County are presented in Table 4-1.

Table 4-1. Monroe County Political Jurisdictions

City	Village	
City of Rochester	Village of Brockport Village of Churchville Village of Fairport Village of Hilton Village of Honeoye Falls	Village of Pittsford Village of Scottsville Village of Spencerport Village of Webster
Towns		
Town of Brighton Town of Chili Town of Clarkson Town/Village of East Rochester Town of Gates Town of Greece Town of Hamlin	Town of Henrietta Town of Irondequoit Town of Mendon Town of Ogden Town of Parma Town of Penfield Town of Perinton	Town of Pittsford Town of Riga Town of Rush Town of Sweden Town of Webster Town of Wheatland

4.1.2 Physical Setting

This section presents the physical setting of Monroe County, including its location, topography, hydrography and hydrology, climate, and land use and land cover.

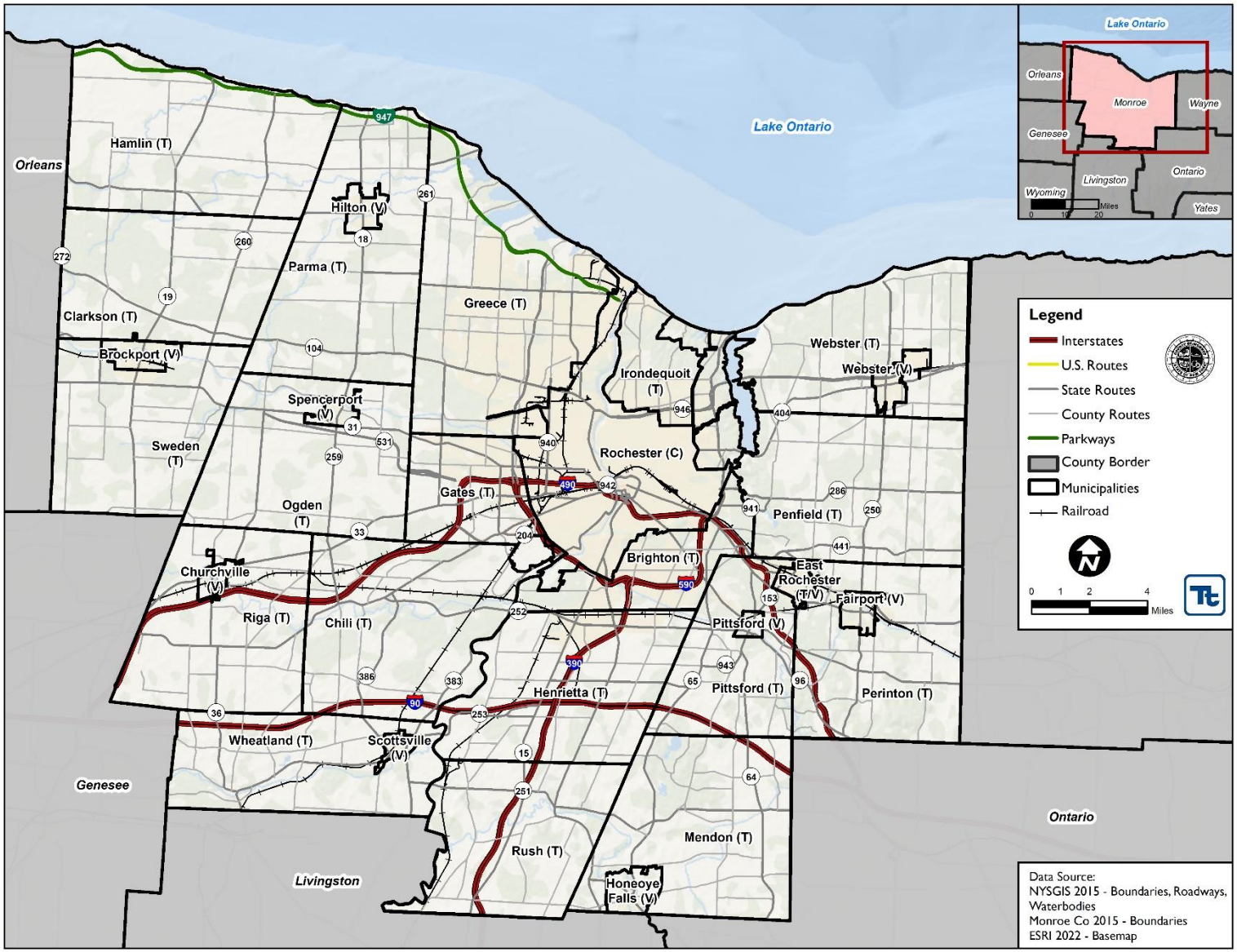
Location

Monroe County lies in the north-central portion of western New York, northeast of Buffalo and northwest of Syracuse, sharing its northern border with the United States border marked by Lake Ontario. Orleans and Genesee Counties form its western boundary, Livingston County marks the southern border with Ontario County to the southeast, and Wayne County shares a border to the east. Figure 4-1 displays Monroe County and its municipalities.

Lake Ontario, one of the Great Lakes, is a predominant feature in Monroe County, as it forms the northern border of the City of Rochester and the Towns of Hamlin, Parma, Greece, Irondequoit, and Webster; and is an important aesthetic, economic, environmental, and cultural resource for the County. The Genesee River is also significant, as it bisects the County into eastern and western sections, running directly through the heart of the City of Rochester and draining to Lake Ontario in the Town of Irondequoit. Topography ranges from gentle rolling hills in the northern parts of the County to steeper slopes and moderately rolling hills in the southern sections.

Monroe County itself is 1,367 square miles with 4,648 miles of road that wind across the County. Interstates (I)-90, I-390, I-490, and I-590 are the primary routes of travel through Monroe County. I-90, built in Monroe County as part of the New York State Thruway in the 1950s, traverses the County from the east to the west through the southern section, passing through the Towns of Wheatland, Chili, Henrietta, Pittsford, and Mendon. In the Town of Henrietta, I-90 intersects with I-390, major north-south route carrying traffic up from Livingston County and other points south and bisecting Monroe County, skirting the City of Rochester to the west and ending near the shores of Lake Ontario where the road continues as the Lake Ontario State Parkway. I-490 is the third major route option for travelers in Monroe County, an auxiliary highway offering a direct route into the City of Rochester from where it splits from I-90 on both the southeastern and southwestern corners of the County. I-490 was constructed in the 1950s along the original path of the Erie Canal through the City of Rochester. Its route serves the Villages of Churchville and Pittsford, among others. It connects with I-390 and New York State Route 390 (NY 390) just west of the City of Rochester and I-590 and NY 590 to the east of the City. Together, these roads comprise the southernmost portion of the Inner Loop Beltway, which circles around the interior of Rochester. State Route 531 connects I-490 to western suburbs including the Towns of Ogden and Gates, and the Villages of Brockport and Spencerport.

Figure 4-1. Monroe County, New York Mitigation Plan Area



Additionally, State Routes 104, 33, 31, and 36 connect the County to its eastern western, and southern neighbors. SR 104 and SR 31 run east west through the northern and central section of the County, respectively. SR 36 begins at the terminus of SR 531 in the Town of Ogden and runs south through the Town of Riga and Wheatland before connecting with Livingston County. SR 33 connects SR 31 in the City of Rochester directly to the City of Buffalo to the west. Often paralleling I-490 along its segments in Monroe County, SR 33 is mostly a rural highway serving local traffic.

Hydrography and Hydrology

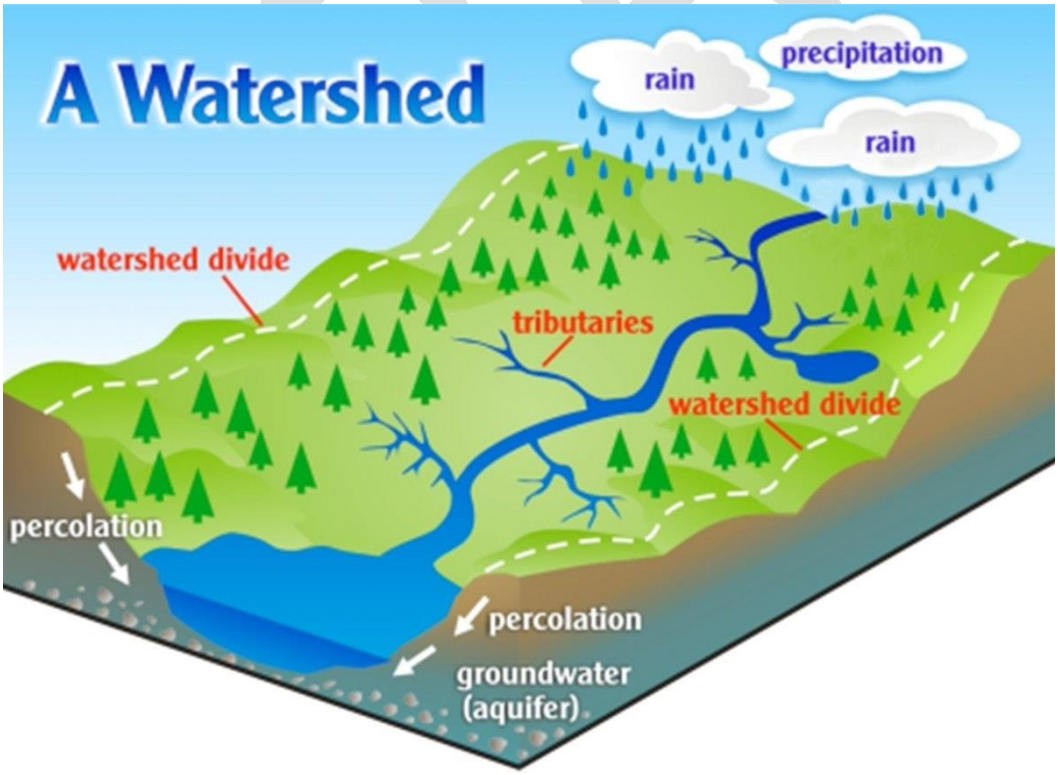
Major waterways in Monroe County include the Genesee River, Black Creek, Honeoye Creek, Irondequoit Creek, Oatka Creek, and Shipbuilders Cree. In addition to many creeks and ponds, Lake Ontario provides the northern border of the County. Irondequoit Bay is fed by Irondequoit Creek, between the towns of Irondequoit and Webster.

Watersheds

A watershed is the area of land that drains into a body of water such as a river, lake, stream, or bay. It is separated from other systems by high points in the area such as hills or slopes. It includes not only the waterway itself but also the entire land area that drains to it. For example, the watershed of a lake would include not only the streams entering the lake but also the land area that drains into those streams and eventually the lake. Drainage basins generally refer to large watersheds that encompass the watersheds of many smaller rivers and streams. Figure 4-2 depicts the hydrologic system of a watershed (NYCDEP 2015).

Watersheds come in all shapes and sizes and can cross municipal and county boundaries. New York State's waters (lakes, rivers, and streams) fall within one of 17 major watersheds (or drainage basins).

Figure 4-2. Watershed



Source: Riverside-Corona Resource Conservation District 2022

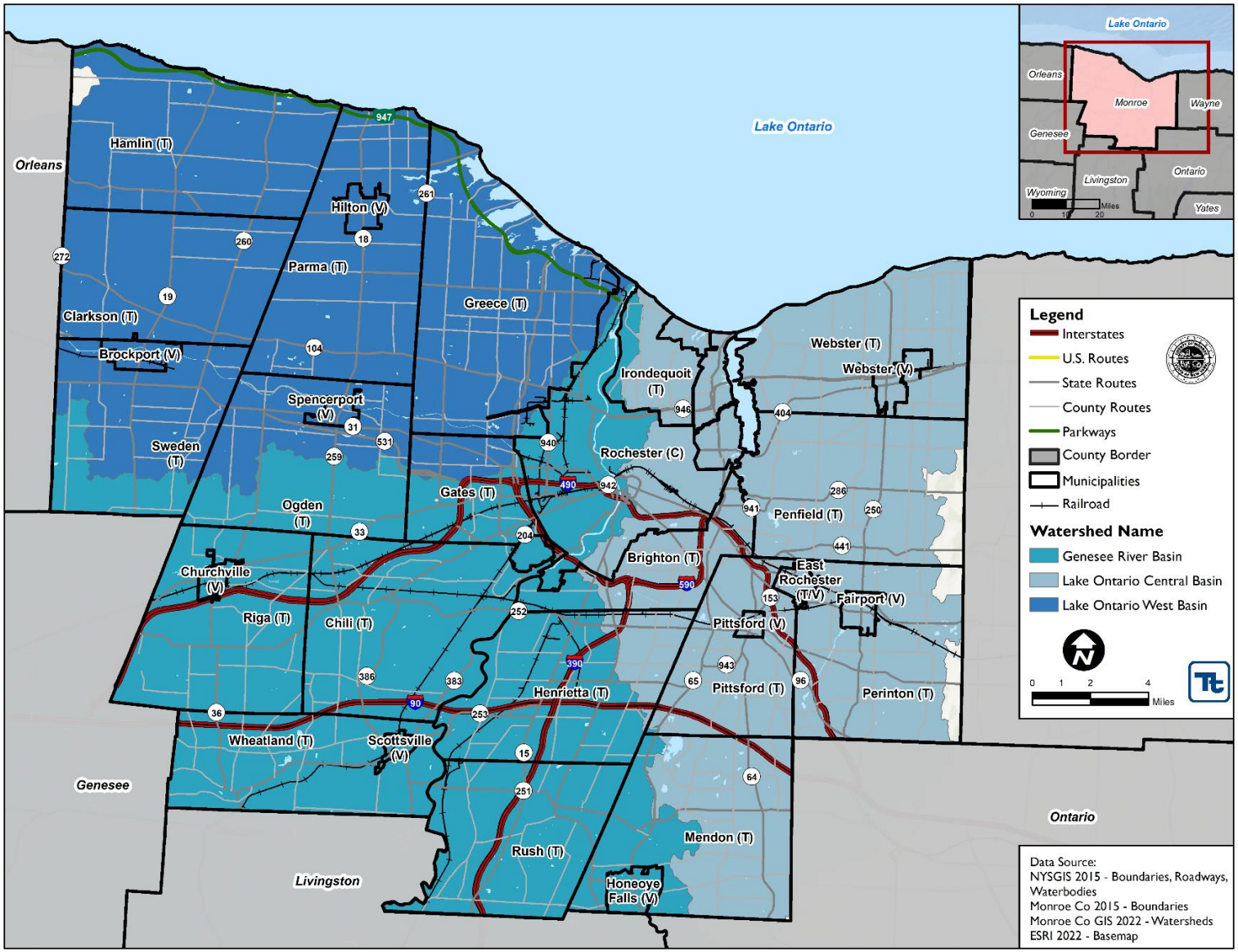
Monroe County creates the landward boundary of the Rochester Embayment of Lake Ontario, a 35-square-mile portion of Lake Ontario between Nine Mile Point in the Town of Webster and Bogus Point in the Town of Parma. At the mouth of the Genesee River, this bay drains approximately 3,000 square miles of upland, including all or parts of ten counties (nine in New York and one in Pennsylvania) including Monroe County. Monroe County drainage into the Rochester Embayment comes from three major sub-basins: The Genesee River Sub-Basin, the Lake Ontario Central Sub-Basin, and the Lake Ontario West Sub-Basin.

Figure 4-4 and Figure 4-3 show the location of watershed and sub watersheds in Monroe County.

Figure 4-3. Sub Watersheds in Monroe County

Source: Monroe County GIS 2015

Figure 4-4. Watersheds in Monroe County



Topography and Geology

Consistent with the rest of western New York, the geography and topography of the land that encompasses Monroe County owes its formation to the thawing of glaciers during the last Ice Age. The region is marked by rolling and rounded hills, often elongated with steeper slopes towards the north and more gradual, gentle slopes towards the south. Elevation ranges from 928 feet above sea level at Baker Hill on the Ontario County line in Perinton Township to 246 feet above sea level along the shores of Lake Ontario and Irondequoit Bay, and the lower course of the Genesee River Soil Survey of Monroe (Crabb 1910).

Most of the geology in the County is the result of glacial debris and sediment left behind after the Ice Age. Bedrock in the area is layered by shale, dolomite, and sandstone, and is overlain by soils of sandy loam, silt loam, and gravelly loam. There is a sharp boundary between soils and bedrock in Monroe County, which is evidence of the glacial activity that characterized the region, as soils were transported to their present location rather than created by gradual weathering of rock over time. Soils in Monroe County originated from glacial rivers, flowing terraces, and alluvial fans. Many boulders found in the region are foreign to the area, transported to Monroe County by the massive glaciers that covered the region. As glaciers receded, streams formed from the melting water and cut through the loose soils creating terraces that can be seen in the valleys of streams around the City of Rochester (Wishart n.d.). As a result of more than a century of agricultural and foresting activity, very little of the original, native vegetation remains in the region.

