

O'Hare Subregion Truck Routing and Infrastructure Plan

Task 2 - Existing Conditions

draft tech memo

prepared for

Chicago Metropolitan Agency for Planning

prepared by

Cambridge Systematics, Inc.

with

Sam Schwartz Engineering

report

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date

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1.0 Overview

The communities and municipalities in the Chicago O'Hare International Airport area are home to a diverse range of industries and multimodal transportation hubs that serve as an economic engine for the region, state, and nation. Although all modes (with the exception of water) are represented and used, the supply chains that serve this region rely on trucks. While critical to the region's economy, the high level of truck traffic also poses problems. The communities in the region have struggled to handle truck activity, regulation, and infrastructure spending in a coordinated manner that protects the community while supporting economic needs.

The Chicago Metropolitan Agency for Planning (CMAP) is coordinating the O'Hare Subregion Truck Routing and Infrastructure Plan (Plan) on behalf of 11 municipalities who applied for Local Technical Assistance funding in 2014. This Plan will provide a framework for coordinated local decision-making and regional investment by identifying an effective and integrated truck route network and priority project needs. CMAP has already done significant research into understanding industry and freight trends, as well as how these align with similar trends in land use, residential, and commercial development through the GO TO 2040 process and other reports such as the *O'Hare Subregional Freight-Manufacturing Drill-Down Report*¹.

The O'Hare Subregion Truck Routing and Infrastructure Plan includes 11 municipalities: Bellwood, Bensenville, Des Plaines, Elk Grove Village, Franklin Park, Itasca, Maywood, Melrose Park, Northlake, Schiller Park, and Wood Dale. This document serves as an existing conditions analysis of the region. It defines the existing designated truck routes, truck restrictions, infrastructure, and other factors important to truck travel and for consideration when designating truck routes.

1.1 Need for a Truck Route Plan

There are several key factors motivating this plan:

1.1.1 Designated truck routes facilitate compliance with Illinois law

Inter-governmentally coordinated local truck route designations are necessary to facilitate lawful truck travel in Illinois. As described in more detail in Section 2.2.2, there are three primary classes of designated truck routes in Illinois: Class I, Class II, and Preferred Truck Routes; Illinois also has Class III designated truck routes, but the legal effect of these routes has been rendered largely moot by legislation increasing legal loads to 80,000 pounds².

These various classifications of designated truck routes are important in regulating where trucks can legally travel. In our state, the size, weight, and load of trucks are largely governed by Chapter 15 (Size, Weight, Load, and Permits) of the Illinois Vehicle Code.³ Travel is highly restricted for vehicles over 65' in length;

¹ <http://www.cmap.illinois.gov/documents/10180/27283/2014-5-12-O-Hare-Subregional-Freight-Manufacturin-+Drill-Down-report.pdf/231356b3-2edc-40ac-b1bb-7ee9cab04c0d>

² PA 96-0034 and PA 96-0037.

³ [\(625 ILCS 5/15\)](#).

such vehicles include a typical over-the-road tractor-trailer combination with a trailer 48' or 53' in length.⁴ A CMAP analysis of this statute showed the following key legal limitations for truck travel on municipal and county roads and streets:

- For trucks with an overall length of more than 65', access on local-jurisdiction roads and streets is limited to the following conditions:
 - Access is permitted on any local road or street within 1 mile of a Class I truck route, unless signs are posted restricting such access.⁵
 - Access is also permitted from State-Designated Class I and Class II truck routes for 5 miles onto any Locally-Designated Class II or Class III truck route. (Access is also permitted for 5 miles onto any state highway.)

Otherwise, access for trucks longer than 65' is unlawful on local roads and streets. This is highly restrictive and needs to be addressed to assure lawful travel.

- For trucks with an overall length of greater than 55', but not more than 65', lawful access is limited to the following conditions:
 - From any State-Designated Class I, Class II, or Class III truck route, access for loading and unloading freight is permitted for 5 miles on all municipal, county, and township roads.
 - From any State-Designated Class I, Class II, or Class III truck route, access for food, fuel, repairs, and rest is permitted for 1 mile on municipal roads, and 5 miles on county and township roads.

Otherwise, access for trucks with an overall length of greater than 55', but not more than 65', is unlawful on local roads and streets. Given the availability of State-Designated truck routes, this is only moderately restrictive.

- For trucks up to 55' in overall length, access is unrestricted by state statute. Local governments may apply additional restrictions, provided they are signed.

In general, State- or Locally-Designated Class I and Class II truck routes reach the general vicinity of most freight-related land uses in the O'Hare subregion and link those land uses to national markets. However, there are often "last mile" gaps in truck routing systems leading to industrial developments, which often include roads under local jurisdiction. These gaps may include roads or a design or environment not appropriate for truck travel, and may result in routing confusion for some truck drivers. Some of the gaps may cross municipal or county jurisdictional boundaries.

⁴ American Association of State Highway and Transportation Officials, *A Policy on Geometric Design of Highways and Streets*. Fourth Edition (2001). pp. 33-34. These exhibits show the dimensions and minimum turning path for interstate semitrailers with 48' and 53' trailers. The design vehicle lengths are 68.5' for 48' trailers, and 73.5' for 53' trailers.

⁵ Access here means to points of loading and unloading, and facilities for food, fuel, rest and repair provided there is no sign prohibiting that access

In Illinois, municipalities and counties may prohibit trucks or commercial vehicles on highways, or impose weight limitations, for highways under their jurisdiction, provided the prohibitions or weight limits are signed.⁶ As mentioned previously, local agencies may also designate roads under their jurisdiction as Class II and Class III truck routes.⁷ When local agencies designate such routes, they are responsible for reporting the designated Class II or Class III routes to IDOT. In turn, IDOT is responsible for preparing a statewide map of the Designated Truck Route System that includes IDOT and local streets and highways that have been designated Class I, Class II, and Class III.⁸

Local governments may also identify “Preferred Truck Routes” that do not have the legal impact of Designated Class II or Class III truck routes. As they are required to do for Designated Class II and Class III truck routes, local governments are required to report Preferred Truck Routes to IDOT. Again, IDOT is required to post these Preferred Truck Routes on its web site.⁹ If a local government has neither Designated Class II/Class III truck routes nor Preferred Truck Routes, the local government is still required to report that to IDOT.¹⁰

1.1.2 *Truck routes help communities effectively invest in their roadway system*

In addition, and a focus of this Plan, truck routes can guide truck-related public and private investments. Truck routes can provide assurance to businesses that rely on trucks that the route is important and recognized by local and state governments. The identification of these routes also provides truck drivers with guidance—they know these routes are appropriate for truck travel.

Despite the benefits of truck routes, the approach taken to identify truck routes thus far has lacked coordination among the communities. A review of municipal ordinances in the O’Hare subregion was prepared by CMAP.¹¹ The review unearthed inconsistencies in how municipalities handle truck traffic, but the following generalizations hold:

- Most municipalities in the O’Hare subregion have not designated Class II or Class III truck routes.
- No municipalities in the O’Hare subregion have identified and submitted Preferred Truck Routes to IDOT.
- In general, municipalities in the O’Hare subregion regulate trucks by establishing widespread restrictions, then establishing exceptions where trucks were expected to operate. These exceptions are not identified as “truck routes,” but may practically function as such from the municipal point of view. However, there is typically no practical way for a truck driver to know that municipalities view the lack of restrictions in this way.
- Most communities also establish truck prohibitions or weight restrictions on certain streets.

⁶ [625 ILCS 5/15-316\(c\)](#); and [65 ILCS 5/11-40-1](#).

⁷ [625 ILCS 5/1-126.1\(d\)](#); and [625 ILCS 5/15-107\(e\)](#).

⁸ [625 ILCS 5/15-116](#). IDOT’s map of designated truck routes is available online at: <http://www.dot.illinois.gov/gettingaroundillinois/gai.htm?mt=dt>

⁹ [625 ILCS 5/11-214\(a\)](#).

¹⁰ [625 ILCS 5/11-214\(b\)](#).

¹¹ This review is included as an Appendix to this report.

This report will identify notable missing links in the truck route system, such as portions of York Rd. along the west side of O'Hare Airport and parts IL 19 along the southern edge of the Airport. Likewise, key local routes that serve a large number of freight-reliant business will be identified in the report, including Franklin Ave. in Franklin Park, which serves a major intermodal terminal.

1.2 Organization of this Document

The remainder of this technical memorandum is organized as follows:

- **Section 2** examines current conditions including land use, population patterns, road and bridge conditions, truck parking, and safety;
- **Section 3** identifies key truck origins and destinations; and
- **Section 4** lists key truck-related improvements that are already planned or under construction in the study region as included in the CMAP Transportation Improvement Program (TIP)

This document explores factors that will influence the designation of truck routes and corresponding infrastructure recommendations. These include:

- Land use, both freight generating uses and areas that are vulnerable to the negative impacts of trucks;
- Truck volumes;
- Pavement conditions, bridge conditions, and bridge restrictions including weight, height, and width limits;
- The availability of truck parking;
- The presence of at-grade rail crossings both as a potential physical impediment to trucks and as a safety risk;
- The risk of flooding;
- Safety as measured through truck-involved crashes; these crashes frequently involve injuries and fatalities in addition to congestion and delay; and
- Truck flows, including an examination of origins and destinations in the region.

This information will be combined with feedback obtained from stakeholders in Task 3 and additional technical analysis to inform the selection of potential truck routes during the development of scenarios in Task 4.

2.0 Current Conditions

This section identifies the study region and examines current conditions for assets and features that impact the ability of trucks to move in the region. Understanding current issues and opportunities allows for the development of a regionally integrated truck network and helps identify locations that need improvement.

2.1 Study Region

The O'Hare Subregion Truck Routing and Infrastructure Plan includes the following 11 municipalities: Bellwood, Bensenville, Des Plaines, Elk Grove Village, Franklin Park, Itasca, Maywood, Melrose Park, Northlake, Schiller Park, and Wood Dale. These municipalities are shown in Figure 2.1.

There are a total of just more than 1,550 miles of roads in the study region which can be organized into a number of categories.¹² The majority of road miles are roads owned by the individual municipalities and townships. These routes account for approximately 1,173 miles and are the key first and last mile connectors to many individual businesses or clusters in the region. There are an additional 60.5 miles of county roads which act both as first and last mile connections to freight generators and as through routes between local areas. Combined, these roads are considered part of the "local" road network. Unfortunately, the data available to measure conditions on these routes is limited.

The remainder of the roads in the study region are part of the State highway network or are under the control of the Illinois Tollway, a separate public entity. This network includes Illinois, U.S. and Interstate marked routes. These routes are the main arteries for truck traffic at the regional and national level. Road jurisdiction is shown in Figure 2.2.

Under the Fixing America's Surface Transportation (FAST) Act, a subset of these roads are identified as the National Highway Freight Network (NHFN), shown in Figure 2.3. Designated by the U.S. DOT in cooperation with states and metropolitan planning organizations (MPOs), such as CMAP, these routes are considered the backbone of the national freight system and include¹³:

- **Primary Highway Freight System (PHFS):** most critical highway portions of the U.S. freight network including 37,436 centerline miles of Interstates and 4,082 centerline miles of non-Interstates¹⁴;
- **Other Interstate portions not on the PHFS:** The estimated 9,511 centerline miles of Interstate that were not part of the PHFS¹⁵;

¹² Although truck routes and infrastructure recommendations will be limited to the municipalities identified above, the maps in these sections include roads that are immediately adjacent to the municipalities discussed (within approximately .1 miles). This buffer allows for an examination of roads that pass in and out of municipal boundaries as well as businesses immediately adjacent to the study region that will generate truck trips.

¹³ http://www.ops.fhwa.dot.gov/Freight/infrastructure/ismt/state_maps/states/illinois.htm

¹⁴ Illinois has 1,685.40 miles included in this designation.

¹⁵ Illinois has 586.89 miles included in this designation.

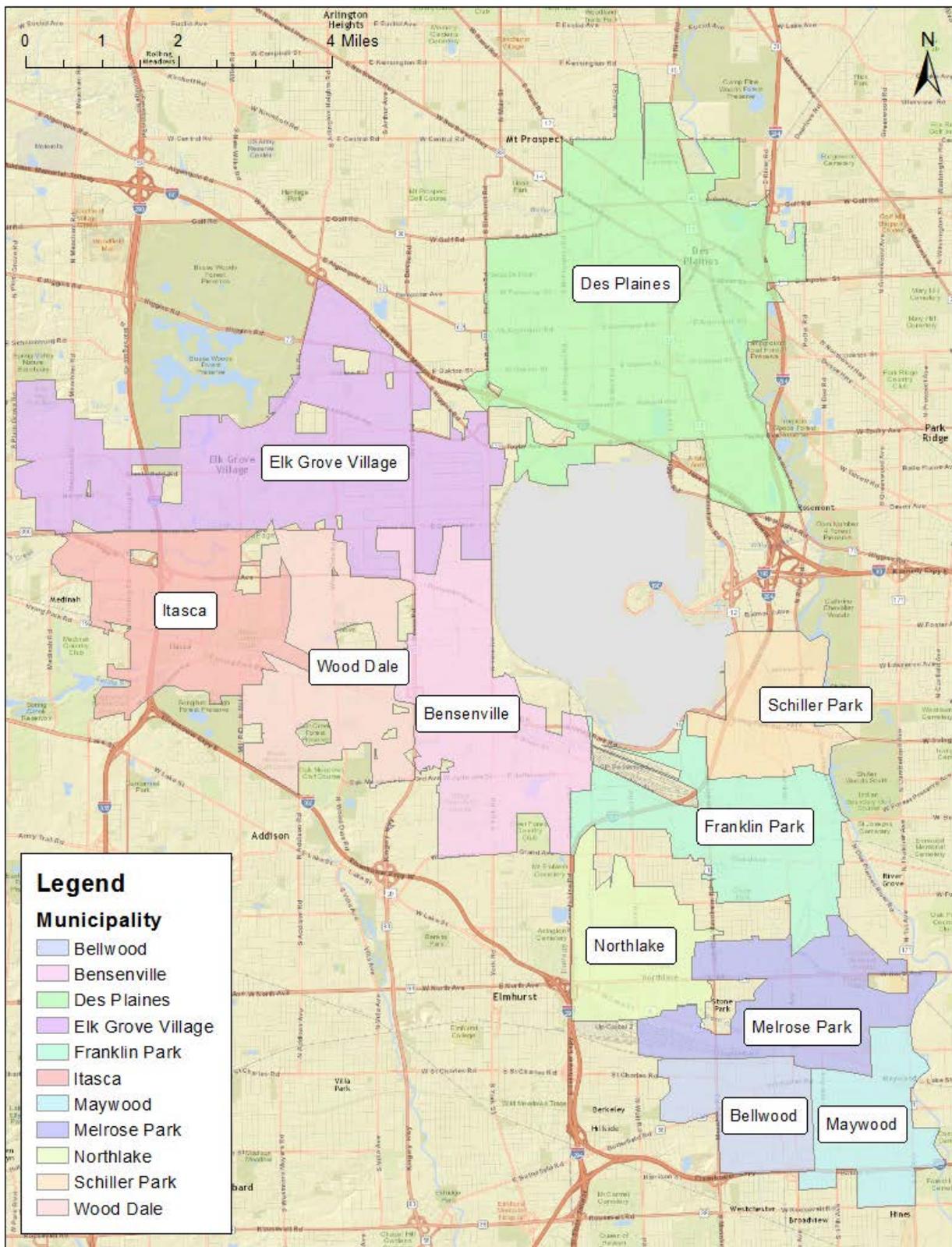
- **Critical Rural Freight Corridors (CRFCs):** Public roads not in an urbanized area which provide access and connection to the PHFS and Interstates with ports, public transportation facilities, or other intermodal freight facilities; and
- **Critical Urban Freight Corridors (CUFCs):** Public roads in urbanized areas which provide access and connection to the PHFS and Interstates with ports, public transportation facilities, or other intermodal freight facilities.