Climate

The climate of Monroe County is fairly humid, and strongly influenced by its proximity to Lake Ontario and the other Great Lakes. Precipitation is regularly distributed across all seasons in terms of quantity, although the frequency of storms is much greater in the winter months when heavy snowfall events occur at highly irregular intervals over varied distances.

Average yearly temperature is about 48.4° Fahrenheit (F). Lake temperatures stabilize the climate through the spring months, resulting in a relatively dry period, although soils remain wet from winter precipitation. Monroe County's summers are typically warm and sunny, with average temperatures between 70 and 72° F and some rain every third or fourth day. Temperatures at any one place in the County normally exceed 90°F roughly nine times each summer. It is uncommon for air temperatures to reach triple digits; however, higher temperatures combined with humidity may lead to days that feel much hotter (National Weather Service, Buffalo Office 2015).

The stabilizing effect of lake waters again leads to mild and dry autumns, but cold weather moves in by late October bringing clouds and early frosts. Monroe County winters are generally cold, cloudy, and snowy. Cold temperatures prevail whenever arctic air masses, under high barometric pressure, flow southward from central Canada or from Hudson Bay (Cornell University College of Agriculture and Life Sciences 2011), and about half of the region's snowfall comes from the "lake effect" process, which creates localized, variable conditions. Lake effect snowfall impacts the eastern portion of the County the most, due to wind patterns coming off Lake Ontario. Total season snowfall ranges from 70 inches in the southern portions of the County to about 90 inches in the City of Rochester, and over 120 inches along the shores of Lake Ontario in the northeastern part of the County. Monroe County's average annual low temperature is 39.5°F (U.S. Climate Data 2015). On average, temperatures fall below 0°F six nights each winter, and temperatures below -10°F are uncommon (National Weather Service, Buffalo Office 2015).

Land Use and Land Cover

The original primeval forest in Monroe County was a mix of several different forest communities. In general, oak dominated on dry slopes while beech was most prevalent in wetter flatland sites. Other common species included shagbark hickory, tulip tree, red maple, and black cherry. Current vegetation consists of agriculture,

deciduous hardwood forests such as sugar maple, beech, yellow birch, ash, red maple, and white oak (Ramsey Lab 2015).

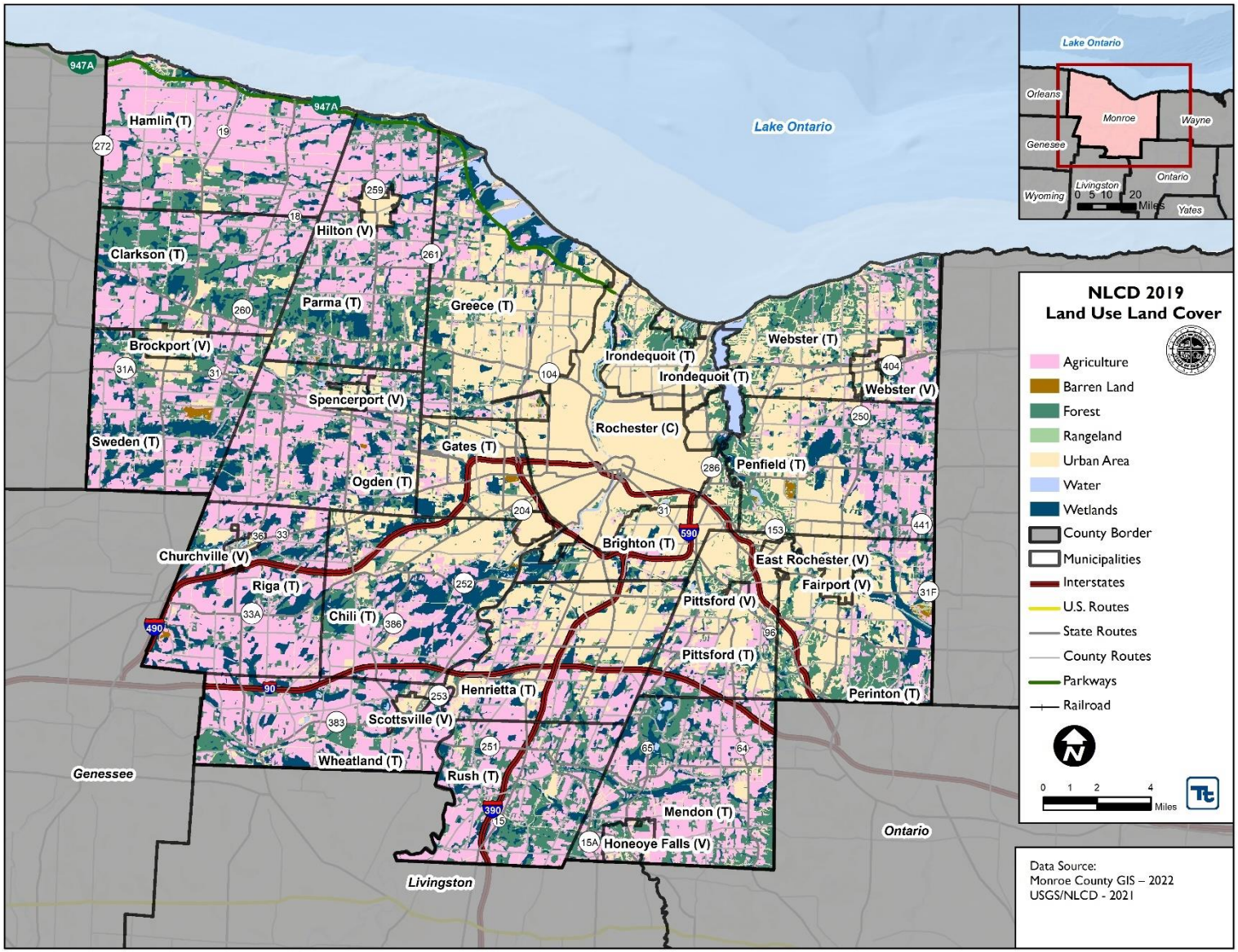
According to the 2020 Monroe Land Use Report published by the Monroe County Department of Planning and Development (MCDPD) Planning Division, the greatest share of land use in Monroe County is residential, with 40.15 percent of all land cover categorized as one of many residential land use categories (in terms of acreage). The next largest shares are agricultural with 21.35 percent, followed by vacant land and commercial, with 15.95 percent and 5.26 percent, respectively. Table 4.2 summarizes the land use categories by the total number of parcels, or properties, in each category. Ranked by number of properties, the top three land uses are Residential with 86.35 percent, Vacant Land with 6.26 percent, and Commercial with 4.67 percent (Monroe County Department of Planning of Development 2022).

Table 4-2. Monroe County 2020 Land Use Classification Table

Property Code	Category Description	Property Count	Count %	Property Acreage	Acreage %
100	Agricultural	1,565	0.59%	83,337.36	21.35%
200	Residential	229,825	86.35%	156,667.47	40.15%
300	Vacant land	16,665	6.26%	62,253.25	15.95%
400	Commercial	12,442	4.67%	20,514.24	5.26%
500	Recreation and entertainment	670	0.25%	11,197.22	2.87%
600	Community services	2,016	0.76%	20,191.98	5.17%
700	Industrial	866	0.33%	7,064.13	1.81%
800	Public services	893	0.34%	8,055.80	2.06%
900	Wild, forested, conservation lands and public parks	360	0.14%	17,695.86	4.53%
No Data	-	845	0.32%	3,267.67	0.84%
Total	**-**	**266,147**	**100%**	**390,254.98**	**100%**

Source: Monroe County Department of Planning of Development 2020

Figure 4-5. Monroe County Land Use and Land Cover



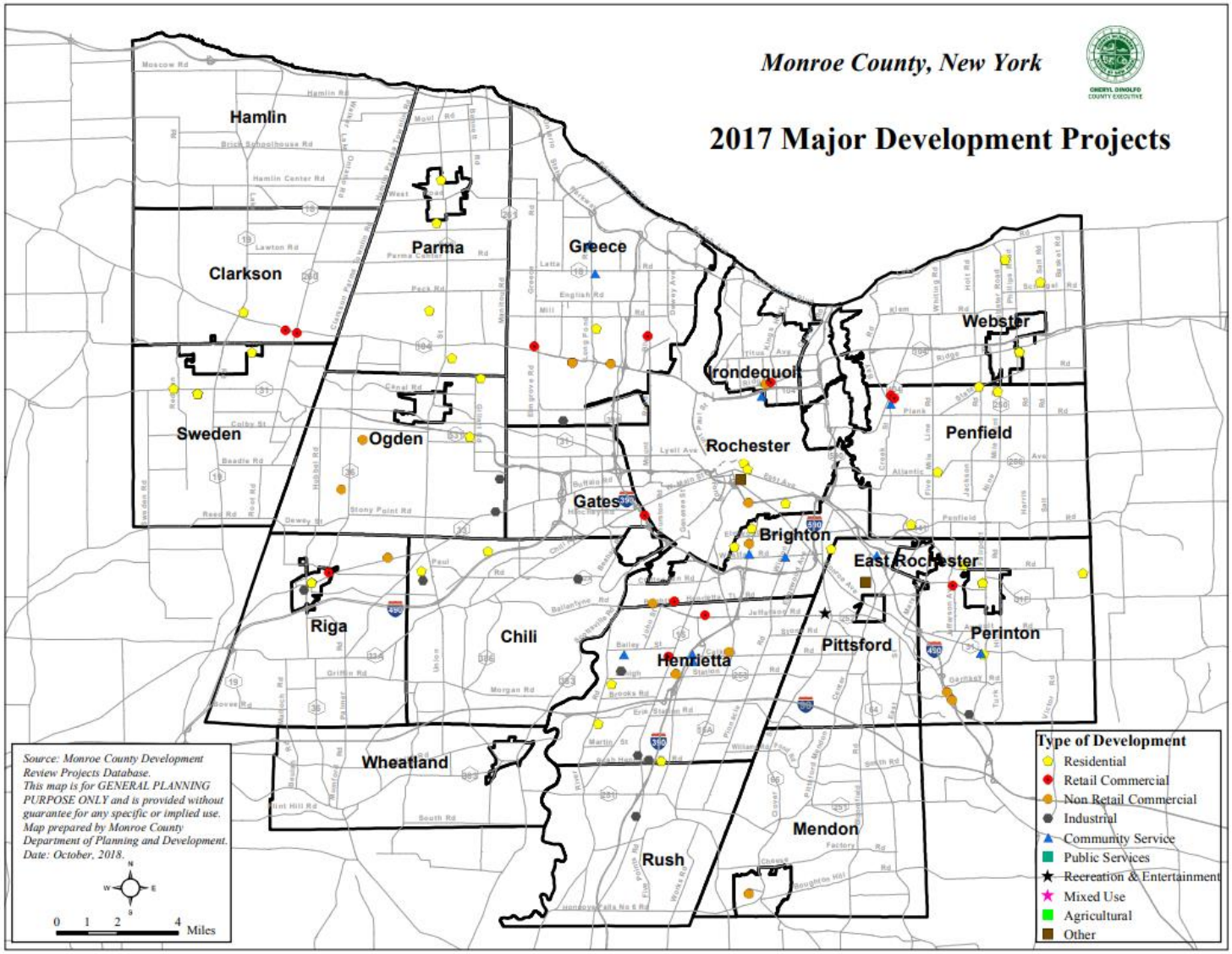
New Development

For new development, the County uses best available data to avoid potential hazard exposure where possible. Additionally, the County intends to (1) discourage development within vulnerable areas, areas with high population density, and the Special Flood Hazard Area (SFHA); and (2) encourage higher regulatory standards at the local level.

In 2020, Monroe County municipalities issued 711 new residential permits compared to 591 in 2019. There were 97 major projects proposed throughout the County in 2020, 2 of which were applications for rezoning (often indicating future development activity). Residential development made up 35 projects, proposing a total of 1,538 residential units. Four of these submitted residential developments were senior housing projects, proposing a total of 224 senior housing units. The Town of Henrietta was the host of the most projects, with 12, followed by the Towns of Greece and Irondequoit with 10 each, City of Rochester with 7, and Gates with 6.

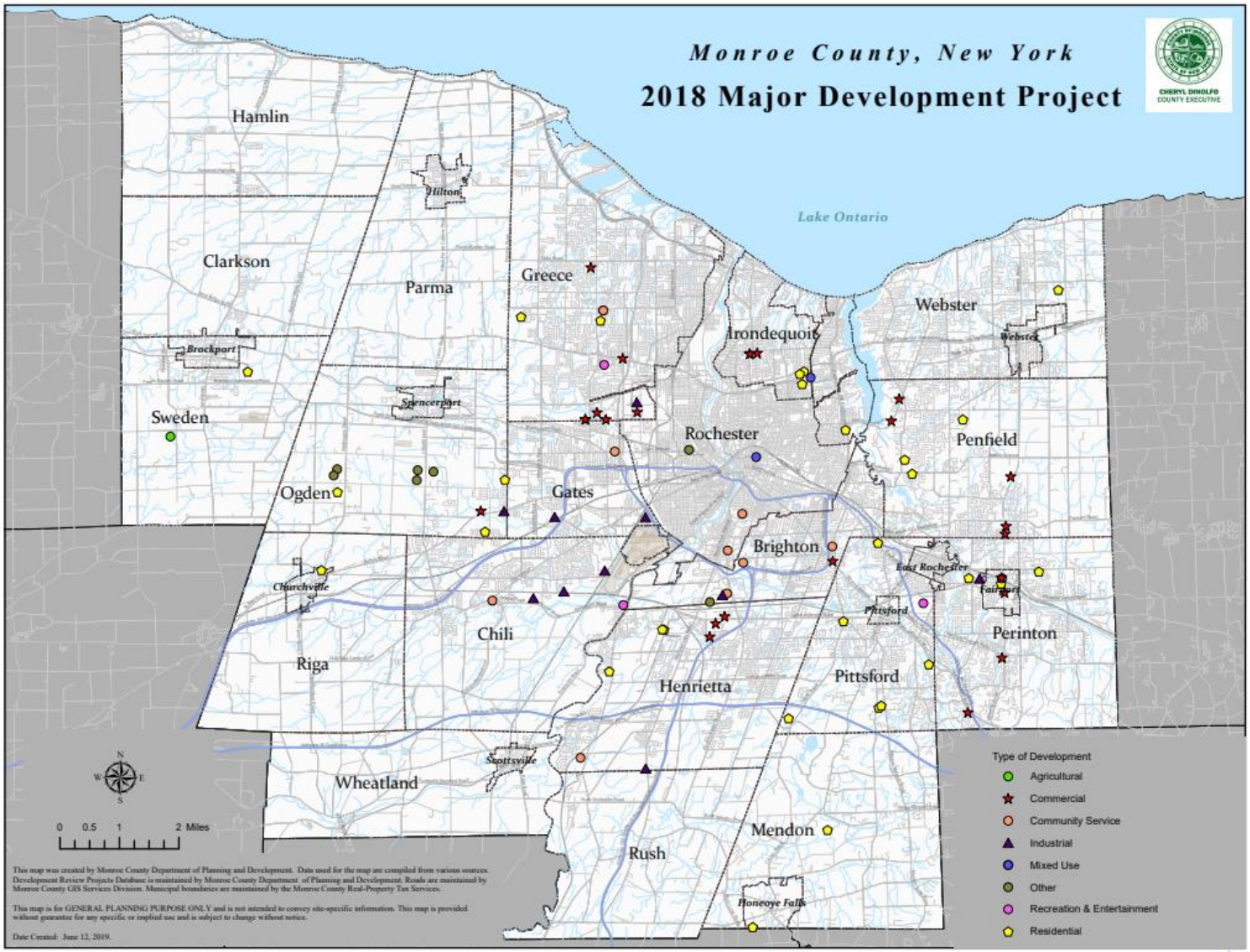
Figure 4 6 through Figure 4 9 show the major development projects in 2017, 2018, 2019, and 2020 (Monroe County Department of Planning of Development 2022). Individual development projects are detailed in Section 9 under each appropriate jurisdictional annex.

Figure 4-6. Monroe County 2017 Major Development Projects



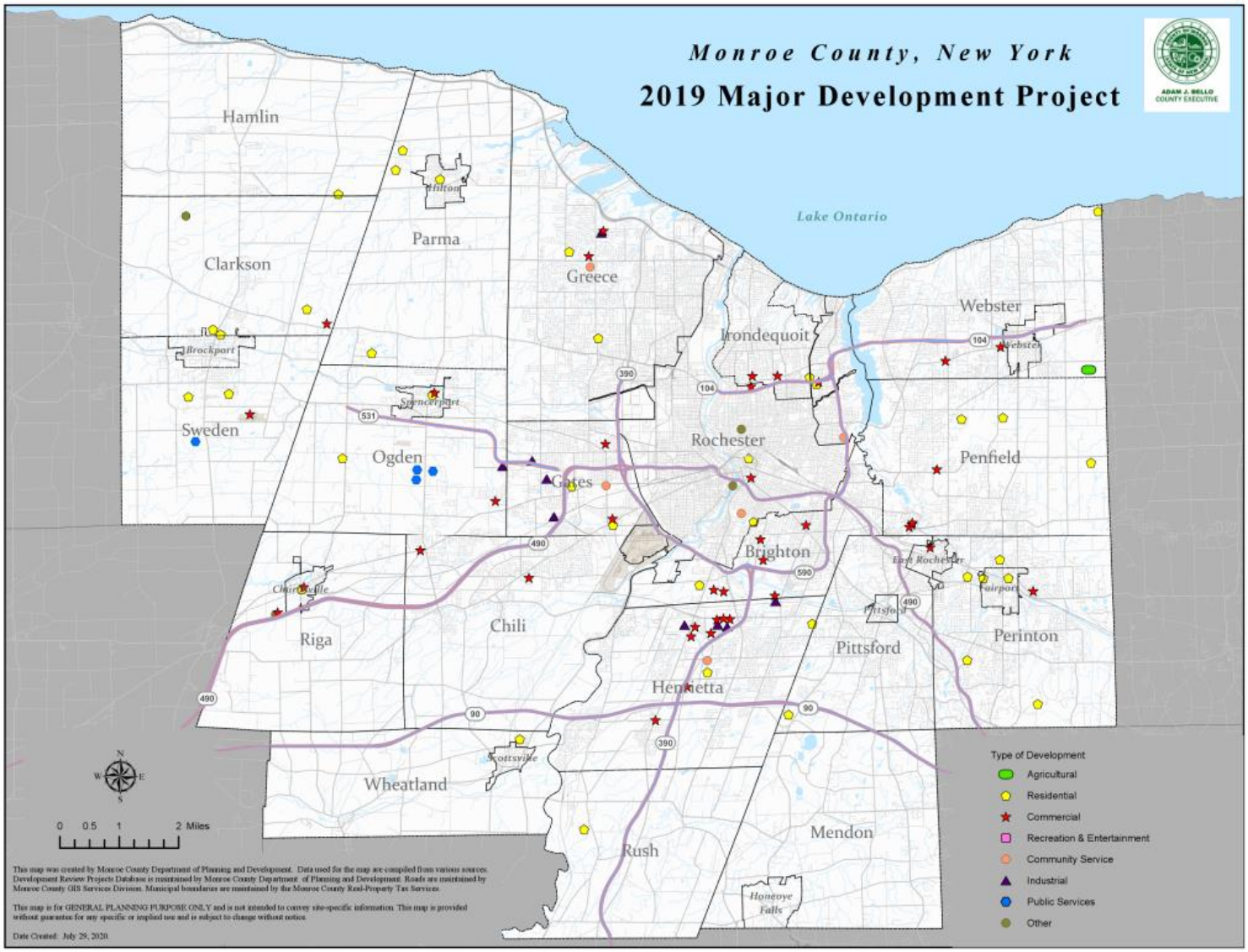
Source: Monroe County Department of Planning of Development 2022

Figure 4-7. Monroe County 2018 Major Development Projects



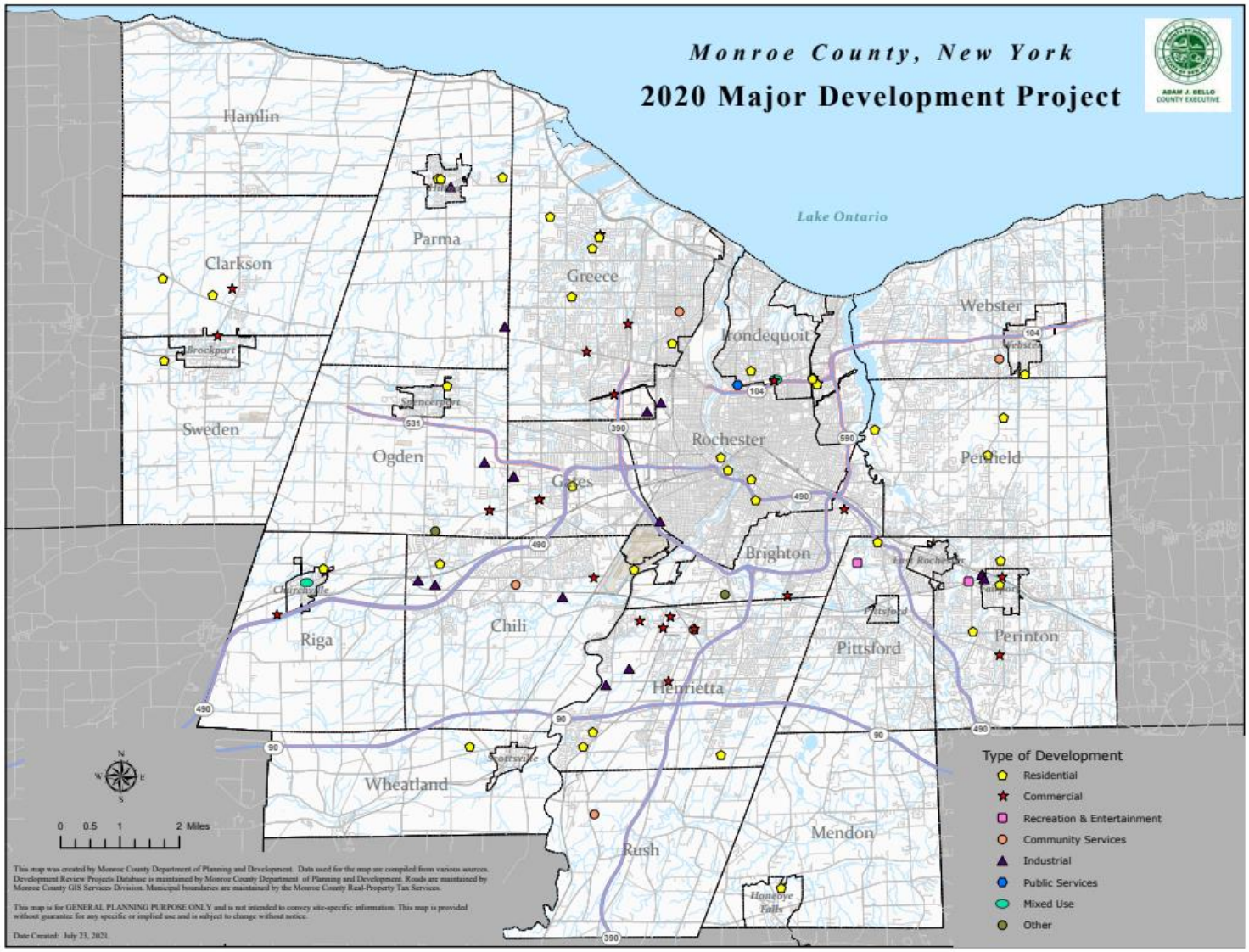
Source: Monroe County Department of Planning of Development 2022

Figure 4-8. Monroe County 2019 Major Development Projects



Source: Monroe County Department of Planning of Development 2022

Figure 4-9. Monroe County 2020 Major Development Projects



Source: Monroe County Department of Planning of Development 2022

4.2 Population and Demographics

According to the 2020 U.S. Census, Monroe County has a population of 753,109 people. Approximately 28.1 percent of that population resides in the City of Rochester. While the overall population of Monroe County has increased by approximately 1.02 percent since 2010, this growth is not geographically uniform throughout the County, with some areas having experienced a decline in population. However, the 2020 U.S. Census data for Hazards-U.S. Multi-Hazard (HAZUS-MH) are believed to be sufficient and appropriate to support the risk assessment and mitigation planning efforts of this project.

The Federal Emergency Management Agency's (FEMA) Disaster Mitigation Act of 2000 (DMA 2000) requires that hazard mitigation plans (HMP) consider socially vulnerable populations. These populations can be more susceptible to hazard events based on a number of factors including their physical and financial ability to react or respond during a hazard, and the location and construction quality of their housing. This HMP considers several socially vulnerable population groups: the elderly (persons over the age of 65), the young (persons under the age of 5), non-English speaking households, those with disabilities, and those living below the poverty level (as defined by the U.S. Census Bureau). Table 4-3 and Table 4-4 present the population statistics for each municipality in the County based on the 2010 and 2020 Census data.

Table 4-3. Monroe County Population and Demographic Statistics, 2010 Census

Municipality	U.S. Census 2010				
	Total	Pop. 65+	% Pop. 65+	Below Poverty Level	% Below Poverty Level
Brighton (T)	36,609	6,421	18%	2,162	6%
Brockport (V)	8,366	686	8%	661	8%
Chili (T)	28,625	4,229	15%	960	3%
Churchville (V)	1,961	287	15%	96	5%
Clarkson (T)	6,588	851	13%	382	6%
East Rochester (T/V)	6,587	800	12%	544	8%
Fairport (V)	5,353	811	15%	344	6%
Gates (T)	28,400	5,327	19%	1,790	6%
Greece (T)	96,095	16,011	17%	5,208	5%
Hamlin (T)	9,045	929	10%	459	5%
Henrietta (T)	42,581	4,964	12%	2,509	6%
Hilton (V)	5,886	789	13%	164	3%
Honeoye Falls (V)	2,674	406	15%	191	7%
Irondequoit (T)	51,692	9,802	19%	3,706	7%
Mendon (T)	6,478	754	12%	18	0%
Ogden (T)	16,255	1,971	12%	331	2%
Parma (T)	9,747	1,360	14%	314	3%
Penfield (T)	36,242	6,342	18%	1,094	3%
Perinton (T)	41,109	6,940	17%	1,415	3%
Pittsford (T)	28,050	4,909	18%	616	2%
Pittsford (V)	1,355	231	17%	31	2%
Riga (T)	3,629	434	12%	176	5%
Rochester City	210,565	18,955	9%	29,978	14%
Rush (T)	3,478	588	17%	110	3%
Scottsville (V)	2,001	287	14%	68	3%
Spencerport (V)	3,601	497	14%	215	6%
Sweden (T)	5,957	765	13%	376	6%
Webster (T)	37,242	6,028	16%	1,424	4%
Webster (V)	5,399	842	16%	342	6%
Wheatland (T)	2,774	378	14%	154	6%
Monroe County	**744,344**	**103,594**	**14%**	**55838**	**8%**

Source: HAZUS-MH 2.2; U.S. Census Bureau, Census 2010; U.S. Census Bureau, Census 2020

Table 4-4. Monroe County Population and Demographic Statistics 2020 Census, American Community Survey 5-Year Estimates

Municipality	U.S. Census 2020*										
	Total	Over 65	Percent of Jurisdiction Total	Under 5	Percent of Jurisdiction Total	Non-English-Speaking Households	Percent of Jurisdiction Total	Disability	Percent of Jurisdiction Total	Poverty Level	Percent of Jurisdiction Total
Brighton (T)	37,137	7,492	20.2%	1,294	3.5%	498	1.3%	3,740	10.1%	3,605	9.7%
Brockport (V)	7,104	1,091	15.4%	120	1.7%	7	0.1%	0	0.0%	1,029	14.5%
Chili (T)	29,123	5,566	19.1%	1,580	5.4%	214	0.7%	3,441	11.8%	1,710	5.9%
Churchville (V)	2,091	423	20.2%	127	6.1%	0	0.0%	316	15.1%	101	4.8%
Clarkson (T)	6,904	1,314	19.0%	379	5.5%	34	0.5%	955	13.8%	783	11.3%
East Rochester (T/V)	6,334	1,135	17.9%	380	6.0%	19	0.3%	960	15.2%	581	9.2%
Fairport (V)	5,501	1,104	20.1%	113	2.1%	15	0.3%	871	15.8%	759	13.8%
Gates (T)	29,167	5,954	20.4%	1,611	5.5%	402	1.4%	4,318	14.8%	2,125	7.3%
Greece (T)	96,926	18,651	19.2%	4,677	4.8%	1,159	1.2%	14,305	14.8%	8,908	9.2%
Hamlin (T)	8,725	1,537	17.6%	710	8.1%	25	0.3%	1,296	14.9%	670	7.7%
Henrietta (T)	47,096	6,295	13.4%	2,197	4.7%	516	1.1%	5,239	11.1%	5,222	11.1%
Hilton (V)	6,027	782	13.0%	483	8.0%	0	0.0%	675	11.2%	661	11.0%
Honeoye Falls (V)	2,706	549	20.3%	93	3.4%	0	0.0%	281	10.4%	239	8.8%
Irondequoit (T)	51,043	11,605	22.7%	2,231	4.4%	530	1.0%	7,105	13.9%	3,966	7.8%
Mendon (T)	6,389	958	15.0%	536	8.4%	0	0.0%	345	5.4%	181	2.8%
Ogden (T)	16,585	2,664	16.1%	725	4.4%	50	0.3%	1,946	11.7%	1,185	7.1%
Parma (T)	10,190	1,811	17.8%	379	3.7%	20	0.2%	905	8.9%	562	5.5%
Penfield (T)	39,438	7,583	19.2%	2,187	5.5%	231	0.6%	3,588	9.1%	1,598	4.1%
Perinton (T)	39,128	8,731	22.3%	2,364	6.0%	222	0.6%	3,743	9.6%	1,661	4.2%
Pittsford (T)	25,714	4,857	18.9%	1,267	4.9%	101	0.4%	1,761	6.8%	473	1.8%
Pittsford (V)	1,419	246	17.3%	92	6.5%	0	0.0%	40	2.8%	23	1.6%
Riga (T)	3,495	506	14.5%	286	8.2%	0	0.0%	315	9.0%	253	7.2%
Rochester City	211,328	23,947	11.3%	13,203	6.2%	5,737	2.7%	37,911	17.9%	60,015	28.4%
Rush (T)	3,490	894	25.6%	113	3.2%	0	0.0%	374	10.7%	151	4.3%
Scottsville (V)	2,009	368	18.3%	178	8.9%	7	0.3%	250	12.4%	320	15.9%
Spencerport (V)	3,685	643	17.4%	201	5.5%	0	0.0%	322	8.7%	193	5.2%
Sweden (T)	6,140	1,059	17.2%	478	7.8%	58	0.9%	1,672	27.2%	942	15.3%
Webster (T)	39,676	8,368	21.1%	2,112	5.3%	292	0.7%	4,599	11.6%	1,521	3.8%
Webster (V)	5,651	1,059	18.7%	109	1.9%	211	3.7%	859	15.2%	701	12.4%
Wheatland (T)	2,888	396	13.7%	226	7.8%	0	0.0%	367	12.7%	346	12.0%
Monroe County	**753,109**	**127,588**	**16.9%**	**40,451**	**5.4%**	**10,348**	**1.4%**	**102,499**	**13.6%**	**100,484**	**13.3%**

Source: HAZUS-MH 2.2; U.S. Census Bureau, Census 2020
*Notes: * 2020 data includes estimates of population percentages based on the 2020 American Community Survey 5-year Estimates*