Illinois has not yet formally submitted a list of routes to FHWA for acceptance as CUFCs or CRFCs, so these routes do not appear in Figure 2.3. However, CMAP has developed a draft set of CUFCs. These routes are shown in Figure 2.4 along with the NHFN.

Only projects that are on or improve freight movement on the NHFN will be eligible for FAST Act apportioned freight funding. Illinois is expected to receive approximately \$225 million in funding between FY2016 and FY2020.¹⁶ Projects in other locations can receive funding through federal non-freight or local sources.

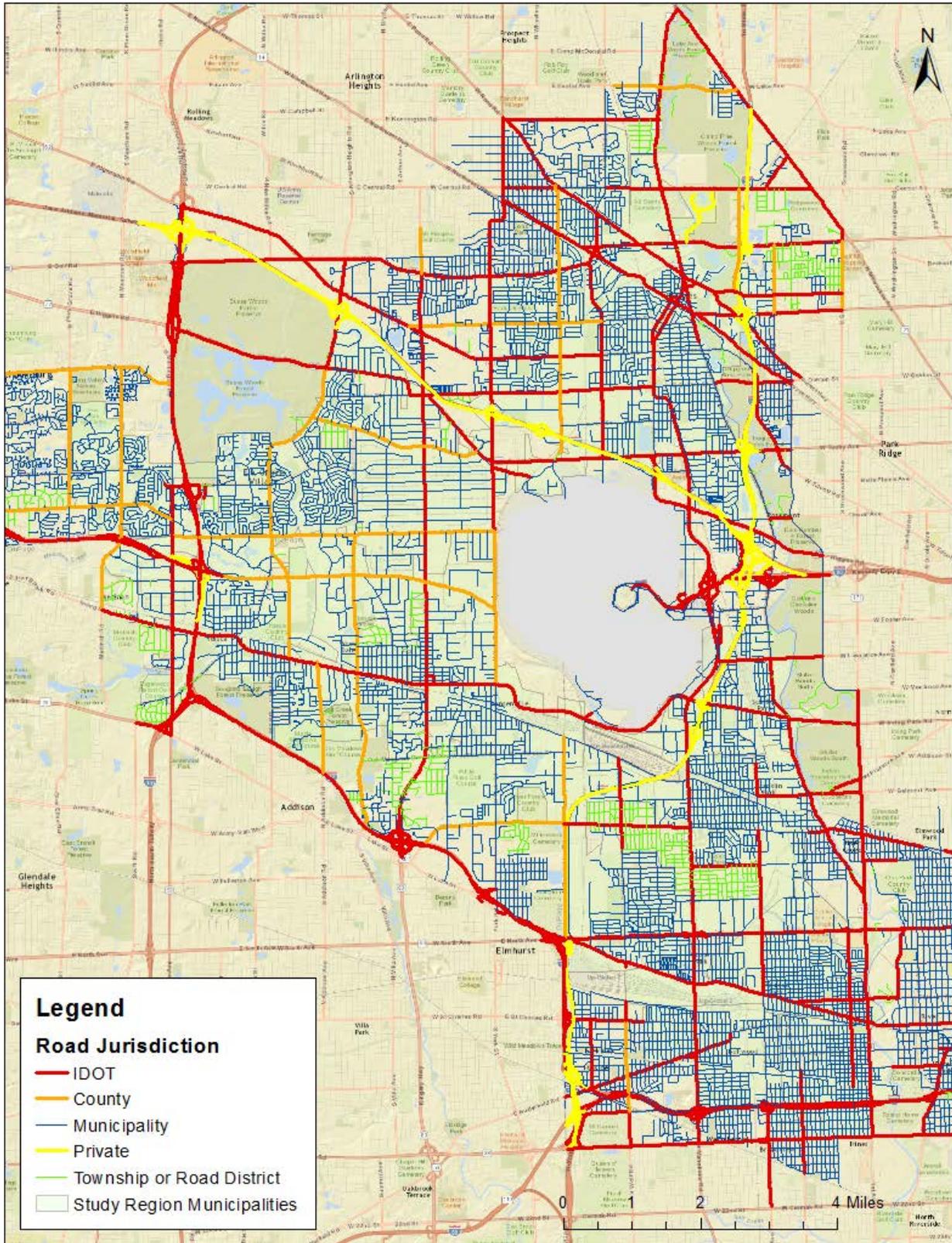
¹⁶ <http://www.idot.illinois.gov/Assets/uploads/files/About-IDOT/Fact-Sheet/FAST%20Act%20Flyer.pdf>

Figure 2.1 O'Hare Subregion - Municipal Boundaries



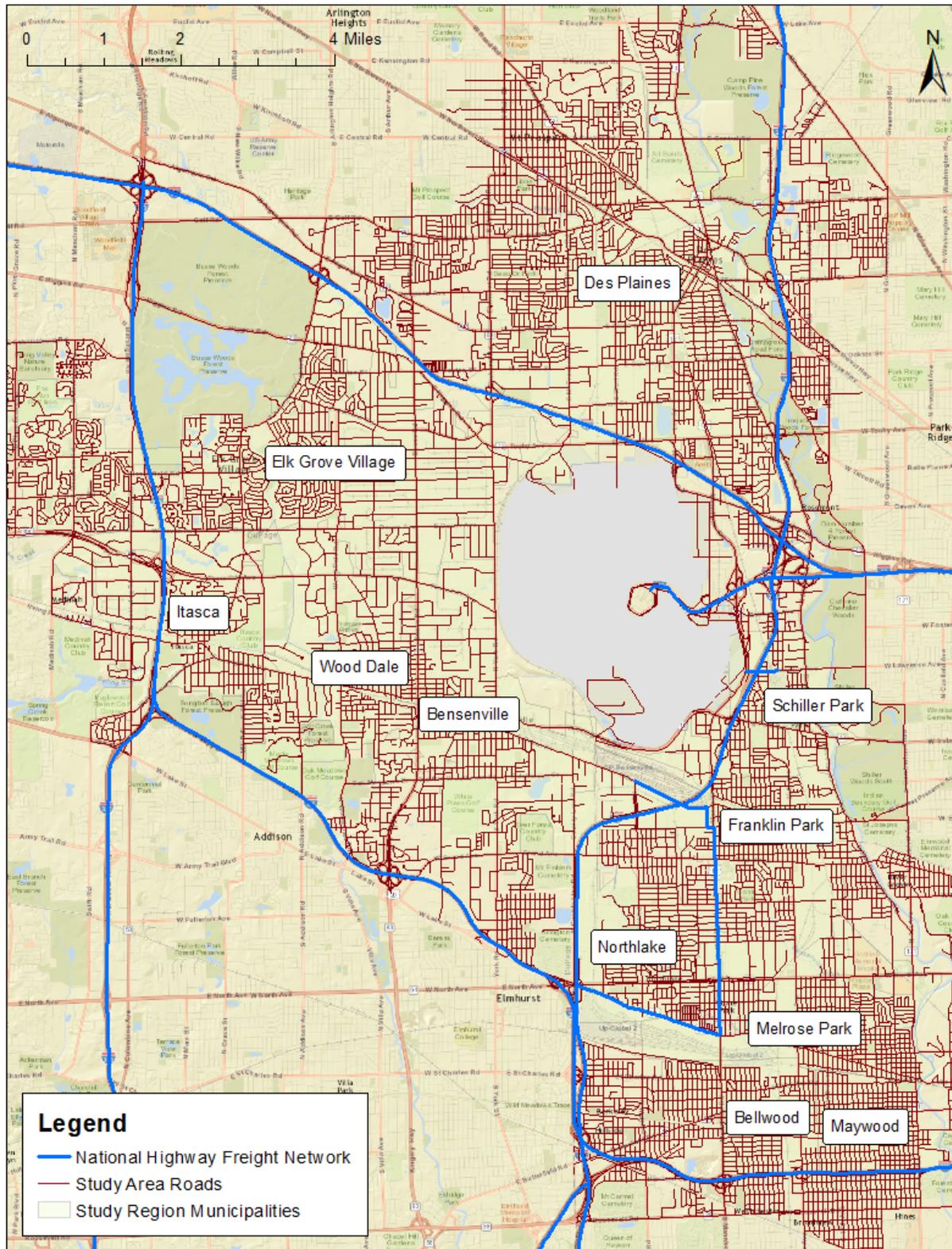
Source: <https://clearinghouse.isgs.illinois.edu/data/infrastructure/municipal-boundaries-incorporated-places-2000>

Figure 2.2 O'Hare Subregion - Road Jurisdiction



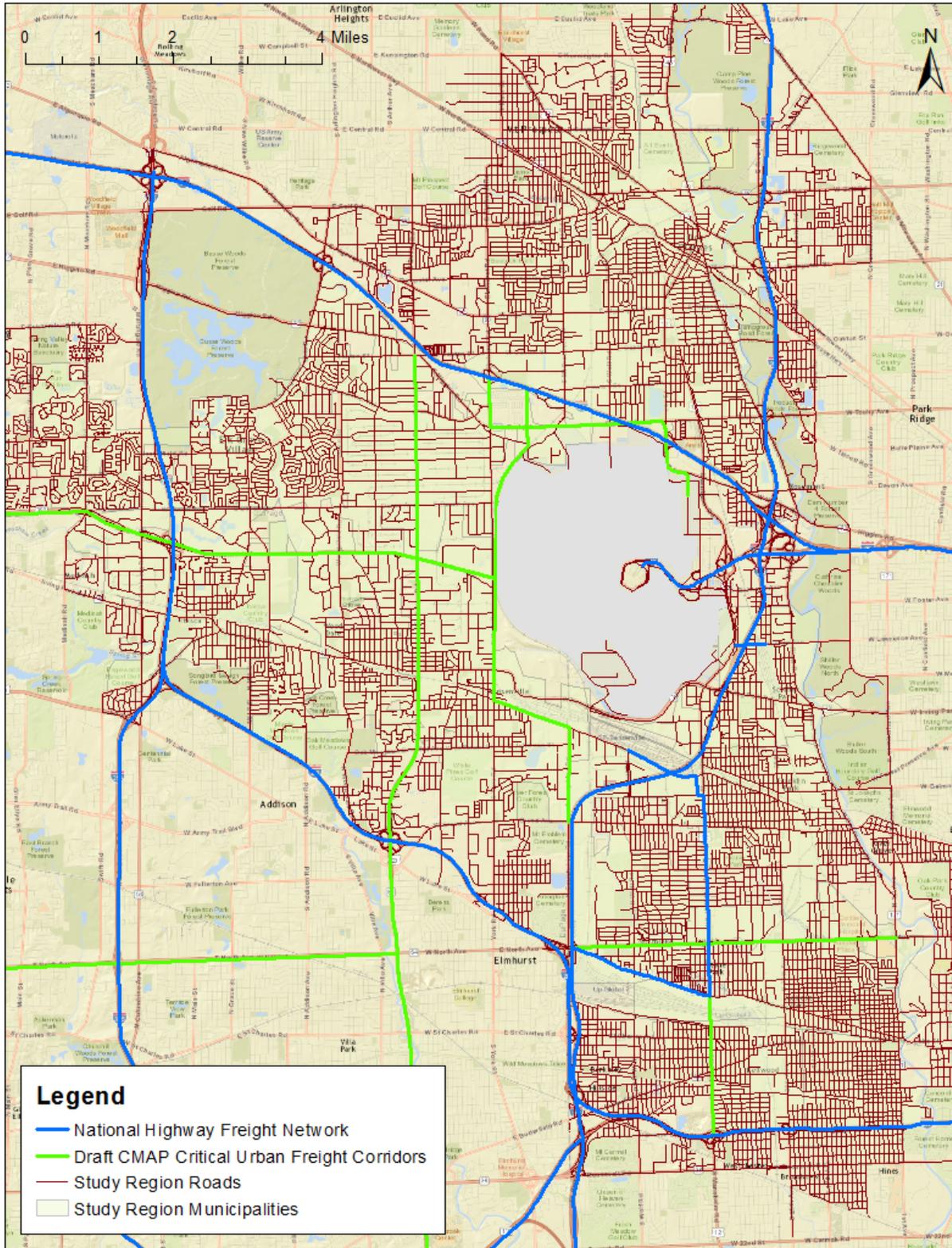
Source: IDOT. Note: On this map, "Private" also includes the Illinois Tollway, a public entity.

Figure 2.3 O'Hare Subregion - Municipalities and National Highway Freight Network



Source: CMAP, FHWA, Illinois Geospatial Data Clearinghouse (2010).

Figure 2.4 CMAP Draft Critical Urban Freight Corridors and National Highway Freight Network



Source: CMAP, FHWA, Illinois Geospatial Data Clearinghouse (2010).

2.2 Truck Rules and Regulations

2.2.1 Federal Standards

Federal truck size and weight standards have been in place since the 1950's to protect the approximately 40,000-mile Interstate Highway System. On that system, a vehicle's gross weight cannot exceed 80,000 pounds without a permit, with limits of 20,000 pounds on any single axle and 34,000 pounds on any tandem axle. Size limits, which apply to approximately 200,000 miles of roads that are part of the National Network of highways¹⁷, are not as well defined. States can set their own limits as long as they are not below a federal threshold. The following table provides an overview of these limits.

Table 2.1 Federal Commercial Vehicle Size Limits on National Network

Dimension	Limits
Vehicle Weight	80,000 pounds gross vehicle weight. 20,000 pounds for single axle, 34,000 pounds on a tandem axle
Overall vehicle length	No federal limit except for combination vehicles designed to carry automobiles or boats which cannot exceed overall length of 65 feet or 75 feet depending on connection used between tractor and trailer
Trailer length	No length limit of less than 48 feet for a truck tractor-semitrailer combination. No length limit of less than 28 feet on a semitrailer or trailer operating in a twin-trailer combination.
Vehicle width	102 inches (8 feet 6 inches)
Vehicle height	No federal standard. State limits range from 13.6 feet to 14.6 feet

Source: FHWA

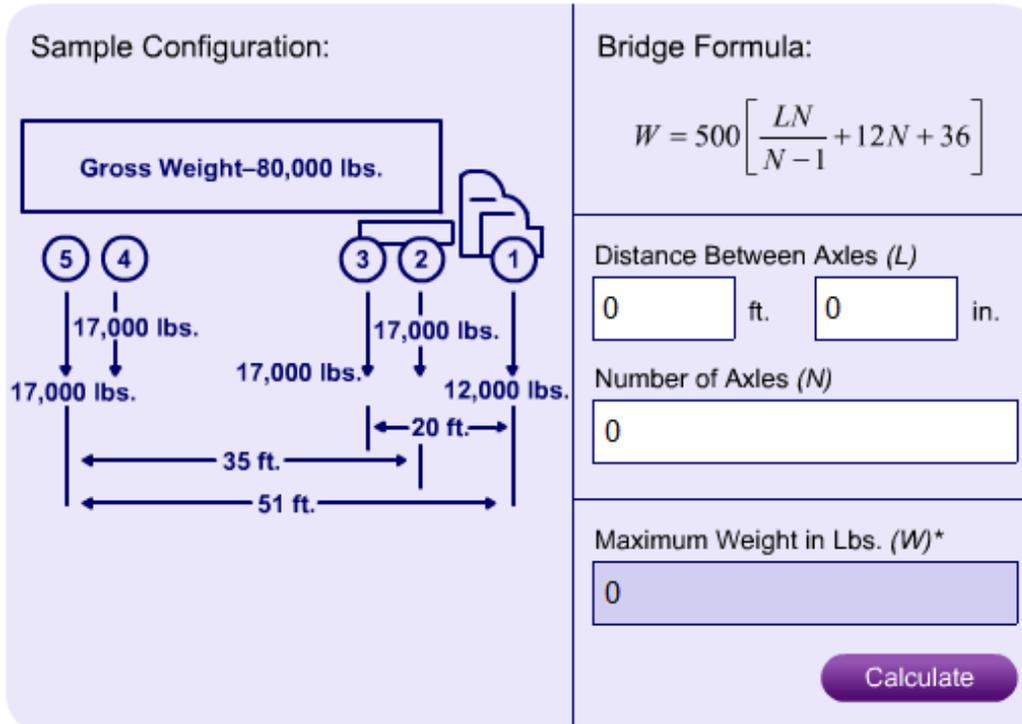
One final dimensional constraint that applies in the O'Hare region is the Bridge Formula.¹⁸ This formula, enacted by Congress in 1975 to protect bridge infrastructure, determines the maximum allowable weight that any set of axles on a motor vehicle may carry on the Interstate highway system. This formula typically applies to all trucks, even if they have a permit to legally carry a higher gross weight. Figure 2.5 below shows a calculator developed by FHWA to determine maximum allowable weights. In the formula:

- W = the overall gross weight on any group of two or more consecutive axles to the nearest 500 pounds.
- L = the distance in feet between the outer axles of any group of two or more consecutive axles.
- N = the number of axles in the group under consideration.

¹⁷ The National Network of highways includes the majority of the Interstate Highway system, and highways formerly classified as Primary System routes that are certified to the FHWA by states.

¹⁸ FHWA. *Bridge Formula Weights Calculator*. Online at: http://ops.fhwa.dot.gov/freight/sw/brdgcalc/calc_page.htm

Figure 2.5 Federal Bridge Formula Weights Calculator



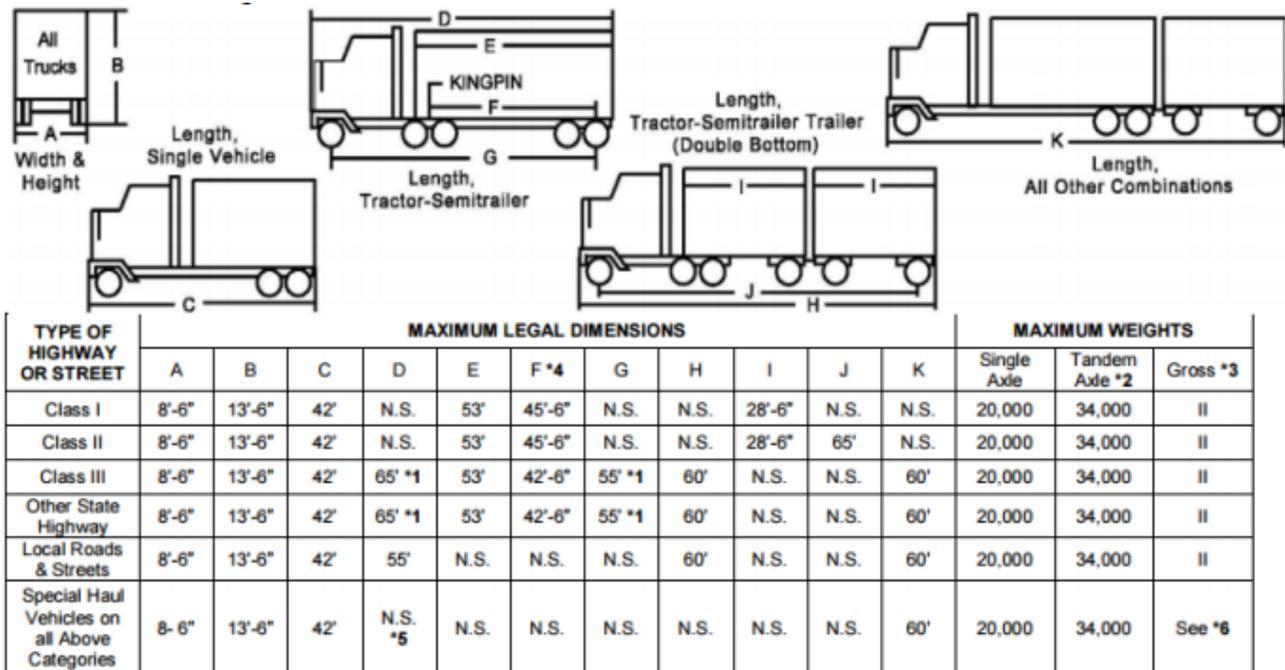
Source: FHWA

2.2.2 Illinois Standards

As described in Section 1.1.1, in Illinois, the size, weight, and load of trucks are largely governed by Chapter 15 (Size, Weight, Load, and Permits) of the Illinois Vehicle Code.¹⁹ Legal dimensions for trucks on each type of roadway are shown in Figure 2.6. These classifications and limits provide a baseline for analysis as truck routes. As routes are designated, it is important to ensure that they meet the conditions required for the type of designation desired. Routes that do not meet the conditions are either inappropriate for a truck route or will require infrastructure spending to meet these needs. For example, a bridge that can only carry 78,000 pounds would limit the usefulness of that route unless a project is planned to fix the deficiency.

¹⁹ (625 ILCS 5/15).

Figure 2.6 Illinois Maximum Legal Dimensions for Trucks



N.S. indicates legal dimension not specified.

Source: <http://www.cmap.illinois.gov/documents/10180/508249/Freight+Committee+local+truck+regulations+v2.pdf/cf2a6ec0-3679-4689-a30b-a2639ed90487>

The primary classes of designated truck routes in Illinois are Class I, Class II, and Class III routes.²⁰ The study region currently contains Class I, Class II and a small amount of Class III routes. Either the State or Local authorities can designate highways in their jurisdiction as Class II or Class III truck routes.²² Local governments can also identify “Preferred Truck Routes”, which have no effect on lawful size and weight and include routes administratively identified by local governments. When local agencies designate such routes, they are responsible for reporting the designated Class II, Class III or Preferred routes to IDOT. In turn, IDOT is responsible for preparing a statewide map of the Designated Truck Route System.²³

In Illinois, municipalities and counties may also prohibit trucks or commercial vehicles on highways, or impose weight limitations, for highways under their jurisdiction, provided the prohibitions or weight limits are signed.²⁴

²⁰ Since legislation allowing 80,000 lb. legal loads, Class III routes have become in practice almost identical to Class II, with the exception that Class II routes require 11 foot lanes

²² [625 ILCS 5/1-126.1\(d\)](#); and [625 ILCS 5/15-107\(e\)](#).

²³ [625 ILCS 5/15-116](#). IDOT’s map of designated truck routes is available online at: <http://www.dot.illinois.gov/gettingaroundillinois/gai.htm?mt=dtr>

²⁴ [625 ILCS 5/15-316\(c\)](#); and [65 ILCS 5/11-40-1](#).

Depending upon the length of the truck, travel within Illinois is restricted by statute.²⁶ A CMAP analysis of showed the following key legal limitations for truck travel on municipal and county roads and streets (also described in Section (1.1.1) :

- For trucks with an overall length of more than 65', access on local-jurisdiction roads and streets is limited to the following conditions:
 - Access is permitted on any local road or street within 1 mile of a Class I truck route, unless signs are posted restricting such access.²⁷
 - Access is also permitted from State-Designated Class I and Class II truck routes for 5 miles onto any Locally-Designated Class II or Class III truck route. (Access is also permitted for 5 miles onto any state highway.)

Otherwise, access for trucks longer than 65' is unlawful on local roads and streets. This is highly restrictive and needs to be addressed to assure lawful travel.

- For trucks with an overall length of greater than 55', but not more than 65', lawful access is limited to the following conditions:
 - From any State-Designated Class I, Class II, or Class III truck route, access for loading and unloading freight is permitted for 5 miles on all municipal, county, and township roads.
 - From any State-Designated Class I, Class II, or Class III truck route, access for food, fuel, repairs, and rest is permitted for 1 mile on municipal roads, and 5 miles on county and township roads.

Otherwise, access for trucks with an overall length of greater than 55', but not more than 65', is unlawful on local roads and streets. Given the availability of State-Designated truck routes, this is only moderately restrictive.

- For trucks up to 55' in overall length, access is unrestricted by state statute. Local governments may apply additional restrictions, provided they are signed.

In essence, trucks may legally travel up to one to five miles from Class I and Class II routes to reach a destination. These access limits are dependent on the main route of travel and the purpose of travel, as shown in Figure 2.7. Note that trucks over 65' in length are not permitted on local-jurisdiction roads except within one highway mile of a Designated Class I truck route or on Locally Designated Class II and Class III truck routes.

²⁶ American Association of State Highway and Transportation Officials, *A Policy on Geometric Design of Highways and Streets*. Fourth Edition (2001). pp. 33-34. These exhibits show the dimensions and minimum turning path for interstate semitrailers with 48' and 53' trailers. The design vehicle lengths are 68.5' for 48' trailers, and 73.5' for 53' trailers.

²⁷ Access here means to points of loading and unloading, and facilities for food, fuel, rest and repair provided there is no sign prohibiting that access

Figure 2.7 Illinois Truck Reasonable Access Regulations

Access for a truck with an overall length of 65 feet		
	Loading and unloading freight	Food, fuel, repairs, and rest
From designated State highway*	5 miles on all municipal, county, and township roads	1 mile on municipal roads 5 miles on county and township roads
Access for a truck over 65 feet long		
	Loading and unloading freight	Food, fuel, repairs, and rest
From Class I	1 mile on all municipal, county, and township roads	
From Class I or Class II	5 miles onto any State highway or locally designated truck route	

*Includes Class I and state-jurisdiction Class II truck routes

Source: CMAP analysis of the Illinois Vehicle Code, Chapter 15

Source: <http://www.cmap.illinois.gov/documents/10180/508249/Freight+Committee+local+truck+regulations+v2.pdf/cf2a6ec0-3679-4689-a30b-a2639ed90487>

In addition, municipalities may prohibit trucks or commercial vehicles on highways, or impose weight limitations, for highways under their jurisdiction, provided the prohibitions or weight limits are signed.²⁸ The discrepancy in regulations between adjoining municipalities can lead to confusion and inefficiency.

The combination of the above factors means that a specific roadway can fall into one of three definitions:

- An expressly defined truck route;
- A route that is not defined as a truck route, but on which trucks are not prohibited; or
- A route on which trucks are expressly prohibited.

2.3 Truck Routes, Restrictions, and Land Use

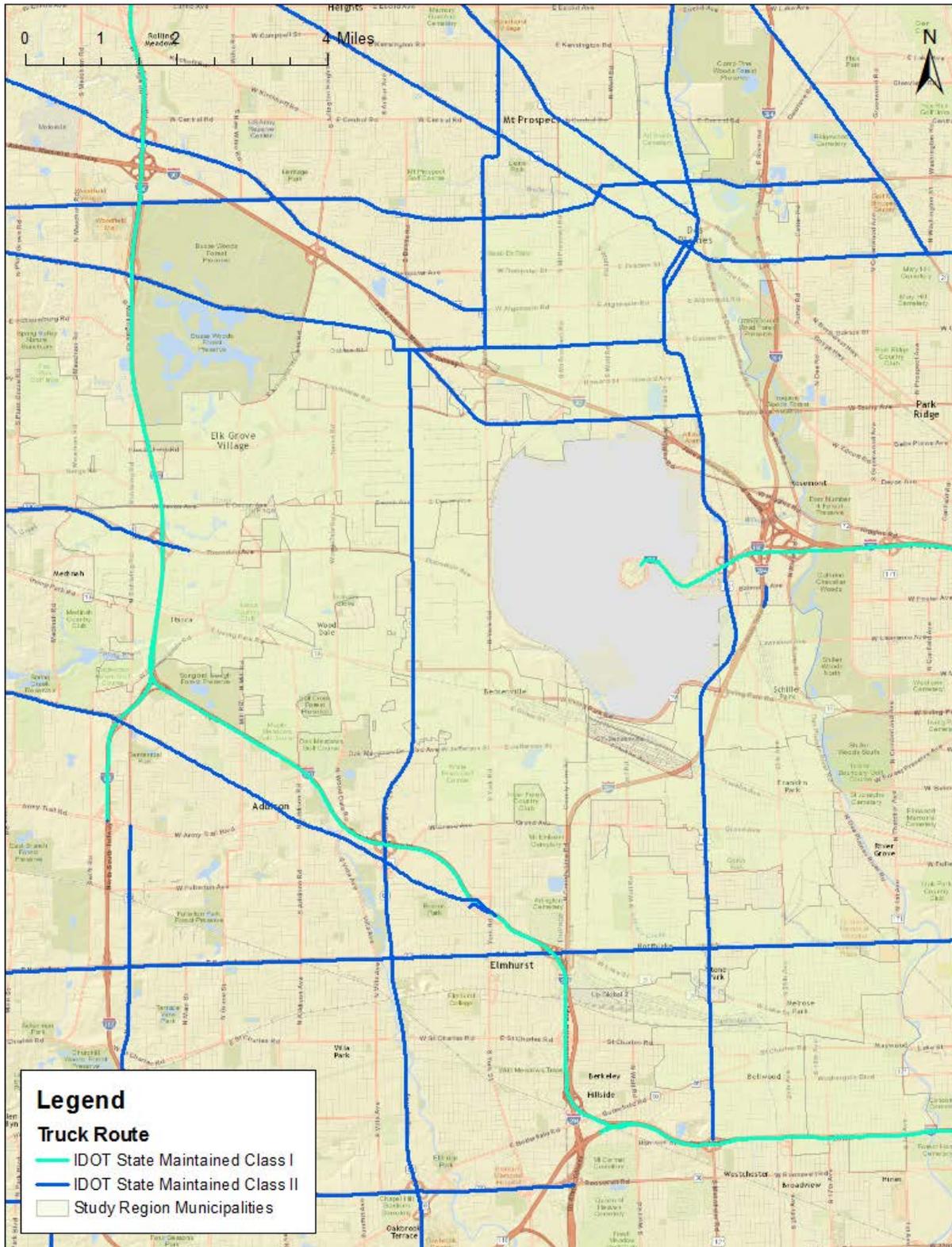
There are currently a variety of governmental approaches to the regulation of truck traffic in the study region across the various owners of the network's roadways.

2.3.1 Existing Designated Truck Routes

Designated truck routes in the study region total approximately 166 miles of roads and are shown in Figure 2.8 and Figure 2.9 and are summarized in Table 2.2.