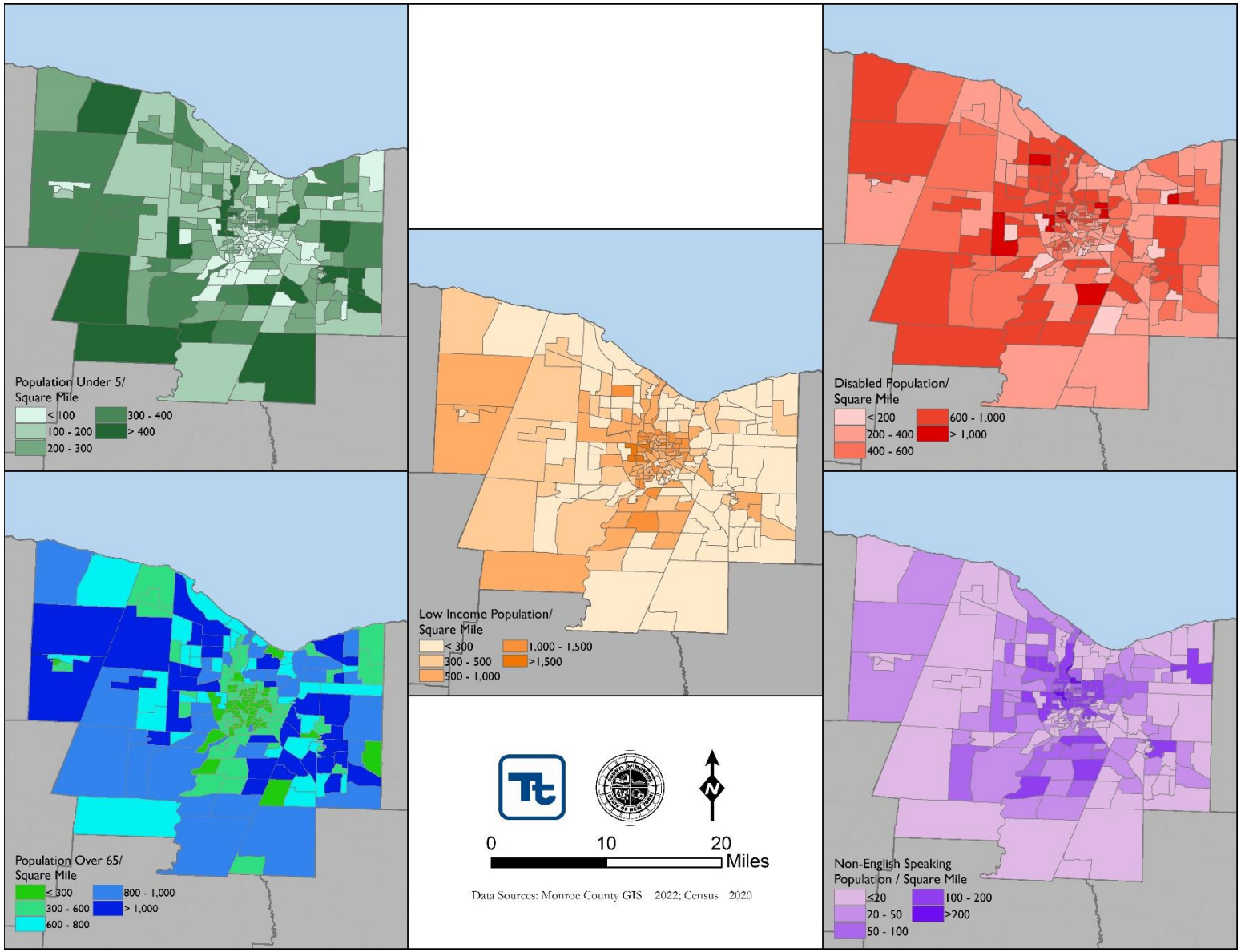
4.2.1 Socially Vulnerable Populations

The Federal Emergency Management Agency's (FEMA) Disaster Mitigation Act of 2000 (DMA 2000) requires that hazard mitigation plans (HMP) consider socially vulnerable populations. These populations can be more susceptible to hazard events based on a number of factors including their physical and financial ability to react or respond during a hazard, and the location and construction quality of their housing. This HMP considers several socially vulnerable population groups: the elderly (persons over the age of 65), the young (persons under the age of 5), non-English speaking households, those with disabilities, and those living below the poverty level (as defined by the U.S. Census Bureau). Refer to Table 4-3 and Table 4-4 for population statistics for these socially vulnerable populations, for each municipality in the County based on the 2010 and 2020 Census data.

16.9 percent of the Monroe County population is over the age of 65. 5.4 percent of the population in the County is under the age of 5. The 2020 U.S. Census data indicate a total of 13.9 percent of all persons living in households fall below the poverty level (Census 2020).

Figure 4-10 shows the distribution of the general population density (persons per square mile) for persons under 5 years of age, persons over 65 years of age, low-income population, the disabled population, and the non-English speaking population.

Figure 4-10. Distribution of Socially Vulnerable Population by Census Block for Monroe County



1.4 percent of the County's residents live in non-English speaking households (Census 2020). Monroe County averages 8.5 percent of its population characterized as "foreign born." The City of Rochester is a sanctuary city and welcomes refuges from Somalia, Cuba, Bhutan, Iraq, Congo, and Burma primarily (Monroe County Department of Health 2019).

The City of Rochester has a large population of Deaf sign language users and many older adults with hearing loss. Rochester Institute of Technology (RIT) estimates that in the Rochester area there are 42,674 people who are deaf or have serious difficulty hearing, including 19,438 persons younger than 65 years old (National Technical Institute for the Deaf 2012). The Rochester School for the Deaf works with deaf and hard-of-hearing children and their families. The National Technical Institute for the Deaf D is the largest technical college for deaf and hard-of-hearing students in the country, with approximately 1,400 students. The critical mass of Deaf people influences the local Rochester economy, and many local companies hire qualified Deaf people for blue-collar and white-collar jobs, and local service industries, such as restaurants, are comfortable with Deaf customers. University of Rochester research and clinical training programs include Deaf graduate students, medical students, and fellows. Deaf people migrate to Rochester, attracted by the economic, social, and educational opportunities (Monroe County Department of Health 2019).

4.3 General Building Stock

According to 2020 Census data, 305,210 households are located in Monroe County. A household includes all the people who occupy a housing unit as their usual residence. The Census data identified 338,052 housing units in the county. A housing unit is a house, apartment, mobile home or trailer, a group of rooms, or a single room occupied as separate living quarters (or if vacant, intended for occupancy as separate living quarters). According to the 2020 Census, there are 19,301 vacant housing units in the County (U.S. Census 2020).

For this update, the default general building stock in HAZUS-MH was updated and replaced with a custom building inventory for Monroe County both at the aggregate and structure level. The building stock update was performed using the most current parcel and the New York State Department of Taxation and Finance tax assessment data provided by Monroe County. The tax assessment data was joined to the spatial layer of structure footprints also provided by the County. The replacement cost value was calculated using the square footage value of each building and RS Means 2022 data.

For the purposes of this plan, approximately 312,018 structures were identified by the tax data and spatial data available. These structures account for a replacement cost value of approximately $173 billion. Estimated content value was calculated by using 50 percent of the residential replacement cost value, and 100 percent of the non-residential replacement values. Using this methodology, approximately $141 billion in contents exist within these properties. Approximately 79.1 percent of the total buildings in the County are residential, which make up approximately 58.0 percent of the total building stock value. Table 4-5 presents building stock statistics by occupancy class for Monroe County.

Table 4-5. Building Stock Count and Replacement Cost Value (RCV) by Occupancy Class

Jurisdiction	All Occupancies				Residential		Commercial	
	Count	Replacement Cost Value (Structure Only)	Replacement Cost Value (Contents Only)	Total Replacement Cost Value (Structure + Contents)	Count	Total Replacement Cost Value (Structure + Contents)	Count	Total Replacement Cost Value (Structure + Contents)
Brighton (T)	11,693	$8,018,612,066	$6,425,273,936	$14,443,886,002	10,270	$5,580,375,863	1,259	$6,093,196,671
Brockport (V)	2,224	$2,528,139,646	$2,630,649,947	$5,158,789,593	1,610	$640,479,602	491	$2,747,646,434
Chili (T)	11,534	$5,143,090,968	$4,063,752,918	$9,206,843,886	10,013	$3,993,957,118	1,182	$3,348,362,080
Churchville (V)	1,112	$524,841,659	$413,322,418	$938,164,078	853	$284,144,029	236	$503,302,995
Clarkson (T)	3,411	$1,092,033,825	$795,358,205	$1,887,392,030	2,262	$902,262,571	1,063	$855,123,448
East Rochester (T/V)	2,924	$1,867,574,316	$1,572,596,811	$3,440,171,127	2,428	$708,559,999	441	$2,030,617,679
Fairport (V)	2,394	$1,241,155,279	$1,040,300,797	$2,281,456,076	2,018	$758,398,775	341	$1,010,519,831
Gates (T)	11,801	$6,360,259,250	$5,860,340,035	$12,220,599,285	10,541	$3,786,446,019	1,019	$3,814,022,542
Greece (T)	36,414	$15,353,982,024	$11,600,396,660	$26,954,378,684	33,432	$13,272,805,288	2,643	$8,303,870,789
Hamlin (T)	5,539	$1,326,520,319	$992,257,708	$2,318,778,027	3,699	$1,076,615,019	1,728	$946,838,486
Henrietta (T)	15,982	$12,207,689,238	$11,252,877,084	$23,460,566,322	13,249	$6,095,727,279	2,288	$9,335,995,519
Hilton (V)	2,143	$1,217,915,013	$902,372,975	$2,120,287,988	1,912	$708,654,462	189	$814,073,823
Honeoye Falls (V)	1,155	$958,640,006	$854,540,685	$1,813,180,690	873	$407,093,838	247	$844,128,446
Irondequoit (T)	21,885	$7,952,286,403	$5,474,720,437	$13,427,006,840	19,659	$7,041,068,033	2,108	$5,061,073,578
Mendon (T)	3,835	$1,621,833,177	$1,230,322,737	$2,852,155,914	2,327	$1,186,886,439	1,350	$1,458,365,989
Ogden (T)	7,407	$3,085,558,975	$2,472,528,465	$5,558,087,440	5,604	$2,296,291,456	1,546	$1,723,419,525
Parma (T)	5,509	$1,928,899,846	$1,444,512,728	$3,373,412,574	4,007	$1,529,775,633	1,397	$1,541,642,328
Penfield (T)	15,882	$6,562,442,642	$4,556,791,349	$11,119,233,991	14,128	$6,241,168,186	1,461	$3,108,343,726
Perinton (T)	16,817	$7,627,088,739	$5,498,326,668	$13,125,415,407	14,983	$6,715,410,339	1,569	$4,730,871,596
Pittsford (T)	10,590	$6,033,826,086	$4,652,947,915	$10,686,774,001	9,400	$4,923,430,830	919	$3,049,673,012
Pittsford (V)	804	$930,437,470	$846,397,041	$1,776,834,511	565	$258,437,114	218	$1,307,795,943
Riga (T)	2,356	$848,605,349	$690,887,496	$1,539,492,845	1,365	$472,009,443	888	$650,102,259
Rochester (C)	89,392	$64,962,663,964	$54,980,707,092	$119,943,371,056	59,563	$21,959,576,383	28,315	$75,946,717,760
Rush (T)	2,808	$995,725,102	$820,720,252	$1,816,445,354	1,405	$560,863,090	1,204	$818,170,658
Scottsville (V)	1,069	$490,385,148	$418,331,605	$908,716,753	726	$248,077,070	308	$394,234,885
Spencerport (V)	1,654	$890,802,851	$690,041,845	$1,580,844,696	1,257	$479,394,702	376	$943,979,928
Sweden (T)	3,465	$1,858,369,017	$1,543,889,219	$3,402,258,236	2,060	$938,121,236	1,334	$1,893,041,495
Webster (T)	16,660	$6,717,594,859	$4,792,596,311	$11,510,191,170	14,331	$6,253,561,105	2,108	$3,215,679,437
Webster (V)	1,633	$1,779,482,826	$1,854,583,456	$3,634,066,282	1,344	$810,221,962	210	$766,075,242
Wheatland (T)	1,926	$1,332,809,855	$1,176,267,185	$2,509,077,040	1,011	$555,019,265	676	$867,892,661
Monroe County (Total)	**312,018**	**$173,459,265,918**	**$141,548,611,980**	**$315,007,877,898**	**246,895**	**$100,684,832,147**	**59,114**	**$148,124,778,765**

Source: Monroe County GIS - 2022; RS Means - 2022
Notes: C: City T: Town V: Village

The 2020 Economic Surveys Business Patterns data identified 17,383 business establishments employing approximately 354,169 people in Monroe County. The retail trade industry has the greatest number of establishments in the County, with 2,219. This is followed by the professional, scientific, and technical services industry with 1,943 establishments, and the health care and social assistance industry with 1,931 establishments (Census 2020).

Figure 4-11 through Figure 4-13 show the distribution and exposure density of residential, commercial, and industrial buildings in Monroe County based on the New York State Department of Taxation and Finance Property Class Code. Exposure density is the dollar value of structures per unit area, including building content value. The densities are shown in units of $1,000 ($K) per square mile. Viewing exposure distribution maps, such as those used for Figure 4-11 through Figure 4-13, can assist communities in visualizing areas of high exposure and in evaluating aspects of the study area in relation to the specific hazard risks.

Figure 4-11. Distribution of Residential Building Stock and Value Density in Monroe County

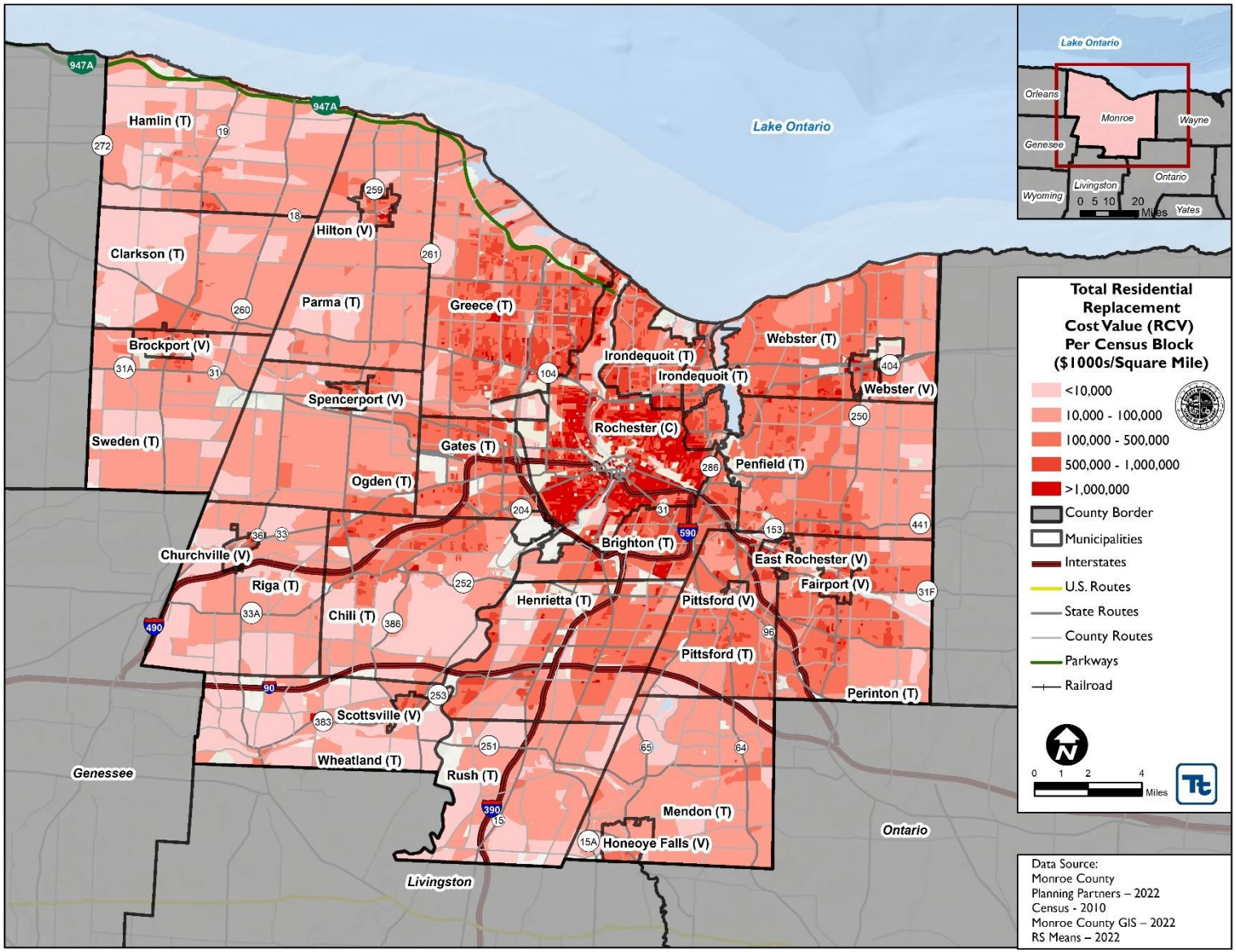


Figure 4-12. Distribution of Commercial Building Stock and Value Density in Monroe County