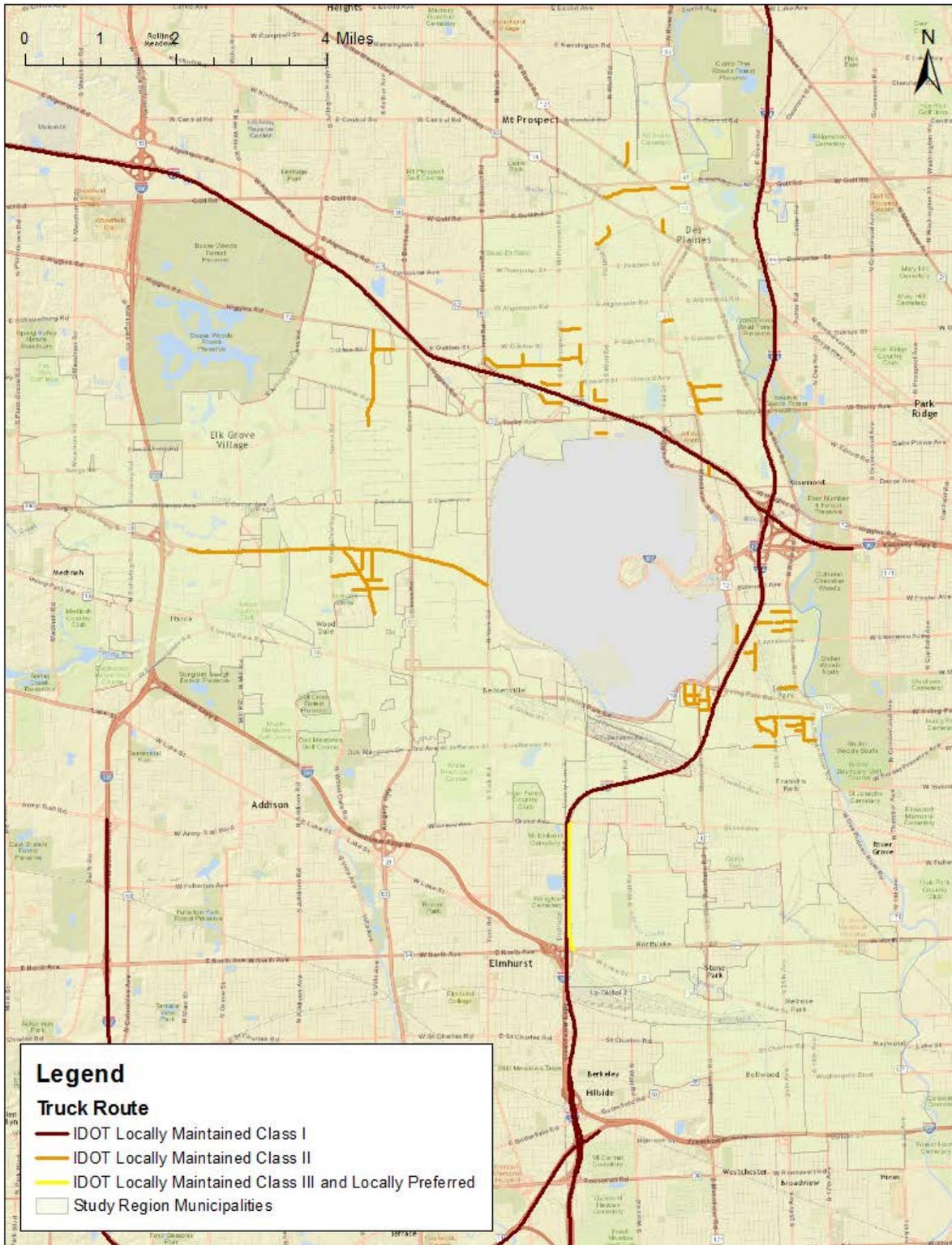
²⁸ [625 ILCS 5/15-316\(c\)](#); and [65 ILCS 5/11-40-1](#).

Figure 2.8 O'Hare Subregion –State Maintained Class I and II Truck Routes



Source: IDOT, Franklin Park LTA Application. Compiled by Cambridge Systematics. Note that State Truck Routes outside the study region are shown but not included in calculations.

Figure 2.9 O'Hare Subregion –Locally Maintained Class I, II, III and Preferred Truck Routes



Source: IDOT, Franklin Park LTA Application. Compiled by Cambridge Systematics. Note that State Truck Routes outside the study region are shown but not included in calculations.

Table 2.2 O'Hare Subregion Existing Designated Truck Routes - Summary

Truck Route Type	Miles in Subregion
IDOT State Maintained Class I	28.08
IDOT State Maintained Class II	83.15
IDOT Locally Maintained Class I	29.49
IDOT Locally Maintained Class II	23.37
IDOT Locally Maintained Class III and Locally Preferred	1.8
Total	165.89

Source: CMAP, Community Planning Program Local Technical Assistance Program. Village of Franklin Park, O'Hare Subregion Truck Routing and Infrastructure Plan Application Survey Appendix 1 (2014). "Franklin Park LTA Application" in Remainder of Document

State maintained Class I Truck Routes include the majority of the Interstate highway system in the O'Hare Subregion, excluding the Interstate routes under the control of the Illinois Tollway which are classified as locally maintained Class I routes in the state database of truck routes. State maintained Class II routes include many of the key U.S. and state highways in the region.

Unsurprisingly, the state maintained Class I and Class II Truck Routes plus the Interstates under Tollway control largely overlap the NHFN and Draft CUFC network including the majority of Interstate, U.S., and State routes in the region. However, there are some NHFN and Draft CUFC routes not included such as:

- A small portion of IL 72;
- Portions of U.S. 20.

Note that trucks can still use these routes but they are not specifically identified by IDOT. In addition, the lack of identification can create confusion and a lack of certainty for businesses and truckers. The locally maintained Class II, Class III, and Preferred Truck Routes expand this system to a number of local roads in Schiller Park.

More broadly, a number of key routes have been identified as potential Class I or Class II truck routes, either on the IDOT or locally maintained highway system. These include parts of IL 19 (Irving Park Road), 25th Avenue, IL 390, parts of Franklin Avenue, and parts of Grand Avenue. Some of these can be designated by local governments, but some will require coordination with IDOT, since local communities may not designate state highways as Class I, Class II, or Class III truck routes.

In Des Plaines, there are a number of routes designated as "Overweight Truck Routes" which do not appear on the official IDOT list but since they are designated for overweight loads, they are also able to carry 80,000 pound trucks. Des Plaines was the only municipality that provided overweight truck routes.

2.3.2 Truck Restrictions

On the opposite side of the spectrum, truck restrictions limit the areas where trucks may travel. Some routes limit trucks above a certain size or weight, while other truck restrictions apply to all trucks. These restrictions are put in place by a local ordinance for many reasons, including:

- Specific structural issues such as a low bridge or weak pavement;
- Community opposition to truck traffic; and
- Presence of vulnerable land uses or security targets.

Reading from local ordinances (see Appendix A), truck restrictions in the study region on streets are shown in Figure 2.10. This map shows the prevalence of truck restrictions in the study area, but comes with three caveats:

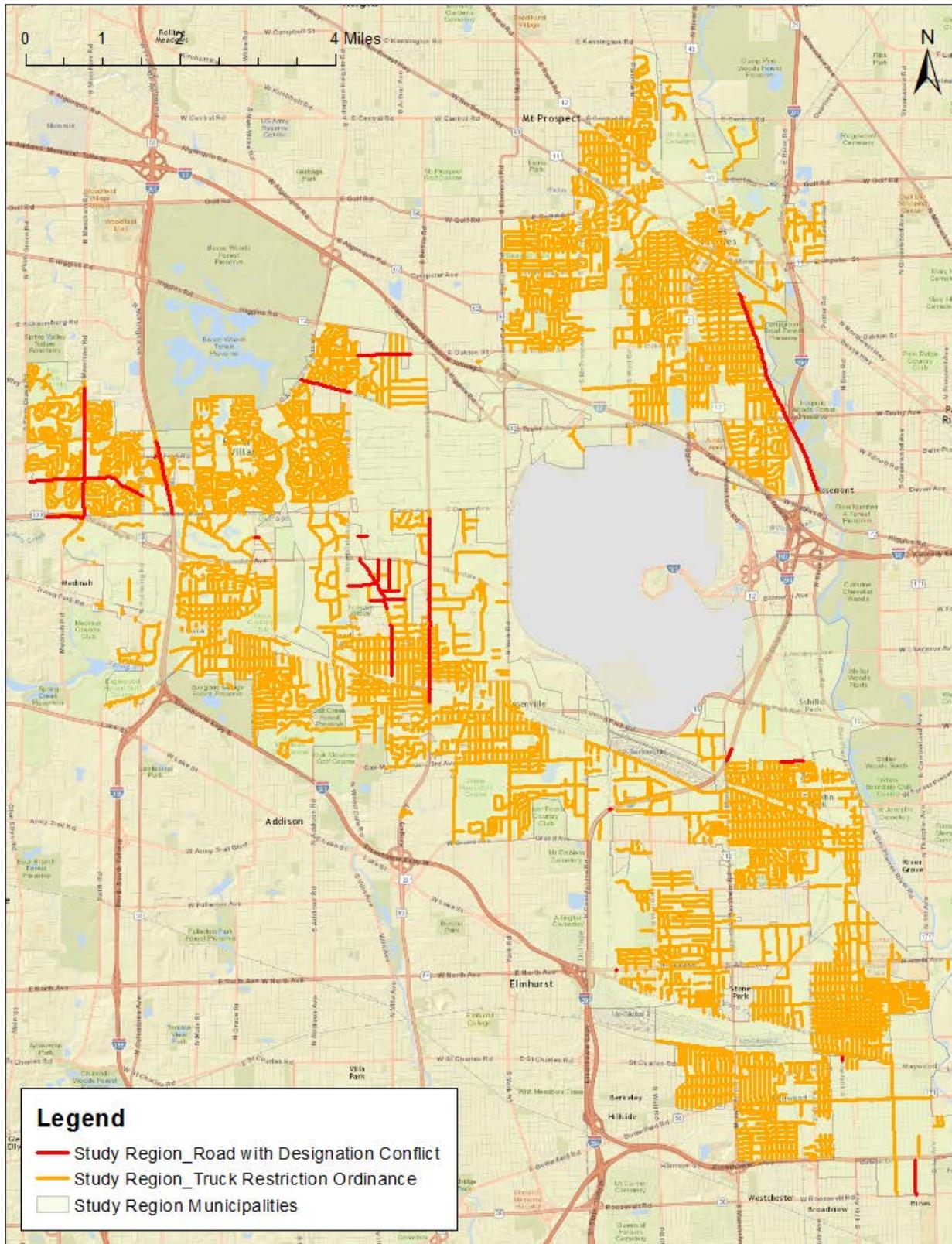
- A restriction is not in effect unless signed;
- A local agency may not establish a truck restriction on another jurisdiction's streets and highways (some of the ordinances may attempt to do so or may be constructed in such a way as to appear to do so);
- Signs with truck restrictions that do not seem to be supported by ordinance, not mapped in the following figure, have been observed in the study area.²⁹

The locations of these restrictions will be incorporated into the recommended scenario development in Task 4. Depending on the cause, truck restrictions may cause the re-routing of an intended truck route or the development of a project to improve the infrastructure and relieve the need for the restriction. In addition, there are a number of locations where truck restrictions appear to overlap with designated truck routes. For example, in Schiller Park, Waveland Ave. east of Ruby St. is designated as a Class II Truck Route. However, based on the ordinances of Franklin Park, the route also has a 5-ton weight limit with an exception for reasonable access. Another example occurs on Central Ave. north of Foster Ave in Wood Dale. This road is also a locally-designated Class II Truck Route with a 9-ton gross weight limit except for pickups and deliveries. IL 83 in Bensenville is another key road that appears to have a conflict, but is an artifact of ordinance construction, and isn't valid because it is a state-jurisdiction route. These inconsistencies will be among the local-ordinance issues to be examined further in Task 4.

As previously described, most municipalities generally restrict trucks from most of their roads. While the remaining unrestricted streets are not designated Class I, Class II, Class III, or Preferred Truck Routes, when taken together with these designated routes, they represent a potential starting place for analysis in later Tasks. As such, throughout the remainder of the existing conditions report, most maps include a layer called "O'Hare Subregion – All Truck Routes", which is a combination of designated Class I, Class II, Class III, Preferred Truck Routes, and unrestricted local streets.

²⁹ A comprehensive sign inventory has not been conducted as part of this project.

Figure 2.10 O'Hare Subregion - Truck Restrictions



Source: CMAP, IDOT.

2.3.3 Land Use

This section identifies and maps the land uses in the study region that drive the majority of freight needs. It also maps areas that are particularly vulnerable to the negative impacts of truck traffic, including open spaces and recreation areas, excluded communities, and areas with high population densities. This information is needed to understand key origins and destinations, areas that truck routes should avoid whenever possible, and potential conflict areas where freight needs and truck vulnerabilities overlap which will drive the identification and selection of draft routes in later Tasks.

2.3.4 Freight Related Land Uses

Understanding land use patterns is a key component in evaluating the existing conditions in the O'Hare Subregion. Land use drives the origins and destinations of freight, and ultimately the roads that trucks need to use to reach those locations.

All businesses rely on the freight network to some extent. Even companies that work in service sectors such as real estate, finance, and law need to send and receive packages and mail, bring in shipments of office supplies or food, and remove waste from their facilities. However, certain sectors of the economy rely on the movement of goods on a daily basis in order to perform central business functions. Companies in these sectors are considered “freight reliant” and generate the majority of shipments. Identified by North American Industry Classification System (NAICS) codes, they include:

- Agriculture, Forestry, Fishing, Hunting;
- Mining, Quarrying, and Oil and Gas Extraction;
- Utilities;
- Construction;
- Manufacturing;
- Wholesale Trade;
- Retail Trade; and
- Transportation and Warehousing.

CMAA's Land Use Inventory from 2010 provided the basis for Land Use in the region.³⁰ Figure 2.11 identifies locations in and adjacent to the study region classified as Industrial, Commercial, Transportation/Communications/Utilities/Waste, Agricultural, Vacant industrial or commercial, and Under Construction industrial or commercial. Industrial and Transportation uses dominate the region. Areas with a high concentration of freight-reliant uses include Elk Grove Village and parts of Itasca to the west of O'Hare, Franklin Park surrounding a pair of rail intermodal facilities south of O'Hare, a small cluster in Des Plaines north of O'Hare, and a string of uses southeast of O'Hare roughly between N River Rd./5th Ave and 25th Ave. Figure 2.12 identifies major cargo facilities within the study region that generate large amounts of truck

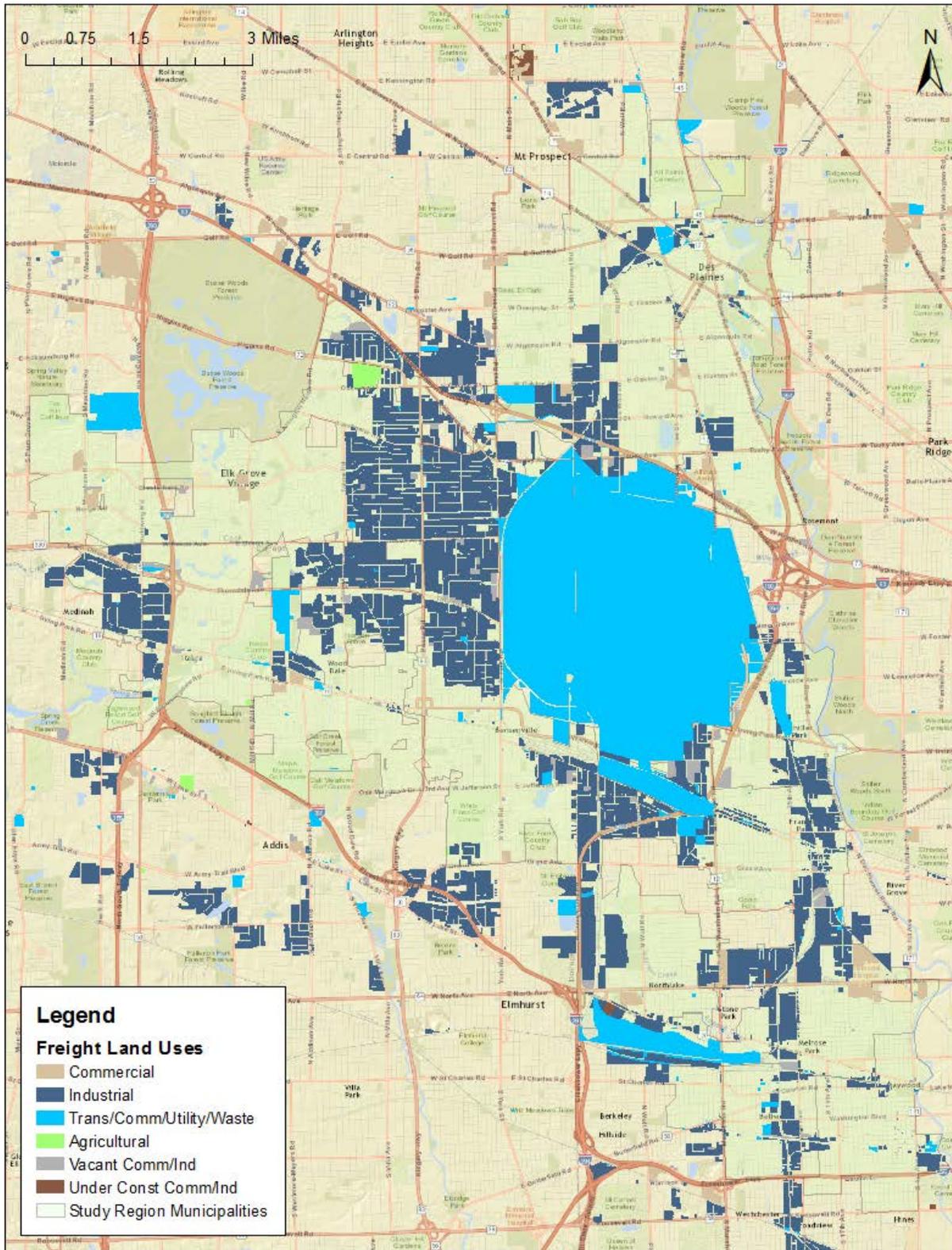
³⁰ <http://www.cmap.illinois.gov/data/land-use/inventory>

traffic, including O'Hare airport, the Canadian Pacific Intermodal Yard in Bensenville, and the Union Pacific Global II facility in Northlake.