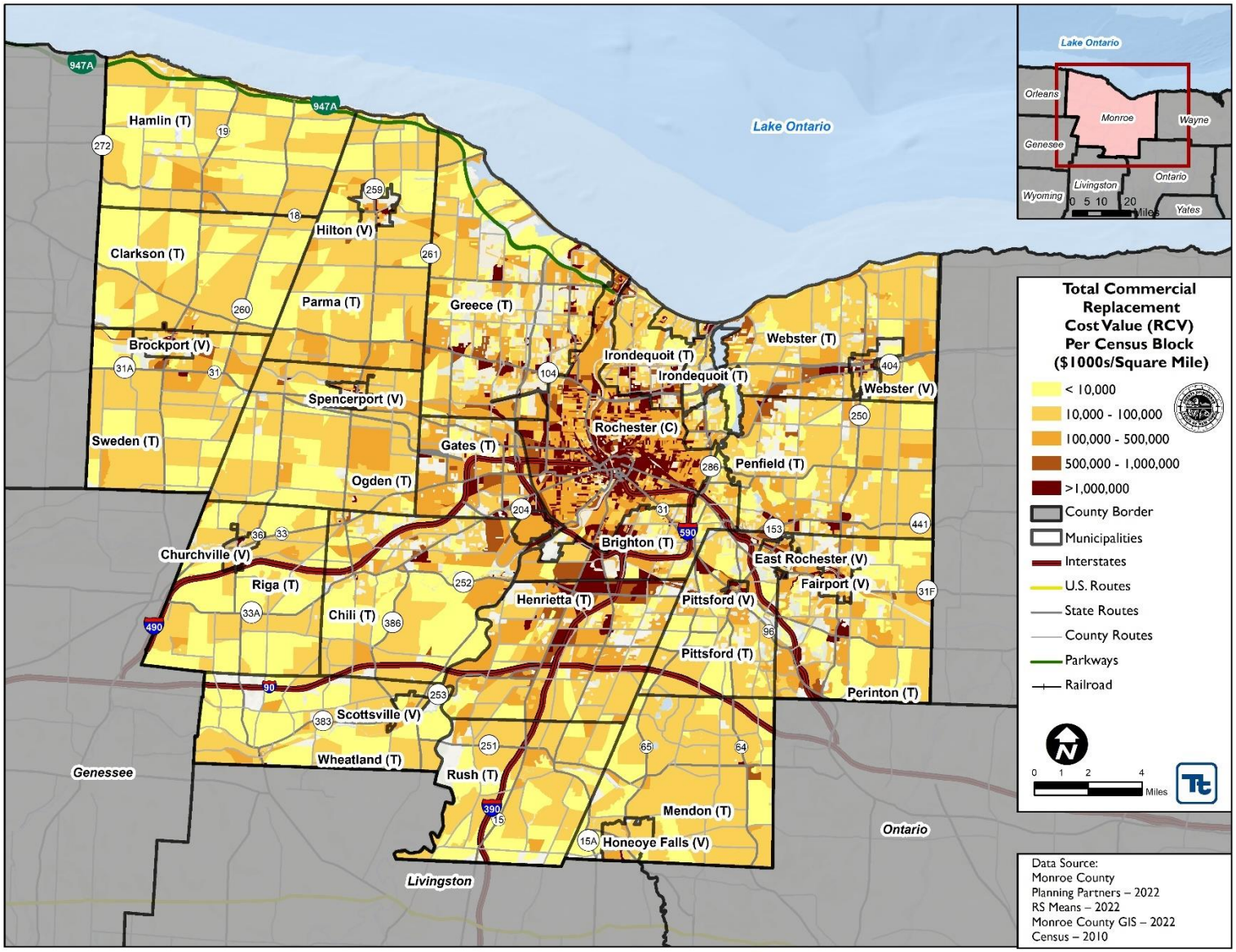
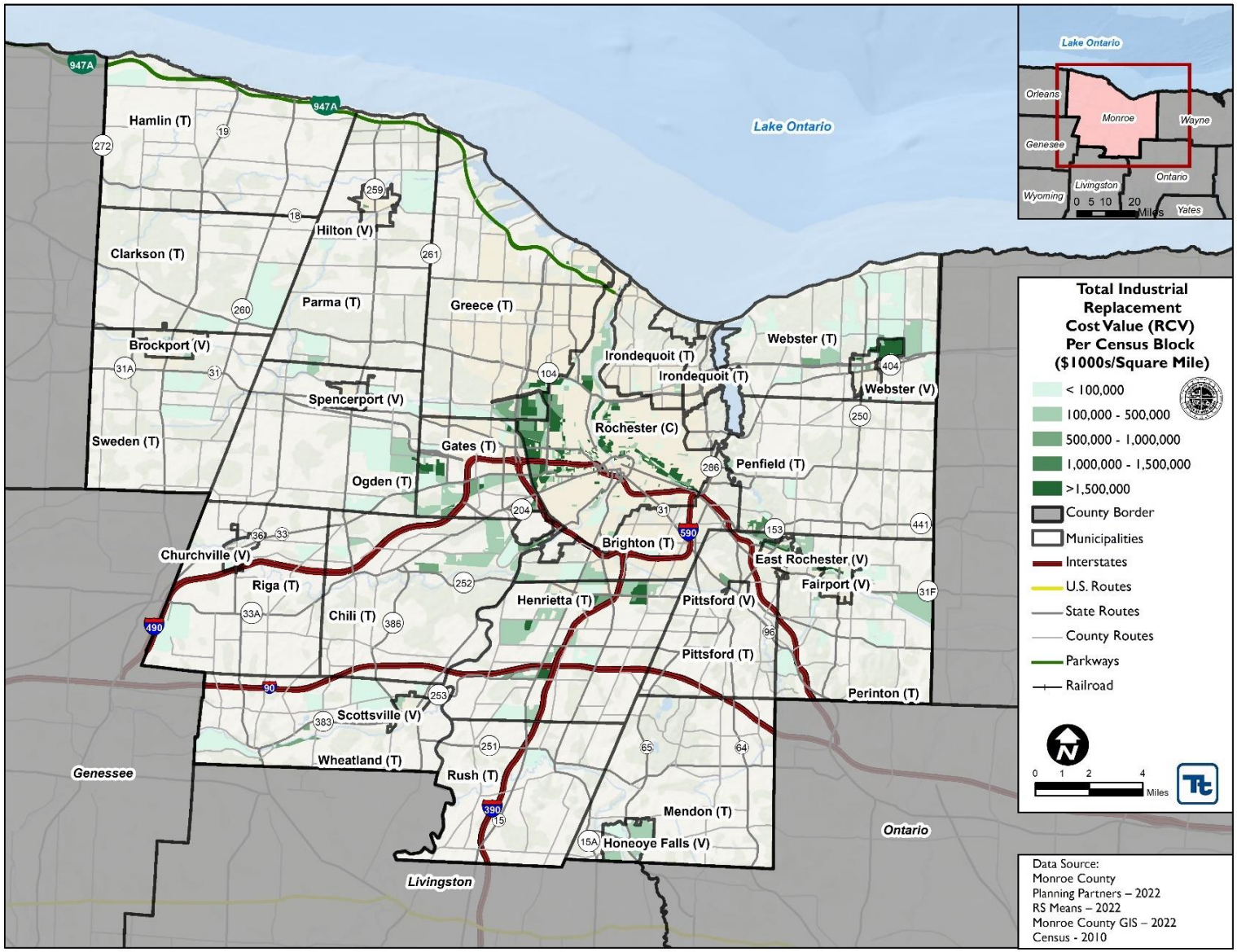


Figure 4-13. Distribution of Industrial Building Stock and Value Density in Monroe County



4.4 Land Use and Population Trends

In New York State, land use regulatory authority is vested in towns, villages, and cities. However, many development and preservation issues transcend local political boundaries. DMA 2000 requires that communities consider land use trends, which can impact the need for, and priority of, mitigation options over time. Land use trends can also significantly impact exposure and vulnerability to various hazards. For example, significant development in a hazard area increases the building stock and population exposed to that hazard.

This section provides a general overview of land use and population trends, and types of development occurring within the County. An understanding of these development trends can assist in planning for further development and ensuring that appropriate mitigation, planning, and preparedness measures are in place to protect human health and community infrastructure.

4.4.1 Land Use Trends

Monroe County is an urbanizing County, and the most populated County in the nine-county Genesee/Finger Lakes region. Monroe County contains major employers, human services providers, schools and colleges, retail and service businesses, recreational sites, and tourist attractions. Most County and state facilities, as well as regional and national retailers, are located in and around the City of Rochester. The County is home to two Fortune 500 companies – Kodak and Xerox – both of which have significant holdings and operations in the County. The headquarters of both Kodak and Bausch & Lomb, widely known for high quality optical equipment, are located in the City of Rochester. Agriculture is also a major business in Monroe County.

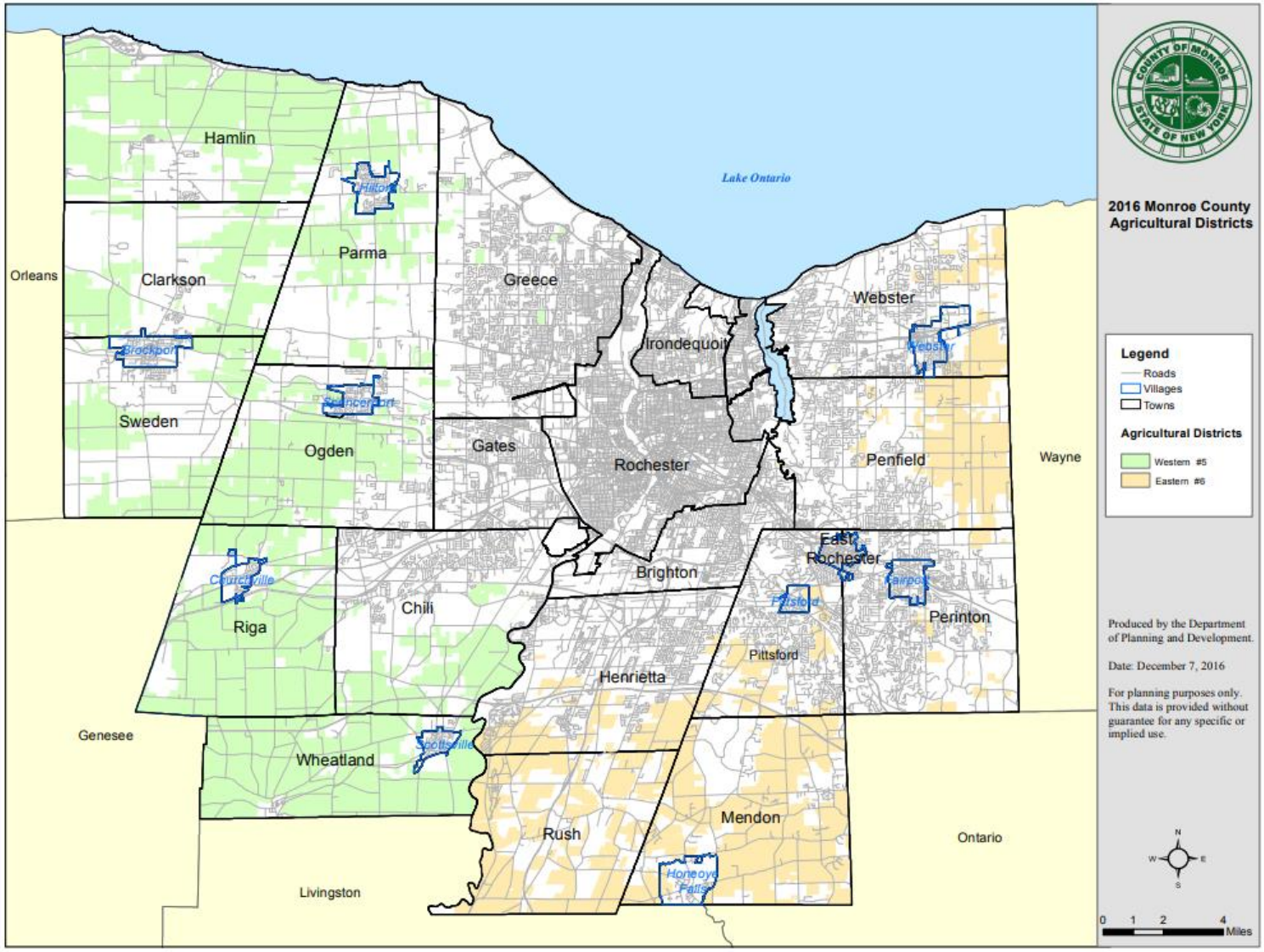
Agriculture

Agriculture in Monroe County has undergone significant changes in recent decades as expanding non-farm development put pressure on landowners for farmland conversion, profitability of certain agricultural markets decreased, and more. According to the 2017 Census of Agriculture, the number of farms in Monroe County has increased 11 percent, total farmland is up 8 percent, and the average size of each farm is down 2 percent since 2012. Between 2012 and 2017, the number of farms increased from 475 to 527, for a total reduction of land in farms of 8,102 acres. However, the market value of products sold in the Monroe County agricultural economies decreased by 15 percent between 2012 and 2017. Combined with an increased number of farms operating, this marked a 24 percent decrease in average market value of products sold per farm (USDA 2017).

The County has a well-developed vegetables, melons, potatoes, and sweet potatoes sector, and is ranked sixth in the state on value of sales by this commodity group. Additionally, Monroe County ranks eighth in the state, and 98th in the nation, for the value of its cut Christmas trees and short rotation woody crops sales (USDA 2017).

Article 25AA of the New York State Agriculture and Markets Law, titled Agricultural Districts, provides counties with the opportunity to create agricultural districts for the purpose of protecting and promoting the agriculture industry. Once created, the law requires that each district must be reviewed on an eight-, ten-, or twelve-year basis to see if it is still achieving its intended purpose. In Monroe County, districts are reviewed every eight years. Monroe County has two agricultural districts. The Western Agricultural District (#5) consists of the Towns of Chili, Clarkson, Gates, Greece, Hamlin, Ogden, Parma, Riga, Sweden, and Wheatland and has a total acreage of 94,077 acres. The Eastern Agricultural District (#6) consists of the Towns of Henrietta, Mendon, Perinton, Penfield, Pittsford, Rush, and Webster and has a total acreage of 47,673 acres (Monroe County 2022).

Figure 4-14. Monroe County Agricultural Districts



Source: Monroe County Department of Planning and Development 2016

Economy

Monroe County's economy is developing into a more diverse economy focused on high-technology industry, education, health care, and a growing small and mid-sized business sector. This transformation reflects the national trend from manufacturing. Locally, significant losses in manufacturing have been offset by gains in other sectors, particularly education and financial activities (ACT Rochester 2022).

The Educational Services and Financial Activities in the region grew between 2001 and 2020 (37 percent and 29 percent), while jobs in the Manufacturing and Information sectors declined (39 percent and 51 percent respectively). The Trade, Transportation, and Utilities sector provided the most jobs in the region at 16 percent of the total in 2020, followed by Health Care and Social Assistance and Professional and Business Services sectors making up 14 percent and 13 percent of the total (ACT Rochester 2022).

The average salary in 2020 in the region of $55,100 was below the state ($83,100) and national ($64,000) figures. All sectors have wages below state figures, and the rate of increase in average salary has consistently lagged in comparison since 2004 (ACT Rochester 2022).

4.4.2 Population Trends

This section discusses population trend information used to estimate future shifts that could significantly change the character of the area. Population trends can provide a basis for making decisions on the type of mitigation approaches to consider and the locations in which these approaches should be applied. This information can also be used to support planning decisions regarding future development in vulnerable areas.

As seen in Table 4-6, Monroe County's population has increased over most decades since 1960. However, the population projections for Monroe County from Cornell University for the next two decades anticipate a peak in population around 2030, followed by a slight drop in population as seen in Table 4-7.