The available land use data has some important limitations due to the constrained land use categories provided. For example, a retail trade and services category is not mapped. This land use contains some freight reliant businesses such as small grocery stores and restaurants, but it also contains professional service uses such as finance and real estate. The data is not detailed enough to distinguish between them, so those areas were not mapped. For similar reasons, the Urban Mix category with commercial use on the bottom floor and housing above was not mapped.³¹

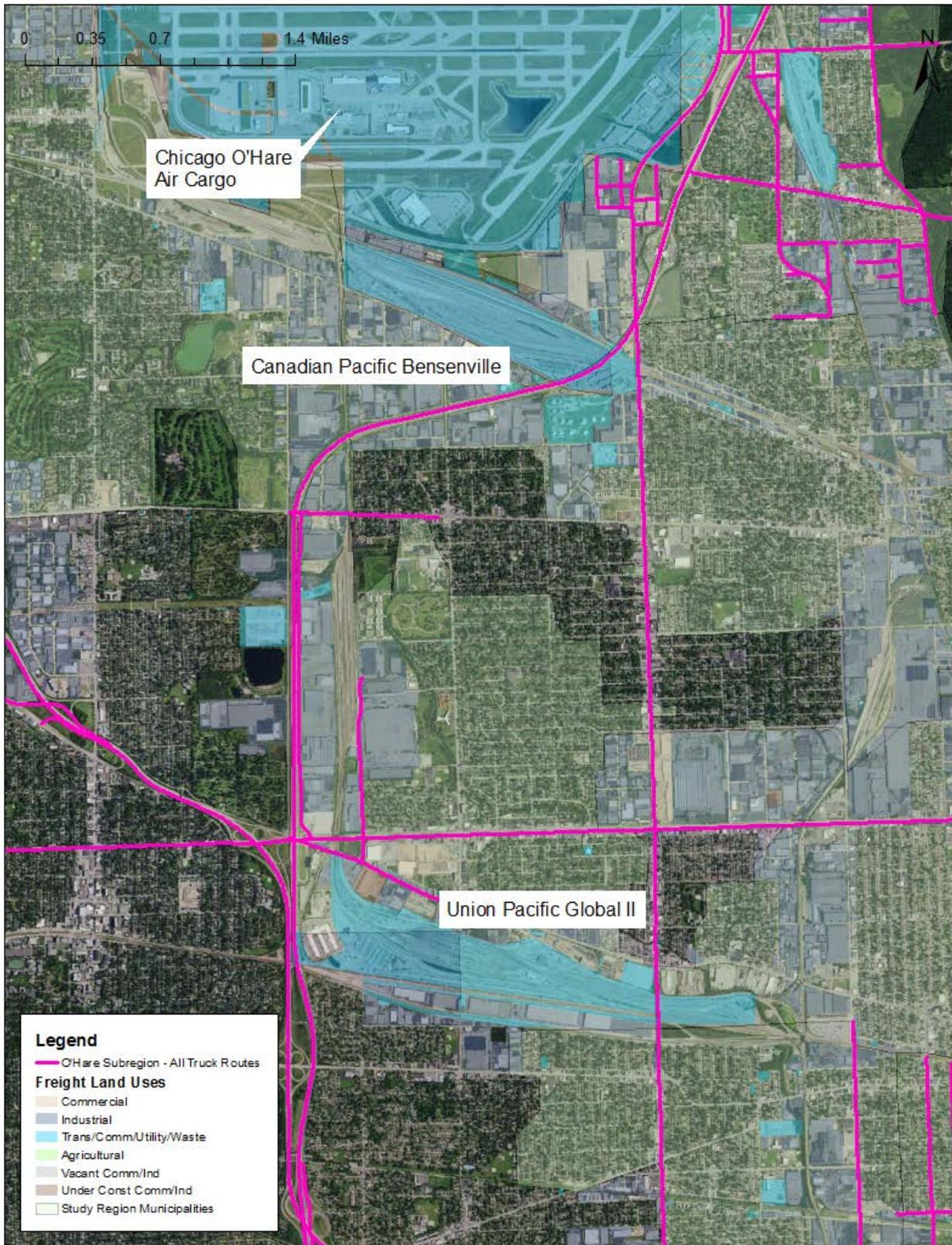
³¹ CMAP Land Use Codes 1215 and 2016.

Figure 2.11 O'Hare Subregion - Freight Reliant Land Uses



Source: CMAP Land Use Inventory (2010)

Figure 2.12 South O'Hare Subregion - Rail and Air Facilities



Source: CMAP. Compiled by Cambridge Systematics. *Note that the runway configuration at O'Hare Airport was updated in 2015.

2.3.5 Vulnerable Land Uses

Areas like those identified above attract and generate large numbers of truck trips and are the key targets for truck route access. There are also a number of land uses that truck trips should try to avoid whenever possible in order to lessen the negative impacts associated with truck movements—particularly air and noise pollution. These land uses are identified below.

Excluded Communities

According to CMAP, “Environmental justice’ involves ensuring that the benefits and burdens of regional transportation decisions are shared by all socioeconomic groups, specifically including low-income and minority populations.”³² Areas with the greatest concentration of low-income and minority populations are termed “excluded communities” in the development of ON TO 2050 and are shown in Figure 2.13.³³ Areas along the north, west, and south boundaries of O’Hare Airport overlap with some of the most important freight facilities and businesses in the region, indicating that truck route choices in these regions will likely require a higher level of scrutiny. One of the key goals of ON TO 2050 is promoting an inclusive model of economic growth that improves the quality of life for marginalized populations while strengthening the region as a whole.³⁴

Open Space and Institutional Land Uses

In addition to residential areas which are discussed below, residents typically want trucks to avoid open spaces designed for recreation or conservation. Parks, conservation areas, trails and greenways, and other “green” areas are mapped in Figure 2.14. However, in a built-out environment like the study region, green space can also act as a buffer between residential communities and freight intensive land uses or corridors. Institutional uses such as schools and government buildings are also identified with medical facilities called out as a separate category. These facilities are a challenge for planning truck routes as they often produce and consume freight on a large scale but also serve people that are most vulnerable to the negative impacts of freight movement including high traffic levels, noise, and air pollution. They are included here as vulnerable uses, but must be considered as origins and destinations for trucks as well.

High Population Density Areas

Areas with high population density exist throughout the O’Hare Subregion. This analysis examined 2010 U.S. Census population at the Census Block level, the smallest geographic unit used by the Census. This small scale is useful because it provides a higher level of detail allowing truck routing decisions to consider population on a street-by-street basis. Population density in the study region in 2010 ranged from 0 persons per square mile to 248,182 persons per square mile as shown in Figure 2.15 below. The highest-density locations are more than 45 times denser than the average density in Cook (approximately 5,500 persons per square mile) or DuPage (approximately 2,800 persons per square mile) County in 2010.³⁵ Areas with the highest population densities include the north and east sections of Des Plaines, though high population

³² <http://www.cmap.illinois.gov/about/2040/supporting-materials/process-archive/scenario-evaluation/scenario-outcomes/environmental-justice>

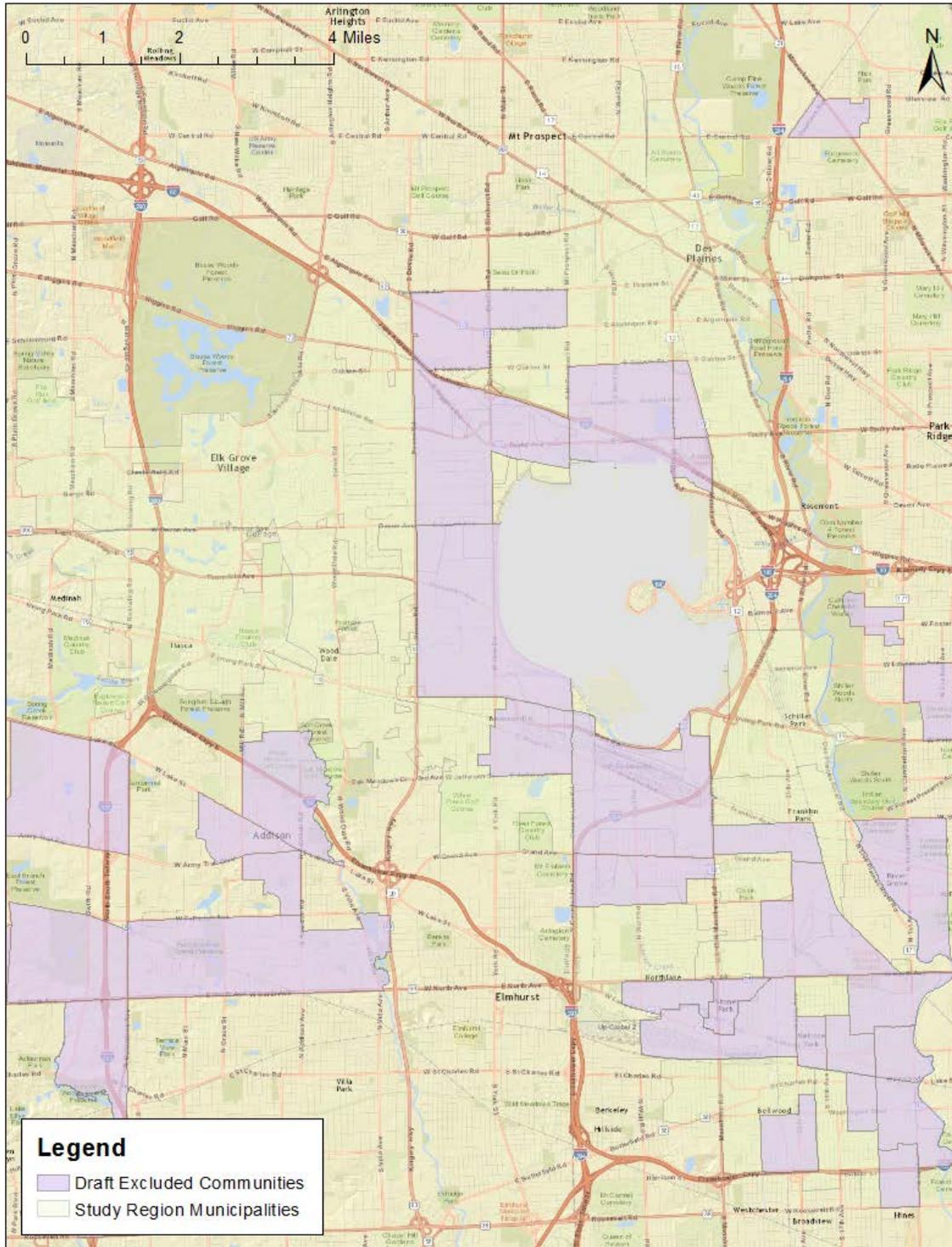
³³ This information is still in draft form.

³⁴ <http://www.cmap.illinois.gov/onto2050/strategy-papers/inclusive-growth>

³⁵ <https://www.census.gov/prod/cen2010/cph-2-15.pdf>

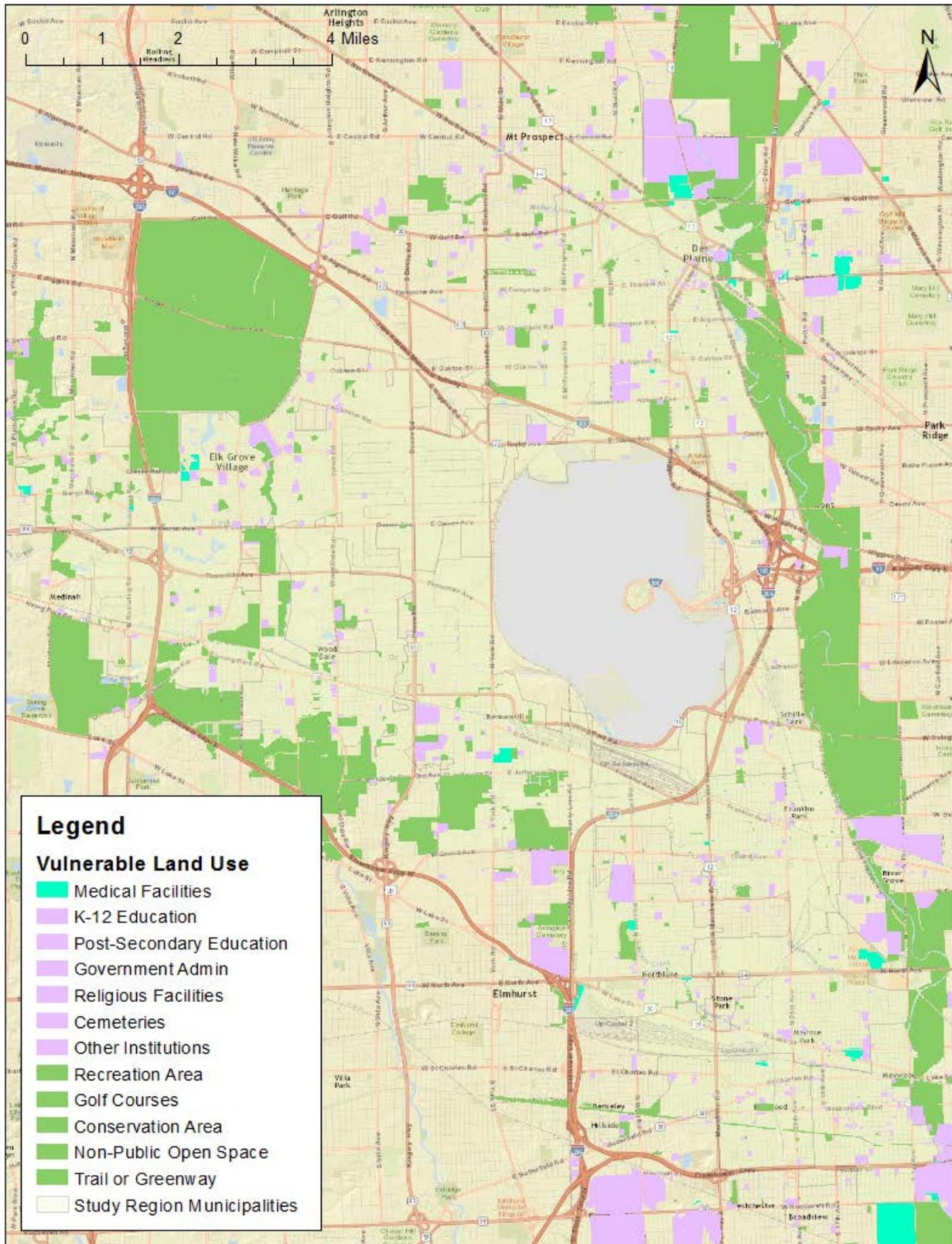
densities exist in all parts of the study region with the notable exception of an area in Elk Grove Village directly west of O'Hare which is a large industrial park.