Table 4-6. Population Growth in Monroe County

Population and Projections	Historical						
	1960	1970	1980	1990	2000	2010	2020
Monroe County	586,387	711,917	702,238	713,968	735,343	744,344	753,109
Town of Brighton	27,849	35,065	35,776	34,455	35,588	36,609	37,137
Town of Chili	11,237	19,609	23,676	25,178	27,638	28,625	29,123
Town of Clarkson	2,339	3,642	4,016	4,417	5,928	6,588	6,904
Village of Brockport	5,256	7,878	9,776	8,849	8,103	8,366	7,104
T/V of East Rochester	8,152	8,347	7,596	6,932	6,650	6,587	6,334
Town of Gates	13,755	26,442	29,756	28,583	29,275	28,400	29,167
Town of Greece	48,670	75,136	81,367	90,106	94,141	96,095	96,926
Town of Hamlin	2,755	4,167	7,675	9,203	9,355	9,045	8,725
Town of Henrietta	11,598	33,017	36,134	36,376	39,028	42,581	47,096
Town of Irondequoit	55,337	63,675	57,648	52,377	52,354	51,692	51,043
Town of Mendon	1,759	2,293	3,024	4,505	5,775	6,478	6,389
Village of Honeoye Falls	2,143	2,248	2,410	2,340	2,595	2,674	2,706
Town of Ogden	4,801	8,807	11,269	13,306	14,933	16,255	16,585
Village of Spencerport	2,461	2,929	3,424	3,606	3,559	3,601	3,685
Town of Parma	4,943	8,308	8,434	8,657	8,966	9,747	10,190
Village of Hilton	1,334	2,440	4,151	5,216	5,856	5,886	6,027
Town of Penfield	12,601	23,782	27,201	30,219	34,645	36,242	39,438
Town of Perinton	7,593	21,609	32,359	37,072	40,350	41,109	39,128
Village of Fairport	5,507	6,474	5,970	5,943	5,740	5,353	5,501
Town of Pittsford	8,469	18,441	21,052	23,009	25,801	28,050	25,714
Village of Pittsford	1,749	1,755	1,568	1,488	1,418	1,355	1,419
Town of Riga	1,797	2,681	2,910	3,383	3,550	3,629	3,495
Village of Churchville	1,003	1,065	1,399	1,731	1,887	1,961	2,091
City of Rochester	318,611	296,233	241,741	231,636	219,773	210,565	211,328
Town of Rush	2,555	3,287	3,001	3,217	3,603	3,478	3,490

Population and Projections	Historical						
	1960	1970	1980	1990	2000	2010	2020
Town of Sweden	1,968	3,583	5,083	5,432	5,757	5,957	6,140
Town of Webster	13,374	19,702	23,426	26,175	32,710	37,242	39,676
Village of Webster	3,060	5,037	5,499	5,464	5,216	5,399	5,651
Town of Wheatland	1,848	2,298	3,108	3,181	3,021	2,774	2,888

Source: Genesee/Finger Lakes Regional Planning Council 2013; US Census 2020

Table 4-7. Population Growth in Monroe County

Population and Projections	Historical							Projected	
	1960	1970	1980	1990	2000	2010	2020	2030	2040
Monroe County	586,387	711,917	702,238	713,968	735,343	744,344	753,109	758,536	751,581

Source: Genesee/Finger Lakes Regional Planning Council 2013; US Census 2020; Cornell PAD projections 2018

4.5 Lifelines and Critical Facilities

Critical infrastructure and facilities are those that are essential to the health and welfare of the population. These facilities are especially important after any hazard event. Critical facilities are those that maintain essential and emergency functions and are typically defined to include police and fire stations, schools, and emergency operations centers. Critical infrastructure can include the roads and bridges that provide ingress and egress and allow emergency vehicles access to those in need and the utilities that provide water, electricity, and communication services to the community. Also included are Tier II facilities (hazardous materials) and rail yards; rail lines hold or carry significant amounts of hazardous materials with a potential to impact public health and welfare in a hazard event (FEMA 1997).

Critical Facilities are those facilities considered critical to the health and welfare of the population and that are especially important following a hazard. As defined for this HMP, critical facilities include transportation systems, lifeline utility systems, high-potential loss facilities, and hazardous material facilities, and essential facilities

Essential facilities are a subset of critical facilities that include those facilities that are important to ensure a full recovery following the occurrence of a hazard event. For the county risk assessment, this category was defined to include police, fire, EMS, schools/colleges, shelters, senior facilities, and medical facilities.

Lifelines enable the continuous operation of critical business and government functions and are essential to human health and safety or economic security.

Beginning in 2017, FEMA developed a new construct to increase effectiveness for disaster operations and position response to catastrophic incidents. This construct, known as "community lifelines", represents the most fundamental services in the community that, when stabilized, enable all other aspects of society. Following a disaster event, intervention is required to stabilize community lifelines. Lifelines are divided into seven categories which include:

- Safety and Security
- Food, Water, Shelter
- Health and Medical
- Energy (Power and Fuel)
- Communications
- Transportation
- Hazardous Materials

To facilitate consistency with the National Response Framework, FEMA Strategic Plan, and guidance for the Building Resilient Infrastructure and Communities grant program, critical facilities in Monroe County are discussed in terms of lifelines.

A comprehensive inventory of critical facilities and lifelines in Monroe County was developed from various sources including input from the Steering Committee and Planning Partnership. The inventory of critical facilities presented in this section represents the current state of this effort at the time of publication of the HMP and was used for the risk assessment in Section 5 (Risk Assessment).

4.5.1 Safety and Security

This section provides information on Safety and Security lifelines. Components of this lifeline category include law enforcement/security, fire services, search and rescue services, government services, and community safety (e.g., dams) (Figure 4-15).

Emergency Facilities

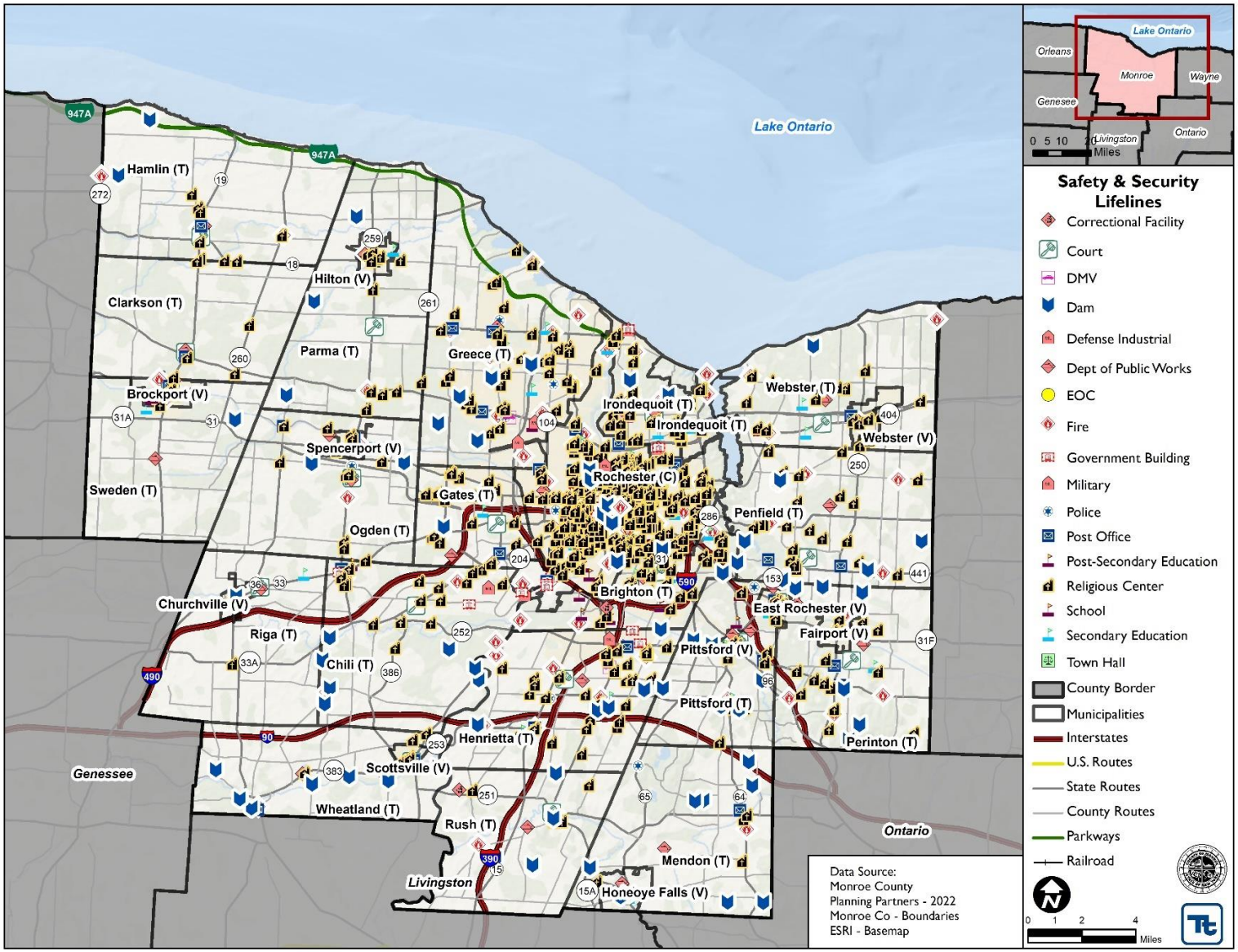
The Monroe County Office of Emergency Management (OEM) is organized into four main tiers: Operations, Planning, Logistics, and Administrative/Financial. The operations tier includes all emergency operations including police, fire/EMS, public works, transportation, and sheltering. The OEM is responsible for aiding communities in emergency planning and response, as well as providing the training and equipment for the county's first responders and volunteers. OEM operates an Emergency Operations Center in the City of Rochester, which is a specially designed facility where public organizations and private-sector agencies meet to decide and coordinate emergency response to community-wide disasters. Additionally, the OEM funds a 24-hour 9-1-1 Center and oversees the operation of the Emergency Communications Department (ECD), operated by the City of Rochester under contract with the County.

The OEM develops, maintains, and executes Monroe County's Comprehensive Emergency Management Plan for disaster relief before, during, and after any type of natural or man-made disaster (or a war-time situation). The OEM also assists towns and villages in the preparation of their emergency response plans. With guidance from FEMA, OEM develops and continually reviews the Monroe County Radiological Emergency Preparedness Plan (MCREPP) in case of an incident at the Ginna nuclear power plant, and conducts multiple exercises annually to test its REPP.

There are 90 fire department facilities in Monroe County serving the County's municipalities. Police enforcement and public safety is maintained by the New York State Police Department, Monroe County Police, and local departments. The Monroe County Sheriff's Office operates two jails and six stations; it also has three boats. The Sheriff's Office patrols towns within Monroe County that do not have their own police patrols and is responsible for primary police patrols at the Greater Rochester International Airport as well as the many parks throughout the County.

Figure 4-15 displays the location of emergency facilities in Monroe County.

Figure 4-15. Safety and Security Facilities In Monroe County



Hospitals and Medical Facilities

The County has multiple hospitals and health care facilities ranging in size and primary function to include smaller community health centers and the larger, regional Strong Memorial Hospital. Hospitals in Monroe County consist of three "systems" – University of Rochester Medical Center, including Strong Memorial Hospital and Highland Hospital; Rochester General Health System, including Rochester General Hospital; and Unity Health System, including Unity Hospital (former Park Ridge Hospital) and the Genesee Street campus (formerly St. Mary's Hospital). All three systems have associated nursing homes, health centers or clinics, and hospital-sponsored medical practices (Monroe County 2017).

Monroe County is also served by a network of federally qualified Community Health Centers (FQHCs) – Jordan, (sites at Holland Street, Woodward, and Brown Square) and Oak Orchard. Inner-city Rochester FQHCs include Clinton Family Health Center, Genesee Health Center, Northeast Health Services, Orchard Street Community Health Center, and Unity Family Medicine Center. St. Joseph's Neighborhood Center and the Mercy Outreach Center, also in the city, are free clinics primarily serving individuals who are uninsured (Monroe County 2017).

For non-emergency health care needs, a number of "urgent care centers" are located throughout the County. Some of these clinics are open 24 hours per day, and most have evening and weekend hours. There are 21 urgent care facilities in the County. The County also has 33 alcohol/drug treatment facilities.

Figure 4-16 displays the location of hospitals and medical facilities in Monroe County.

Schools

There are 255 public and private primary educational facilities (elementary, middle, and high schools) and 17 secondary educational facilities (colleges and universities) located in Monroe County. In times of need, schools can function as shelters and are an important resource to the community. For information regarding shelters, see the Shelters subsection of this document below.

Senior Care and Living Facilities

The County has an extensive system of programs and services for the senior population, including 41 adult care, 33 nursing homes, and 69 Home Care Providers (New York State n.d.). These facilities are highly vulnerable to potential impacts from disasters and knowing the location and numbers of these types of facilities will be effective in managing a response plan pre- and post-disaster. Figure 4-16 displays the location of senior care and living facilities in Monroe County.

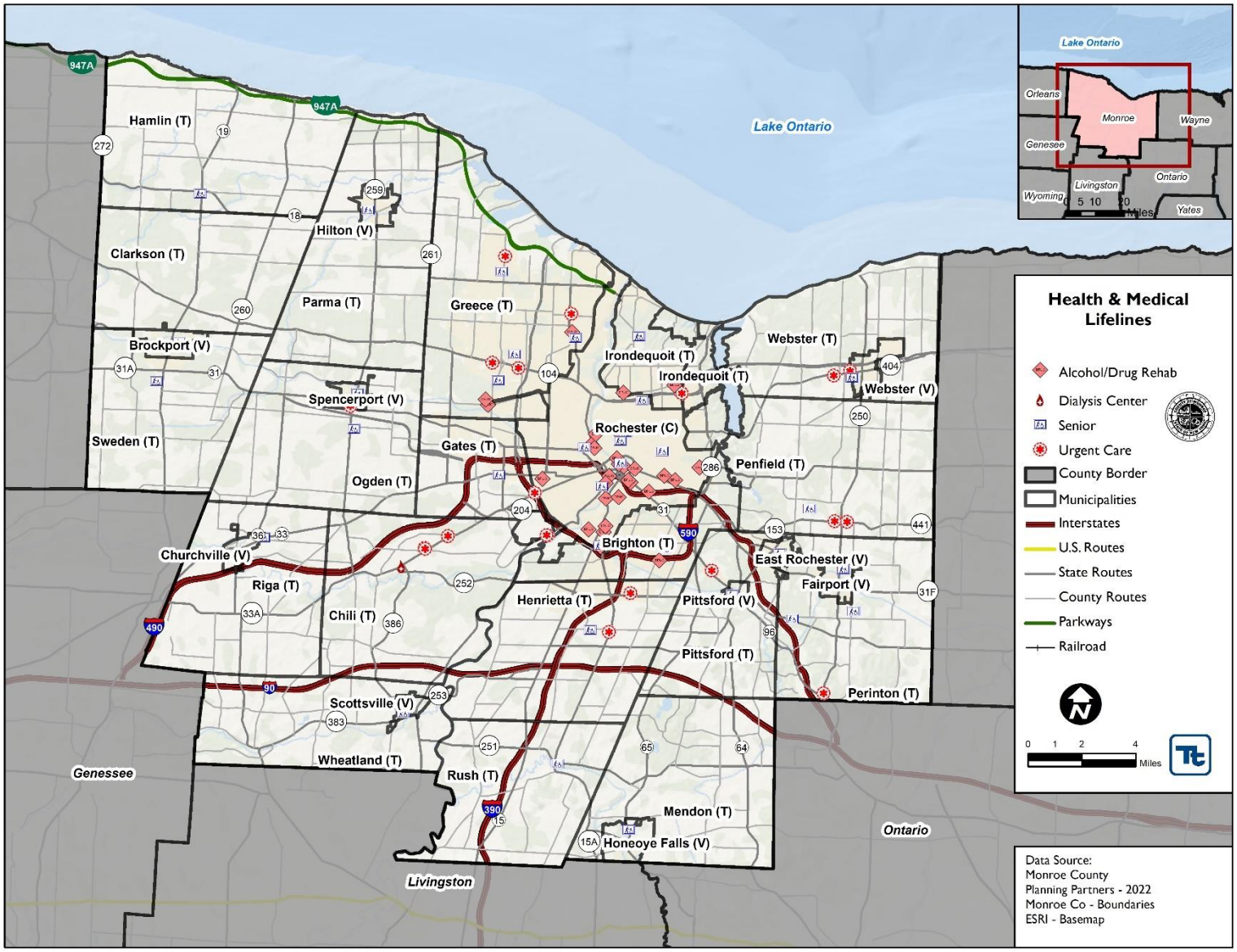
Shelters

With support and cooperation of the American Red Cross and local jurisdictions, the county references an inventory of suitable shelter locations and can assist with the coordination and communication of shelter availability as necessitated by the execution of local municipal emergency operation plans. County-wide sheltering policies and procedures are documented in the following plans, which are maintained by the Monroe County OEM:

- Monroe County Comprehensive Emergency Management Plan
- Monroe County Comprehensive Emergency Management Plan, Mass Sheltering Plan Annex
- Monroe County Radiological Emergency Preparedness Plan (MCREPP)

The County also has 15 homeless shelters facilities.