Figure 2.13 O'Hare Subregion - Draft Excluded Communities



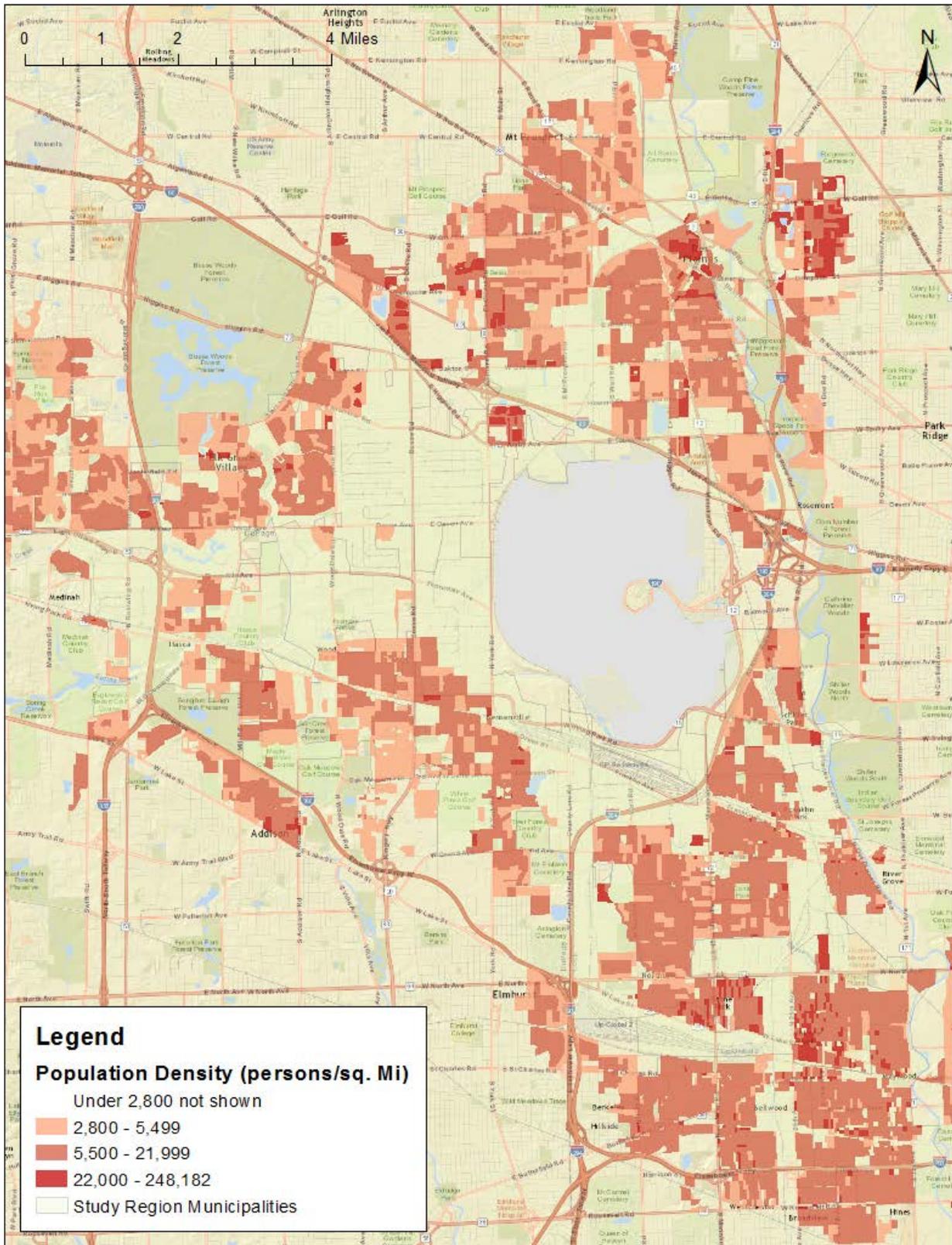
Source: CMAP "ON TO 2050" Draft

Figure 2.14 O'Hare Subregion - Open Space and Institutional Land Uses



Source: CMAP Land Use Inventory (2010)

Figure 2.15 O'Hare Subregion - Population Density, 2010



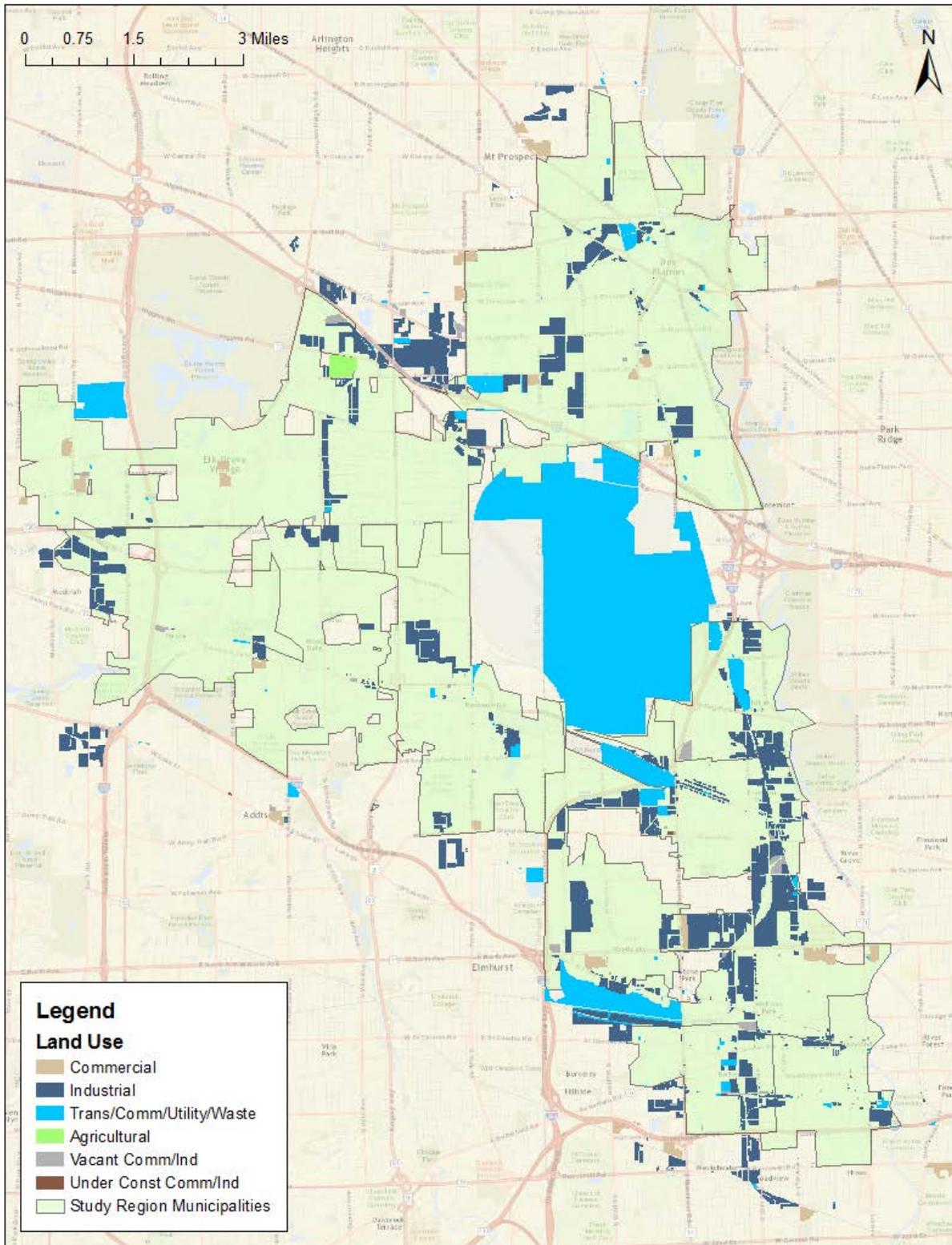
Source: U.S. Census (2010). CMAP. Note that areas with population densities less than 2,800 are not shown

2.3.6 Areas of Potential Concern

Locations where freight land uses overlap with regions with high population densities or “green” land use will require a more careful analysis when developing draft truck routes in later Tasks. For example, Figure 2.16 below shows locations where high population densities³⁶ exist in close proximity to freight land uses. Many of these potential conflict locations follow the rail lines south and east of O’Hare with smaller clusters in southwestern Des Plaines, western Itasca, and northern Elk Grove Village. The need for trucks to access freight related land uses must be balanced with the desire to keep trucks away from large population bases when possible to help protect residents from the potential negative impacts of truck traffic. These are locations where truck routes may not be “obvious” and careful consideration will be needed to decide on the best route that serves both needs.

³⁶ Defined here as locations with more than 5,500 persons/sq. mi. (Cook County 2010 average).

Figure 2.16 O'Hare Subregion - Freight Land Use Within 0.1 Miles of Population Density of 5,500 persons/Sq. Mi. or above



Source: CMAP, U.S. Census

2.4 Traffic Volume

Traffic volume, both truck and all vehicles, is an important consideration when developing truck routes. The highest traffic volume on state routes is 203,700 average annual daily traffic (AADT) located on I-90 just east of the I-90/I-190 split, immediately east of the study region. Within the study region, I-290 between IL 390 and I-355 has the highest traffic volume at 202,300 AADT. The other location with AADT higher than 200,000 is I-294 along the eastern edge of O'Hare. Total traffic volume are shown in Figure 2.17.

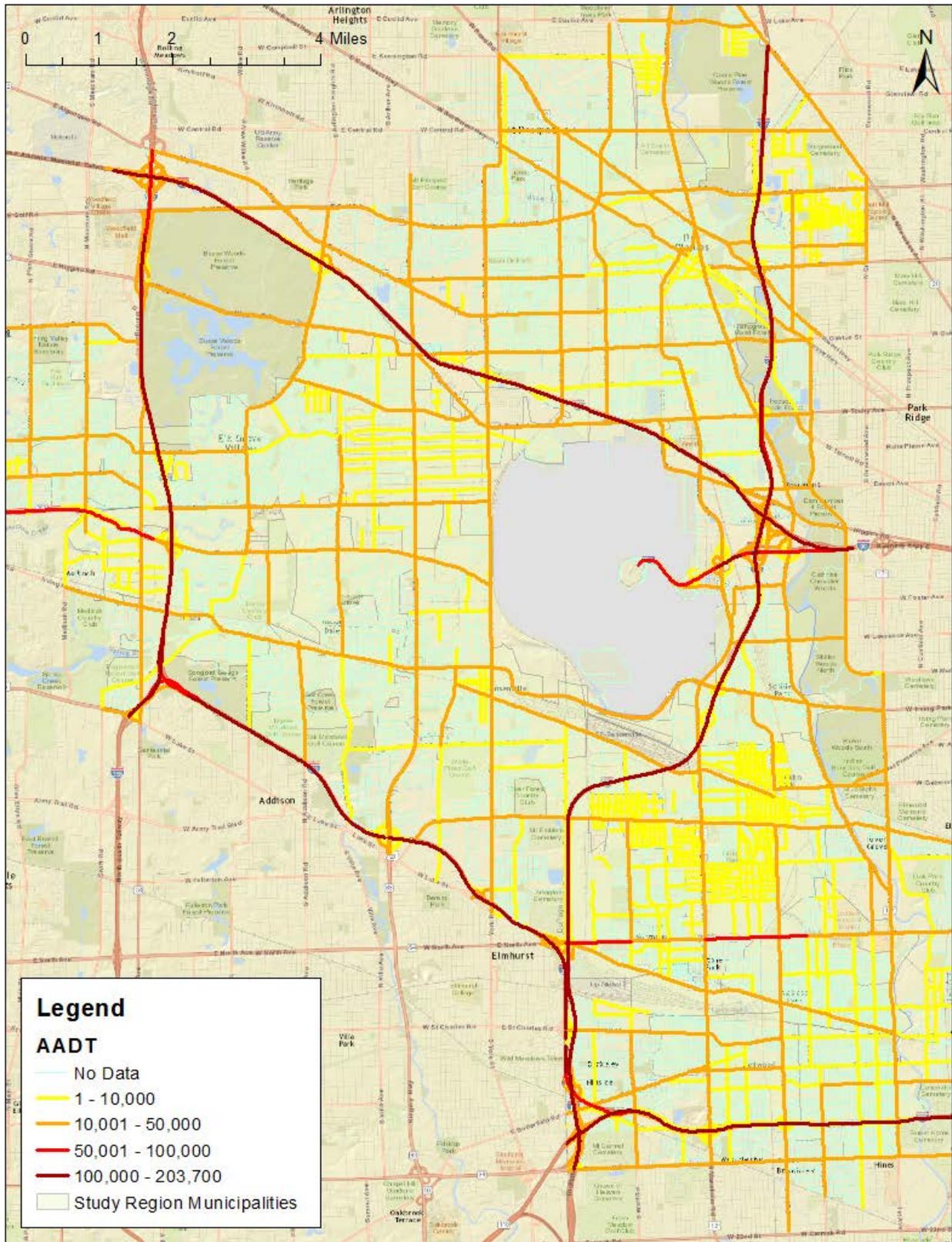
In the IDOT data, the best measure of truck traffic is the Heavy Combination Vehicle (HCV) category. This field captures vehicles with six or more tires which includes the majority of trucks.³⁷ The highest HCV volume in the region is found on I-290 near the I-294/Lake St./North Ave. interchange with 24,700 HCV per year. The second highest volume is found just south of the study region boundary on I-294 south of I-88 with 22,400 HCV per year. I-290 between IL 83 and I-294 just north of Irving Park Road also top 20,000 HCV per year. The top non-Interstate volumes are found on IL 83 on either side of Irving Park Rd. from Thorndale Ave. in the north to approximately Oak Meadow Dr. in the south where volumes range between 9,400 and 9,700 HCV per year. Annual HCV volumes are shown in Figure 2.18 below.

The HCV percent of total volume reaches more than 26 percent of the total AADT on IL 83 north of I-294 in Bensenville to approximately Oak Meadows Dr. Other locations above 20 percent include the IL 83 north to Devon Ave. and small sections of I-290 near the I-294 Interchange. This indicates the key role IL 83 plays in providing truck access to the businesses west of O'Hare Airport.

As previously noted, HCV is not available for local roads in the study region.