Figure 4-16. Health and Medical Lifelines in Monroe County



Evacuation Routes

The County has identified evacuation zones for severe weather, maintains specific evacuation plans for radiological emergencies associated with the Ginna Nuclear Power Plant, and can assist with the coordination and communication of evacuation routing as necessitated by the execution of local municipal emergency operation plans.

4.5.2 Transportation Systems

Monroe County's location and extensive transportation network offer residents and employees' various options for transportation throughout the county and the region. The transportation system includes an extensive network of roads, access to national and commuter rail, countywide bus service, an airport providing domestic and international flights, and a commercial shipping port. Major transportation routes through Monroe County include Interstate Routes 90, 490, 590, 390, and 531 and navigable waterways including the Erie Canal and Lake Ontario.

There are 4,648 miles of roadway in Monroe County. The County Department of Transportation is responsible for roughly 1,500 miles of county-owned highways, 180 bridges, and 275 major culverts, and 805 traffic signal and flasher devices as part of the Monroe County highway system (Monroe County 2022).

Interstates (I)-90, I-390, I-490 and I-590 are the primary routes of travel through Monroe County. I-90 traverses the County from the east to the west through the southern section, passing through the Towns of Wheatland, Chili, Henrietta, Pittsford, and Mendon. In the Town of Henrietta, I-90 intersects with I-390, which is a major north-south route carrying traffic up from Livingston County and other points south. I-390 bisects Monroe County, skirting the City of Rochester to the west and ending near the shores of Lake Ontario where the road continues as the Lake Ontario State Parkway. I-490 is the third major route option and is an auxiliary highway offering a direct route into the City of Rochester from where it splits from I-90 on both the southeastern and southwestern corners of the County. I-490 runs along the original path of the Eire Canal through the City of Rochester; it also serves the Villages of Churchville and Pittsford, among others. I-490 connects with I-390 and New York State Route 390/NY 390 just west of the City of Rochester, and with I-590/NY 590 to the east of Rochester. Together, these roads comprise the southernmost portion of the Inner Loop Beltway, which circles around the interior of Rochester. State Route 531 connects I-490 to western suburbs including the Towns of Ogden and Gates, and the Villages of Brockport and Spencerport.

Additionally, State Routes 104, 33, 31, and 36 connect the County to its eastern western, and southern neighbors. SR 104 and SR 31 run east west through the northern and central section of the County, respectively. SR 36 begins at the terminus of SR 531 in the Town of Ogden and runs south through the Town of Riga and Wheatland before connecting with Livingston County. SR 33 connects SR 31 in the City of Rochester directly to the City of Buffalo to the west. SR 33 is mostly a rural highway serving local traffic and it often parallels I-490. Figure 4-17 displays the location of transportation lifelines in Monroe County.

Bus and Other Transit Facilities

Residents of Monroe County have the option of using public transportation through the Regional Transit Service (RTS), the largest subsidiary of the Rochester Genesee Regional Transportation Authority (RGRTA), which includes 216 buses and 41 fixed routes serving a population of nearly 750,000 throughout Monroe County and the surrounding region. RTS provides affordable public transportation to urban, suburban, and rural areas, as well as complimentary paratransit service throughout the region, and currently serves a ridership of over 14 million (RGRTA 2020).

Railroad Facilities

There are two types of rail systems in Monroe County: freight and passenger. There are a total of 10 junctions or freight stations throughout the Rochester area, including Charlotte Yard in the north, Goodman St. Yard in the east, West Ave. Yard near the city center, and Brooks Ave. Yard along the city's southwestern border. These stations and yards serve a number of transportation and freight companies, including CSX Transportation, Inc. (CSXT); CSXT Amtrak; Livonia, Avon & Lakeville Railroad Corp (LAL); and Rochester & Southern Railroad (RSR). As these lines spread out from Rochester, they provide passenger and freight rail at points in Webster (Ontario Midland Railroad Corp [OMID]), Fairport (CSXT Amtrak), Henrietta (LAL), and Chili (CSXT Amtrak and CSXT) (NYS DOT 2019).

Amtrak provides passenger service from Chicago to Washington DC, and also connects through the City of Rochester. The Rochester station is located along Amtrak's Empire Service and provides regional service to New York City, Albany, Syracuse, Buffalo, and Niagara Falls (Amtrak 2022).

The Rochester & Southern Railroad (RSR), owned and operated by Genesee & Wyoming (G&W), is a 58-mile short line freight railroad that interchanges with the Buffalo & Pittsburgh Railroad; Canadian National; Canadian Pacific; CSX Transportation; Livonia, Avon & Lakeville Railroad; and Norfolk Southern. RSR tracks originate in the City of Rochester, sending one line to Buffalo where it connects with a larger network of G&W trains to points south and west; and another to a terminus in Dansville, south of Rochester. Commodities transported by rail include aggregates, brick and cement, chemicals, coal, food and feed products, forest products, and steel and scrap (GWRR 2015).

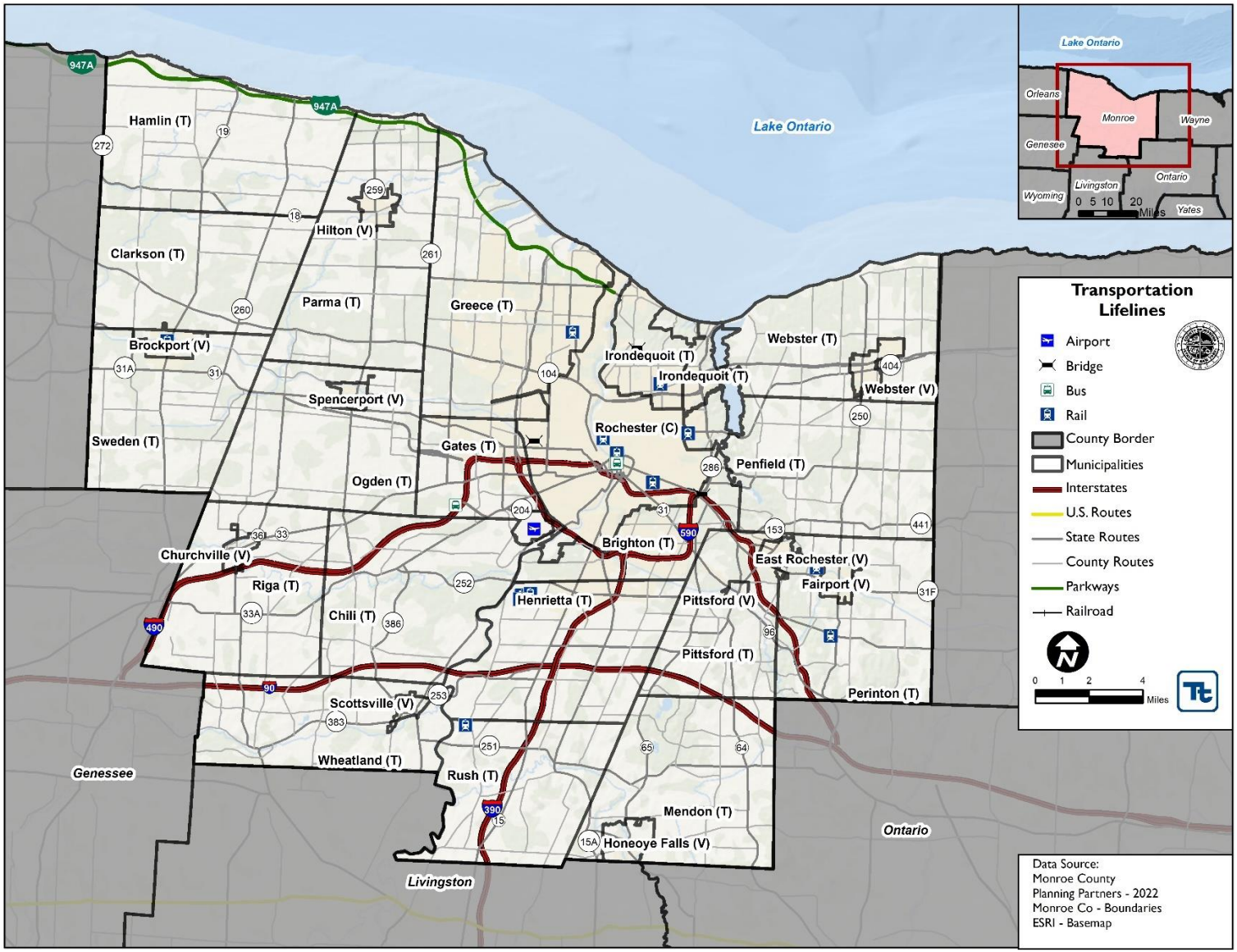
Airports

The Greater Rochester International Airport (ROC) is located 4 miles southwest of downtown Rochester and 12 miles south of Lake Ontario. The airport is the fifth busiest airport in the state of New York and is home to the 642nd Aviation Support Battalion, part of the 42nd Infantry Division. The airport contains a 380,000-square-foot terminal with 22 passenger gates. The airport serviced over 1.5 million passengers in 2021 (US DOT n.d.).

Ferry Service and Ports

The Rochester-Monroe County Port Authority operates a small deep draft commercial harbor at the Genesee River's confluence with Lake Ontario, serving commercial shipping traffic at depths up to 24 feet across a 2.7-mile stretch that includes the Lake Ontario approach, harbor entrance, and Genesee River federal channels. Major partners and operators at port include the Port of Rochester, U.S. Coast Guard, Essroc Cement Corporation and Shellet-Genesee Shipping Group. The Rochester Harbor enables transportation of important commodities and supports $26.8 Million in business revenue, 142 jobs, and $7.4 Million in labor income (USACE 2021).

Figure 4-17. Transportation Lifelines in Monroe County



4.5.3 Lifeline Utility Systems

This section presents data and information on potable water, wastewater, energy resource, and communication utility systems. Due to heightened security concerns, local utility lifeline data sufficient to complete the analysis have only partially been obtained.

Potable Water

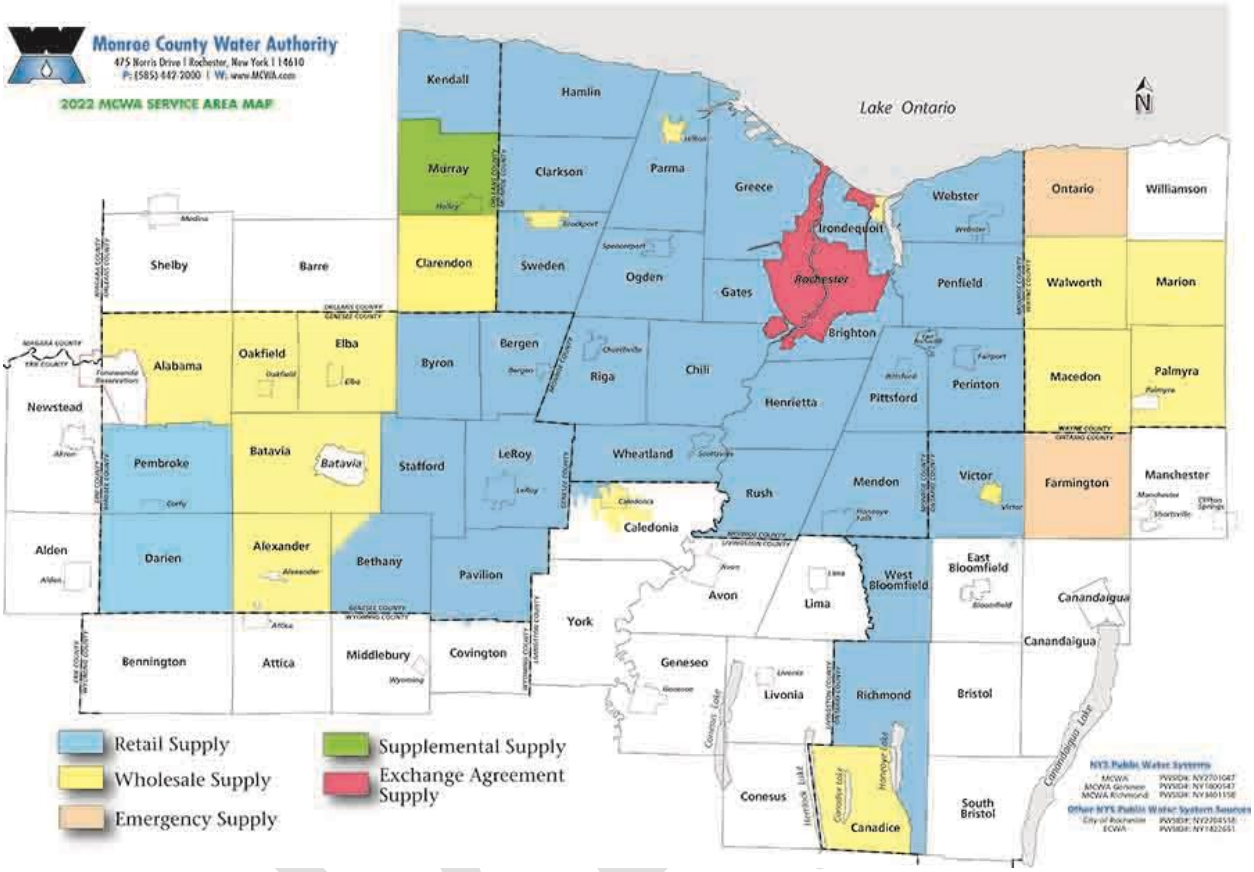
In Monroe County, water is provided from various facilities as a public service or through private supplies, such as wells. Community water suppliers serve most of the county's population while a small portion of the population relies on on-site wells. Figure 4-19 shows the location of water treatment and distribution facilities in Monroe County.

Monroe County's public water supply comes from Lake Ontario, two of the Finger Lakes (Hemlock Lake and Canadice Lake), and from private wells (Monroe County Department of Health 2019). There are two producers of public drinking water within Monroe County: Monroe County Water Authority (MCWA) and City of Rochester Bureau of Water and Lighting. The MCWA is the third largest water supplier in New York State and produces and delivers an average of 20 billion gallons of drinking water every year (MCWA 2021). The Villages of Brockport and Hilton, as well as the Seabreeze Water District community in the Town of Irondequoit, purchase water from MCWA for re-sale to their customers.

Water treatment facilities and distribution systems are not identified for security purposes. Many of the rural areas are dependent on private wells. Several large industries have their own supply source and treatment facilities. Many fire departments have an alternate water source for firefighting. For instance, the City of Rochester has a parallel supply for fire suppression within the downtown area called the "Holley System," and many suburban and rural departments have standpipes on natural waterways.

Water from Lake Ontario, its primary source, is treated at MWCA's Shoremont plant in the Town of Greece and another plant in the Town of Webster. MCWA also operates the Corfu plant, which is a small well supply in the Village of Corfu in Genesee County, and purchases water from the City of Rochester and the Erie County Water Authority (ECWA) (MCWA 2021).

Figure 4-18. Monroe County Water Authority Service Area



Source: *MCWA 2022*
Note: *Monroe County is indicated with the dashed black line.*

Wastewater Facilities

The Monroe County Division of Pure Waters was established by the County's legislature to implement the 1969 Pure Waters Master Plan to reduce the levels of pollution in Irondequoit Bay, the Genesee River, areas of Lake Ontario, and other waters of Monroe County to safe and healthy levels. Today, the County's four sewer districts contain several miles of major interceptor tunnel, two wastewater treatment facilities, pump stations and the sewer collection systems for the Rochester and Gates-Chili-Ogden districts (Monroe County Pure Waters 2022).

The sewer system operated by Monroe County is spread over four sewer districts (Northwest, Gates Chili Ogden, Rochester, and Irondequoit Bay) and serves a population of over 500,000 people. Collection sewers in other districts are operated, maintained, and funded by local municipalities. The districts obtain the majority of their revenue from user charges. In Monroe County, wastewater is collected by a system of underground pipes, or sewers, which carry it to wastewater treatment facilities (WWTF).

Monroe County contains five treatment facilities, most of which are located near bodies of water into which the treated wastewater is discharged. Other wastewater treatment plants that discharge into the Genesee River include those from the Village of Honeoye Falls and Kodak's King's Landing. The County's VanLare and Northwest Quadrant plants are located on the south shore of Lake Ontario. The VanLare plant, first opened in 1916, is the largest WWTF in the County with a permitted flow of 135 million gallons per day (mgd). The

VanLare plant is capable of handling 660 mgd during storm events. The Northwest Quadrant facility is located in the Town of Hilton and has an operating permit for flow of 22 mgd and handles 14 mgd of primarily residential wastewater (Rochester Subway 2022). Figure 4-19 shows the location of wastewater facilities in Monroe County.