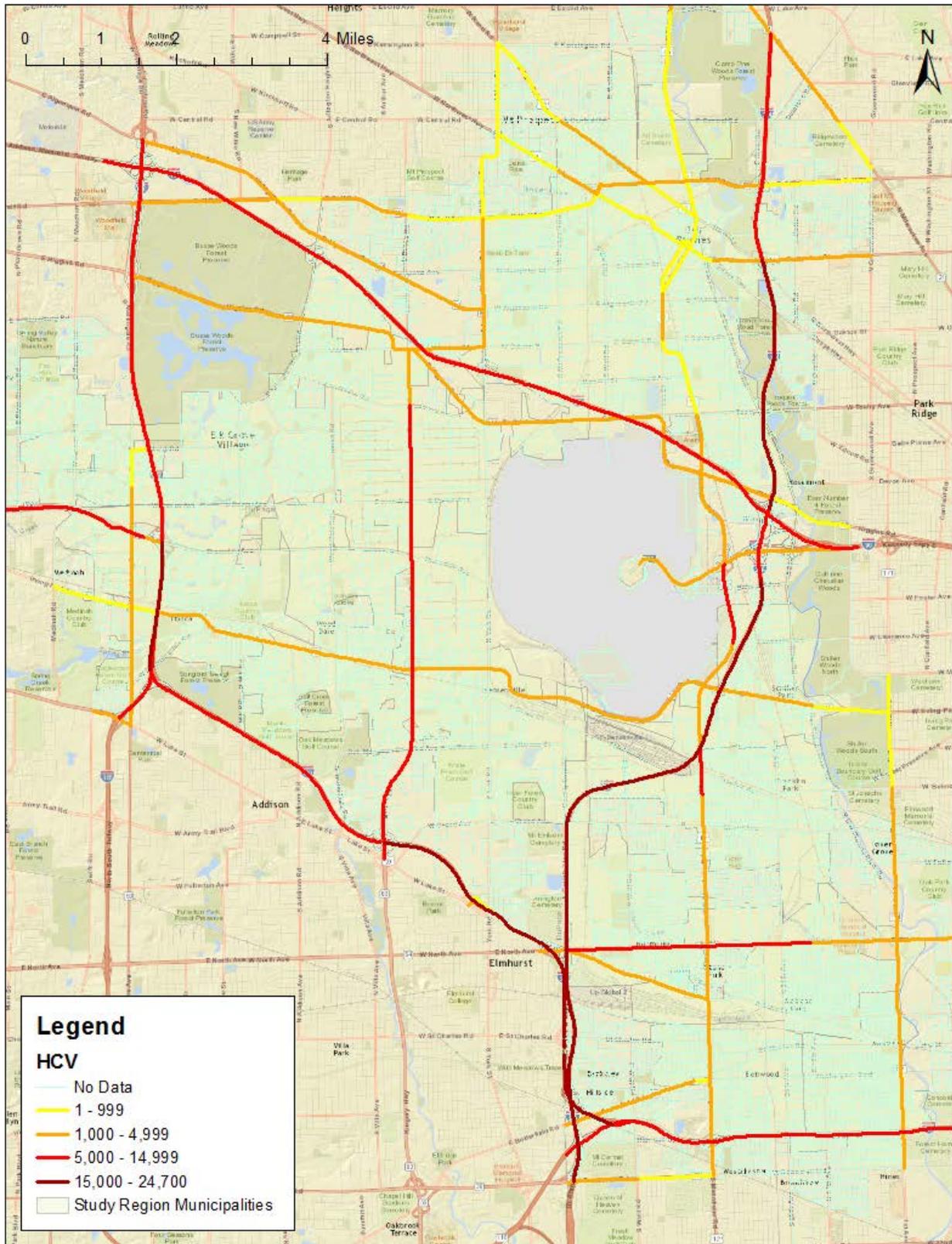
³⁷ Note that this category also includes buses.

Figure 2.17 O'Hare Subregion - AADT



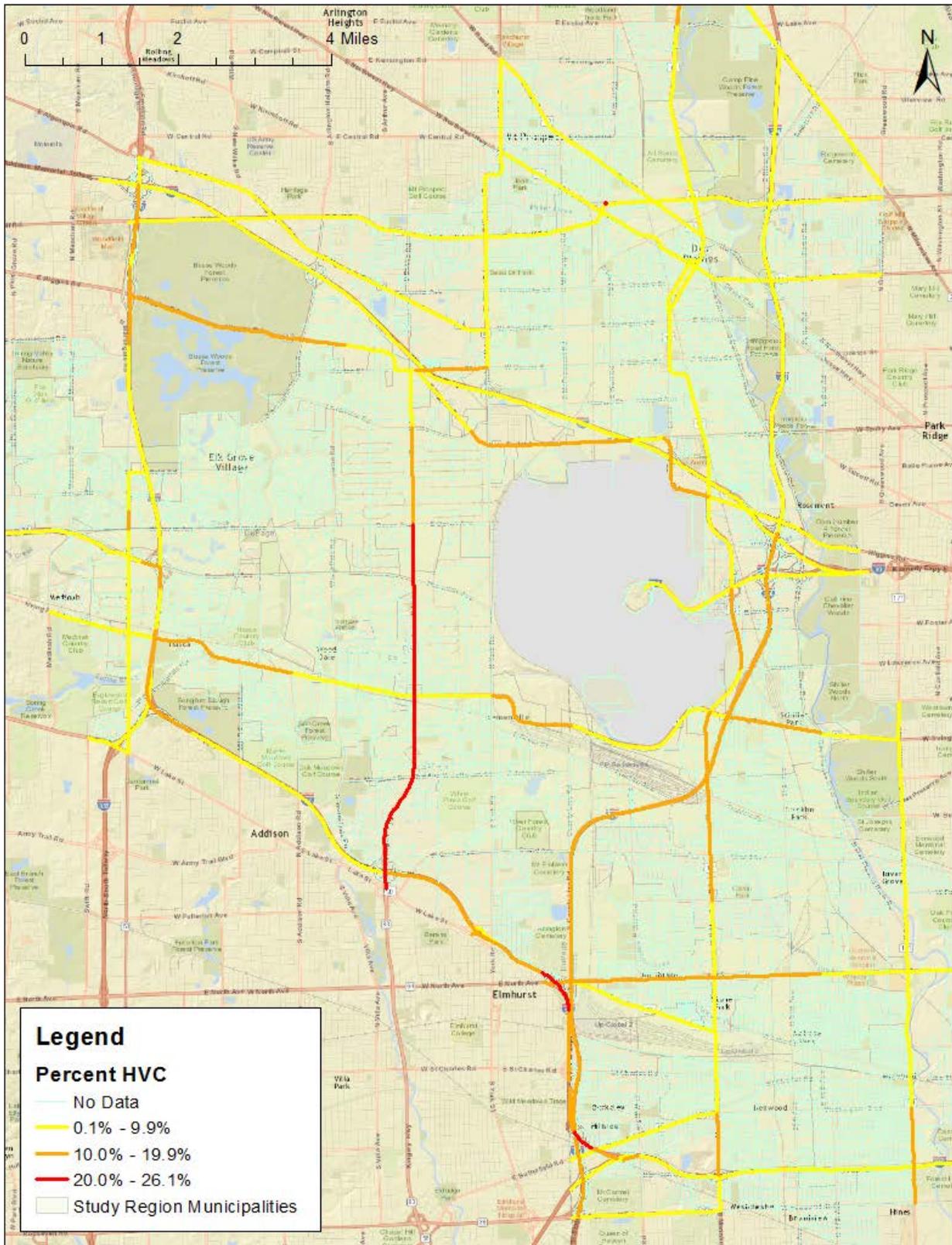
Source: IDOT

Figure 2.18 O'Hare Subregion – Heavy Combination Vehicle Volume, 2015



Source: IDOT

Figure 2.19 O'Hare Subregion – Heavy Combination Vehicle Percent of Traffic, 2015



Source: IDOT. Truck counts for local roads were unavailable.

2.5 Road and Bridge Conditions

IDOT maintains a database with road and bridge conditions current through 2015. Although this database does not include local roads or locally maintained bridges, it provides the most detailed information available for the Subregion.³⁸ The analysis shows that the vast majority of bridges and roads that carry significant truck traffic currently are in reasonable condition.

2.5.1 Pavement Conditions

IDOT's road data includes a pavement score, called the Condition Rating Survey, which is a way to measure road condition. Pavement that is in poor shape can cause delays as trucks and vehicle slow down or weave to avoid problem areas. Pavement in very poor condition can also jostle freight, damaging sensitive goods. Pavement measurements are taken in both directions (i.e., northbound and southbound; eastbound and westbound) and the lower score is used to populate the values for the segment. Scores range from 1.0 "critical" to 9.0 "new or near new."

Table 2.3 shows the breakdown of pavement scores for the study region as a whole and for designated truck routes and unrestricted local streets. A total of 109.46 miles of road in and adjacent to the study region had pavement scores below 6.0 "fair," and approximately 58.8 percent of those miles were on roads identified as designated truck routes or unrestricted local streets. The majority of these lower scoring road miles were locally designated truck routes in Elk Grove Village and Maywood, though major roads including I-90 north of O'Hare, U.S. 14 and U.S. 12 in Des Plaines, and Thorndale Ave.³⁹

Table 2.3 O'Hare Subregion – Road Pavement Scores

Pavement Score	Score Meaning	Number of Miles in Study Region	Number of Miles on Designated Truck Routes and Unrestricted Streets
3.0 - 3.9	Intolerable	4.54 (0.3%)	0.08 (<0.1%)*
4.0 – 5.9	Poor to Marginal	104.92 (6.8%)	63.26 (24.4%)
6.0 – 9.0	Fair and Above	177.83 (11.4%)	118.04 (45.7%)
0	No Data	1,267.07 (81.5%)	77.12 (29.8%)
Total		1,554.36	258.5

Source: IDOT. *Segment is located on Madison St. at the border with River Forest.

Figure 2.20 below shows pavement score ranges for the study region. Interestingly, the IDOT data contains scores for some local roads. The worst segments with a score between 3.0 and 3.9 "Intolerable" are almost entirely local roads, with the exception of a stretch of IL 56/ Butterfield Rd. in Bellwood. These segments are:

- Williams Dr. – Franklin Park

³⁸ <http://apps.dot.illinois.gov/gist2/>

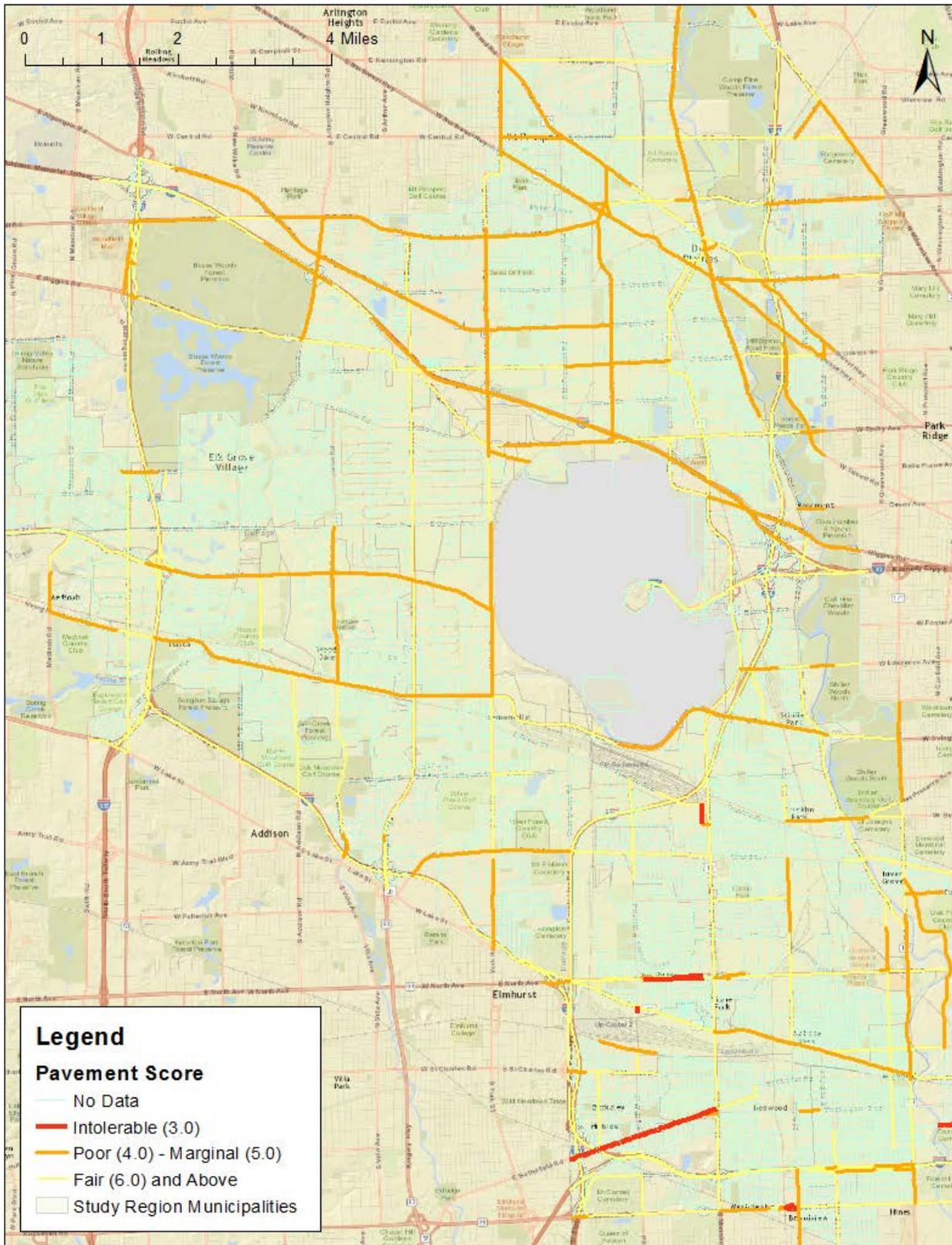
³⁹ I-90 and IL 390 (on the Thorndale Ave. corridor) were under construction in 2016.

- Wolf Rd. – Franklin Park
- Illinois 56/ Butterfield Rd. – Bellwood
- Gail Ave. – Northlake
- North and South Frontage Rd. – Northlake along IL 64

Butterfield Rd. through Berkeley and Hillside and Madison St. east of the study region in River Forest also had pavement scores in the “intolerable” category.⁴⁰

⁴⁰ Madison Street was reconstructed in 2016.

Figure 2.20 O'Hare Subregion - Pavement Condition Scores



Source: IDOT

2.5.2 Bridge Conditions

There are multiple ways to measure bridge condition. This analysis uses two common attributes, sufficiency rating and posted weight limits, to identify potential problem areas. Sufficiency rating is calculated by combining over 20 different ratings including measures of structural evaluation, functional obsolescence, and importance to the public to create a score.⁴¹ According to the Highway Bridge Replacement and Rehabilitation Program,⁴² sufficiency rating is used to establish eligibility and priority for replacement or rehabilitation of bridges. Bridges with lower ratings generally receive a higher priority. Out of 461 structures, 77 bridges in the study region have sufficiency ratings of 50 or below on a 100-point scale. Sufficiency ratings for bridges in the O'Hare Subregion are shown in Figure 2.21.

Of the structures in the study region with sufficiency ratings of 50 or below, 13 are located on routes with more than 10 percent HCV. However, all of these bridges carry non-highway traffic over these high volume routes; nine carry rail traffic, three are bicycle or pedestrian bridges and the final structure connects the two sides of the Travel Oasis just southeast of O'Hare on I-294, as shown in Table 2.4. Since none of these structures carries road traffic, they are given a sufficiency rating of 0. In addition, the high volume of truck traffic on roads crossed by these structures indicates that they are not restricting freight movement under the structure due to a low bridge deck or other feature. Finally, the two bridges which carried UP and CP railroad tracks over IL 19 were replaced in 2016 so the poor sufficiency rating no longer applies. As a result, these 13 bridges are not a concern in the context of truck route planning.

Table 2.4 O'Hare Subregion - Bridges with Sufficiency Ratings Below 50 On or Over Routes with 10% or Higher HCV

Route Carried	Route Crossed	Municipality
C&NW RR	IL 64	Northlake
C&NW RR	IL 64	Northlake
C&NW RR	IL 64	Northlake
C&NW RR	IL 64	Northlake
IHB RR	IL 64	Melrose Park
W.C. RR	IL 64	Schiller Park
RR – Metra	I-290	Itasca
O'Hare Oasis	I-294	Schiller Park
Ped/Bike Path	IL 72	Elk Grove Village (Ned Brown Preserve)
Busse Woods Ped Trail	IL 72	Elk Grove Village (Ned Brown Preserve)
UP RR*	IL 19	Bensenville
CP RR*	IL 19	Bensenville
Bicycle Ped Trail	IL 19	Wood Dale

Source: IDOT. Note: * Bridges replaced in 2016.