Energy Resources

Gas and electric power in Monroe County are transmitted and distributed by three companies: Rochester Gas and Electric Corporation (RG&E), New York State Gas and Electric Corporation (both Avangrid companies), and National Grid. Homes in the County are heated by many different sources, with a majority using utility gas or fuel oil. In addition, there are three municipal electric providers and one municipal natural gas provider. Some areas are dependent on residential propane tanks for gas service. Figure 4-20 displays the location of energy lifelines in Monroe County.

Communications

Monroe County is served by a variety of communications systems, including traditional land line, fiber optic, and cellular service provided by multiple companies, such as Verizon, Direct TV, and Time Warner and Frontier Communications. Each carrier has individual plans for emergency situations during hazard events and post-disaster recovery efforts. In addition to land line, fiber optic and cellular communications systems, Monroe County has an extensive radio communications network that is utilized by emergency services agencies, hospitals, law enforcement, public works, transportation, and other supporting organizations. There are 61 communication facilities in Monroe County identified as critical facilities. Figure 4-21 displays the location of these facilities.

Figure 4-19. Food, Water, and Shelter Lifelines in Monroe County

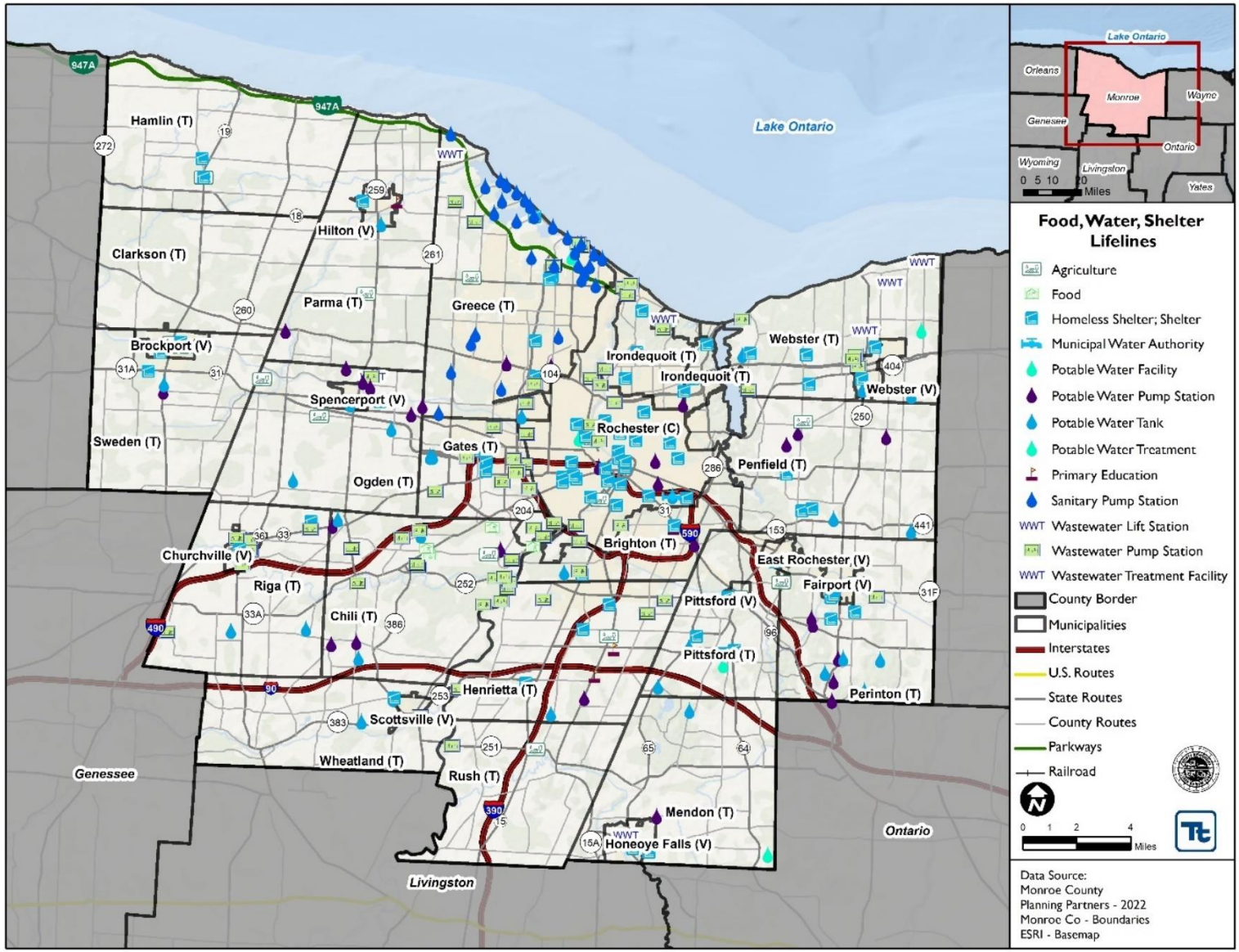


Figure 4-20. Energy Lifelines in Monroe County

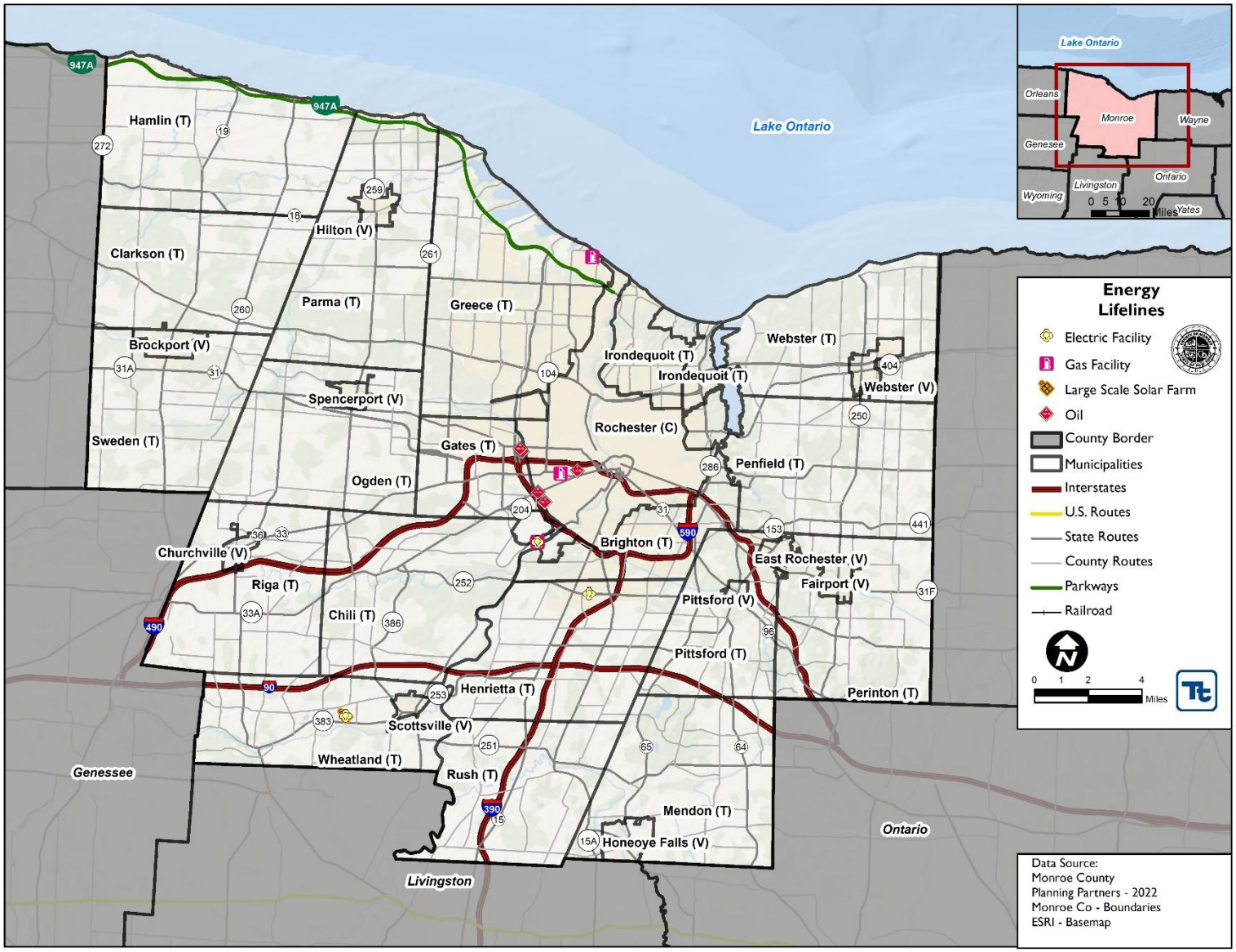
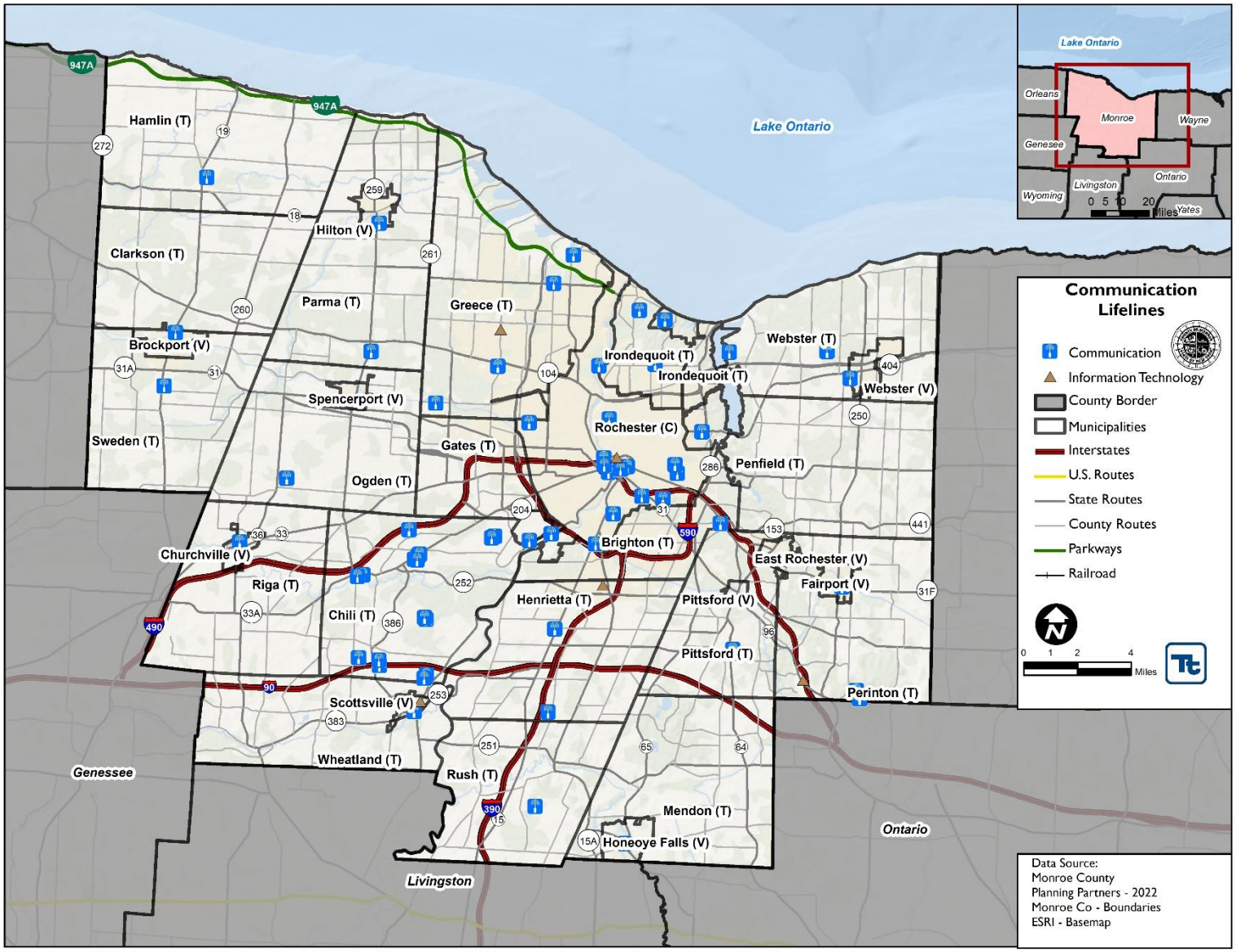


Figure 4-21. Communications Lifelines in Monroe County



4.5.4 High-Potential Loss Facilities

High-potential loss facilities include dams, levees, hazardous materials (HAZMAT) facilities, nuclear power plants, and military installations. The Ginna Nuclear Power Station is located in Wayne County near the northeastern border of Monroe County. Dams are also discussed below.

Military Installations

The 42nd Infantry Division and 53rd Troop Command of the National Guard have guardsmen that report to locations throughout the county. The only other noteworthy military installation in the County is a U.S. Coast Guard station near Lake Ontario and the Genesee River.

HAZMAT Facilities

The U.S. Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) (Superfund) Public Access Database (CPAD) reports that there are currently no Superfund sites in Monroe County. Superfund sites are polluted locations requiring a long-term response to clean up hazardous material contaminations.

Abandoned hazardous waste sites placed on the federal National Priorities List (NPL) include those that the EPA has determined present "a significant risk to human health or the environment," with the sites being eligible for remediation under the Superfund Trust Fund Program. As of 2022, Monroe County has no inactive hazardous sites in the federal Superfund Program that are listed on the NPL (CERCLIS 2021).

In addition to the hazardous waste sites, there are numerous hazardous facilities in Monroe County cataloged by the NYS DEC's Bulk Storage Program Database. The Bulk Storage Program includes three types of facilities: Petroleum Bulk Storage (PBS), Major Oil Storage Facilities (MOSF), and Chemical Bulk Storage (CBS). Registration with NYS DEC is mandatory for all PBS facilities with a total storage capacity of 1,100 gallons or more; all CBS underground tanks and all stationary aboveground tanks with a capacity of 185 gallons or more; and all MOSF sites storing more than 400,000 gallons of petroleum products. As of August 2022, there are roughly 2,100 sites in the DEC's Bulk Storage Program Database in Monroe County, NY (NYS DEC 2022).

Dams and Levees

According to the NYSDEC Division of Water Bureau and Flood Protection and Dam Safety, there are three hazard classifications of dams in New York State. The dams are classified in terms of potential for downstream damage if the dam were to fail. The hazard classifications are as follows:

- *Low Hazard (Class A)* is a dam located in an area where failure will damage nothing more than isolated buildings, undeveloped lands, or township or county roads and/or will cause no significant economic loss or serious environmental damage. Failure or mis-operation would result in no probable loss of human life. Losses are principally limited to the owner's property
- *Intermediate Hazard (Class B)* is a dam located in an area where failure may damage isolated homes, main highways, and minor railroads; interrupt the use of relatively important public utilities; and will cause significant economic loss or serious environmental damage. Failure or mis-operation would result in no probable loss of human life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns. Class B dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.
- *High Hazard (Class C)* is a dam located in an area where failure may cause loss of human life; serious damage to homes, industrial, or commercial buildings; important public utilities; main highways or railroads; and will cause extensive economic loss. This is a downstream hazard classification for dams

in which excessive economic loss (urban area including extensive community, industry, agriculture, or outstanding natural resources) would occur as a direct result of dam failure (NYS DEC n.d.).

According to the USACE National Inventory of Dams (NID), there are 31 dams located within Monroe County with 14 listed as high hazard, 9 listed as significant hazard, and 8 listed as low hazard (USACE n.d.). For the purpose of this plan, the NYSDEC data from the New York State GIS Clearinghouse will be used. According to the GIS data, there are 81 dams located in Monroe County (9 high hazard, 6 intermediate hazard, 43 low hazard, and 23 negligible or no hazard dams). According to the National Levee Database maintained by USACE, there are no levees in Monroe County (USACE n.d.). Refer to Appendix H for the names and locations of the dams found in the County.

4.5.5 Other Facilities

The Planning Partnership also identified additional critical facilities including municipal buildings, government facilities, major employers, and more. These facilities were included in the risk assessment conducted for the County. Figure 4-22 shows the locations of these facilities in the County.

Figure 4-22. Other Facilities in Monroe County