⁴¹ <http://nationalbridges.com/guide-to-ratings>

⁴² 23 CFR 650.409

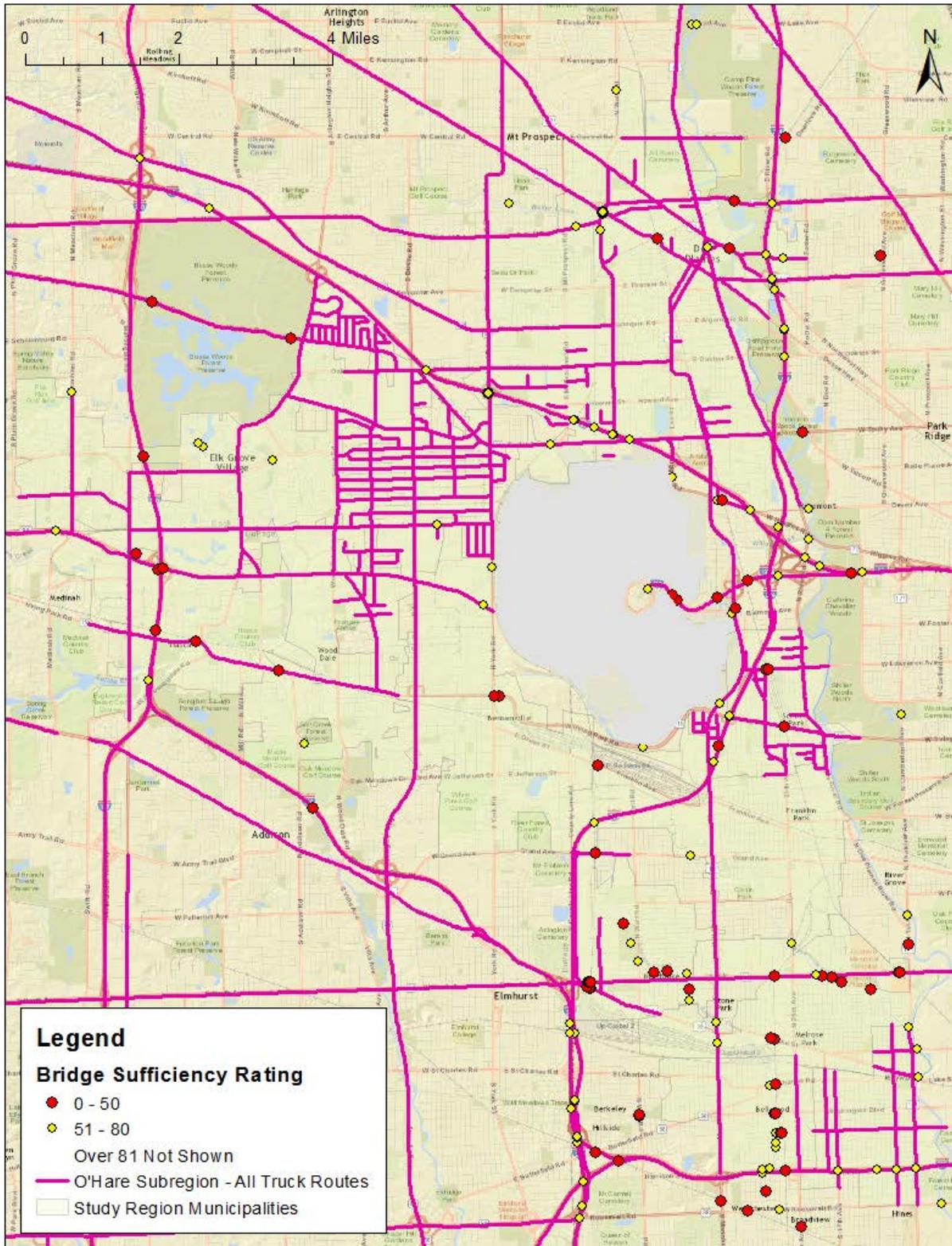
Two structures with sufficiency ratings of 50 or below carry designated truck routes or unrestricted local streets but both are located just outside the study region. One structure carries I-290 over Salt Creek just south of Wood Dale, the second carries U.S.12/Rand Rd. over the Des Plaines River.

A second way to examine bridge condition is through the posted weight limit for a bridge. Bridges with posted weight limits lower than the 80,000-pound federal limit pose a challenge for trucks. Trucks must either reroute, reduce their weight, or travel across the structure illegally. Of the 461 bridges in IDOT's database, only 5 have posted weight limits below the legal load. Nine additional bridges cannot accept any overweight loads—trucks with an overweight permit cannot utilize these structures. Six of the nine are in the study region, and all carry local roads over water features. Of the remaining three located in the areas adjacent to the study region municipalities, two carry local roads across a water feature, the final one carries IL 171/ First Ave. across an equestrian path. All bridges with posted weights in or near the study region are shown in Table 2.4 and in Figure 2.26 below.

Two bridges have posted weights that are 40% or more lower than the legal limit. Both are found in Northlake, one on North Roy Ave. just north of Parkview Dr. and the other on E. Le Moyne St. just east of Addison Creek. In addition, a bridge on N Prater Ave. just north of Parkview Dr. (just west of N. Roy Ave) is limited to trucks 30-39% below posted weight. One bridge on N 1st Ave north of IL 64 is restricted to legal loads only. Projects to reconstruct/repair the bridges on N. Prater Ave. and N. Roy Ave. are included in the FY 2014-2019 CMAP Transportation Improvement Program (TIP).⁴³

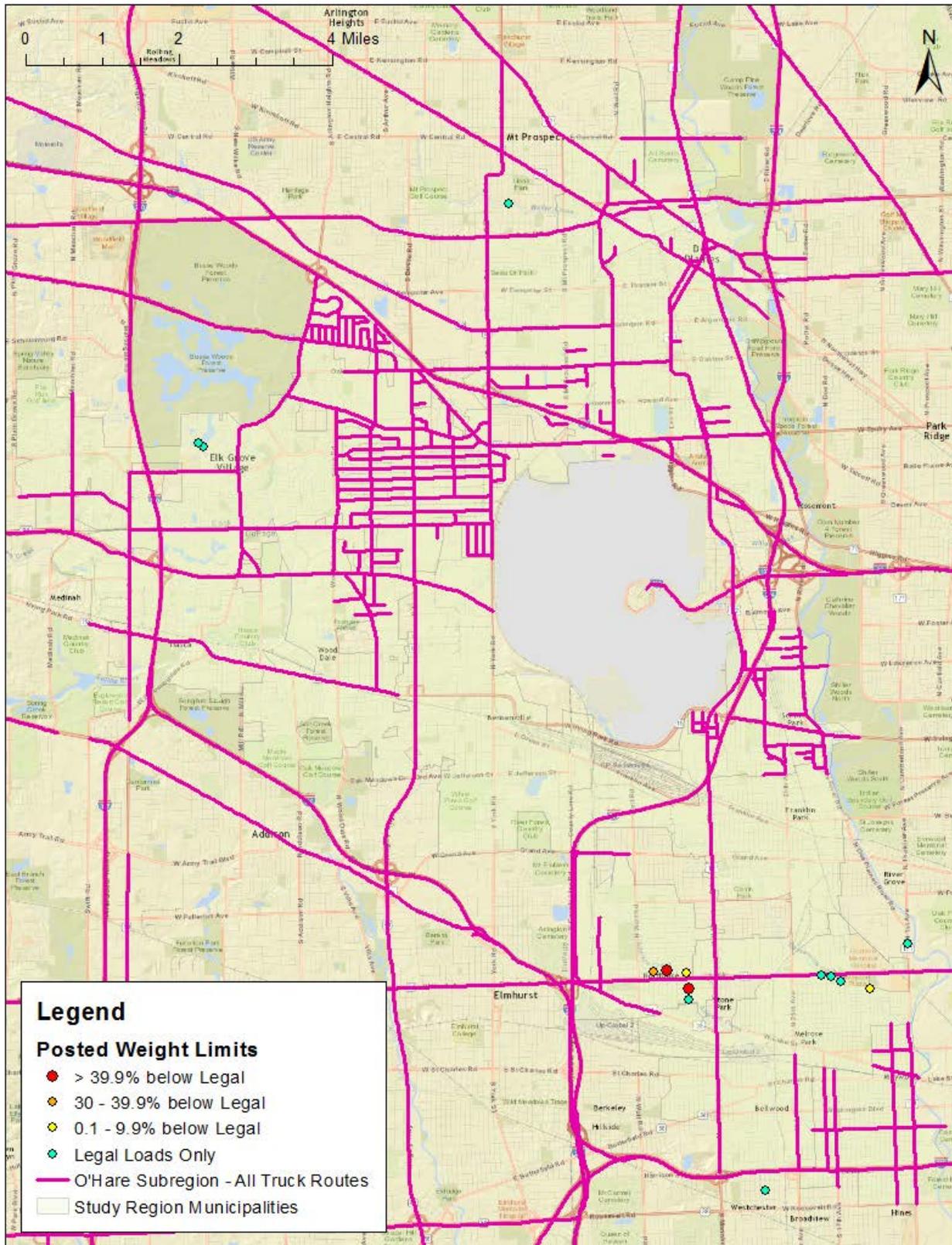
⁴³ <http://www.cmap.illinois.gov/programs-and-resources/tip/tip-data/tip-map>

Figure 2.21 O'Hare Subregion - Bridge Sufficiency Ratings, 2015



Source: IDOT. Note that bridges with sufficiency ratings above 80 are not shown.

Figure 2.22 O'Hare Subregion - Posted Weight Bridges, 2015



Source: IDOT

2.5.3 Vertical Clearance

The Illinois maximum legal height for trucks is 13 feet 6 inches. There are two bridges just outside the study region in IDOT's database with a vertical clearance less than 13'6".⁴⁴ One bridge in Elmhurst carries U.S. 20 (W Lake St) over IL 64 (W North Ave) under I-294. The eastbound lane is listed in IDOT's structures database with a vertical clearance of only 13'3"; but further investigation is necessary, as this does not ring true for a major state highway with high truck volumes. The second structure carries the Wisconsin Central RR over Washington Blvd in River Forest with a vertical clearance of only 12'7". The area near this bridge is mostly community use and residential, indicating that the bridge is unlikely to restrict any significant freight movements.

2.6 Other Road Users

In addition to trucks, there are a number of other road users vying for space on the roads in the study region. Automobiles, transit vehicles, bicycles, and pedestrians all seek to use the limited right-of-way. With proper design, trucks can coexist with these other road users in almost every scenario. However, this coexistence is likely more difficult on some routes instead of others. Although the presence of other road users (specifically major bicycle and transit routes) should not necessarily preclude a road from being designated as a truck route, additional scrutiny and care in design will be required on routes where these networks overlap.

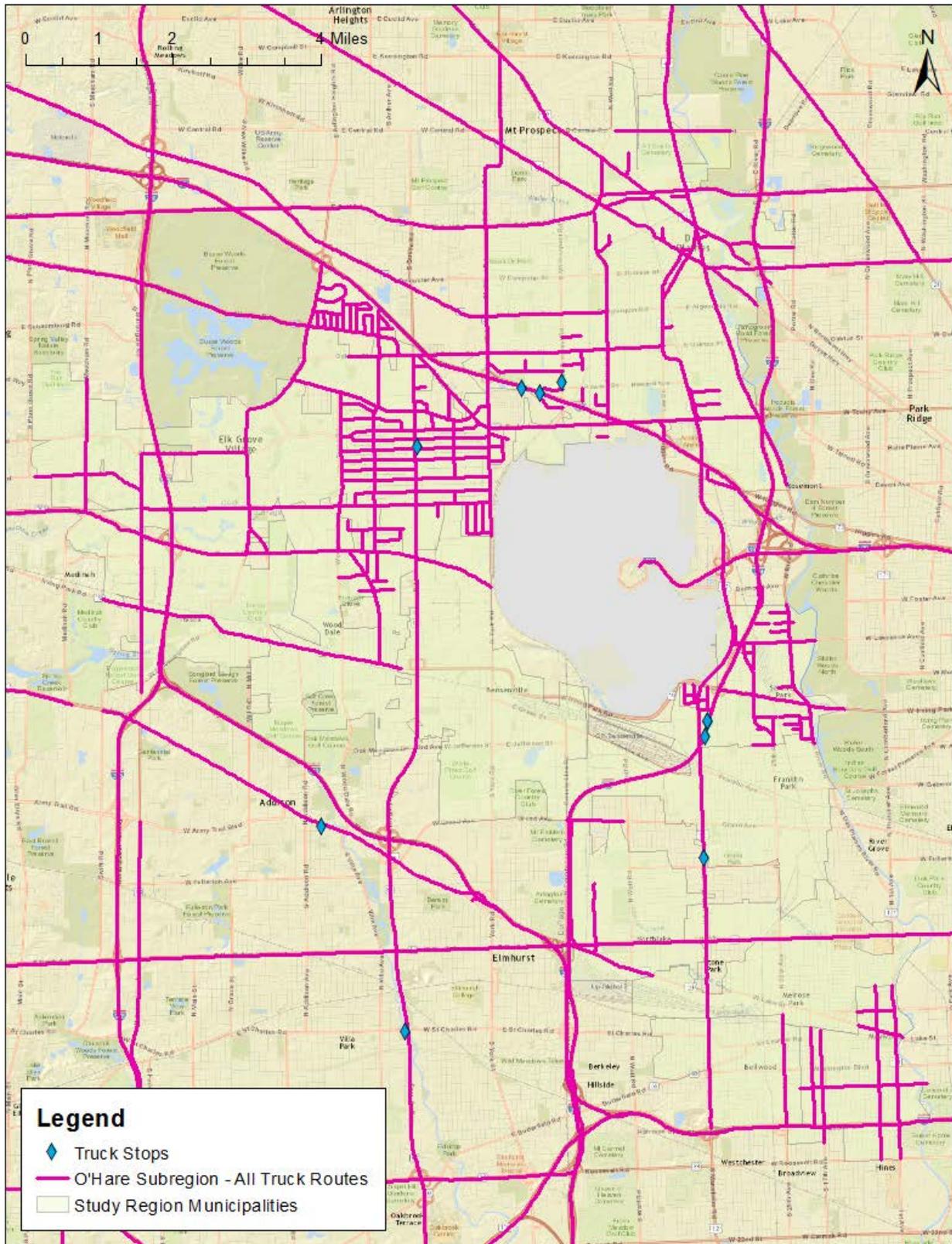
2.7 Truck Parking

The Federal Highway Administration (FHWA) completed a nationwide survey of truck parking locations in October 2015.⁴⁵ This study was in response to Jason's Law, a measure signed into law in July 2012 as part of the Moving Ahead for Progress in the 21st Century Act (MAP-21) to address the need for additional safe places for trucks to park. Private and publically owned locations identified during that study in the O'Hare Subregion are shown in Figure 2.24. Most of these locations are along the major corridors in the region and are meant to serve mainly long-haul traffic. Local parking for trucks waiting to make a pickup or delivery is a separate challenge that was brought up during initial stakeholder meetings. This topic will be explored further during the next round of stakeholder outreach and considered in detail in Tasks 4 and 5.

⁴⁴ <http://www.idot.illinois.gov/Assets/uploads/files/IDOT-Forms/OPER/OPER%20753.pdf>

⁴⁵ http://www.ops.fhwa.dot.gov/freight/infrastructure/truck_parking/jasons_law/truckparkingsurvey/

Figure 2.23 O'Hare Subregion - Public and Private Truck Stops



Source: FHWA

2.8 At-Grade Rail Crossings

At-grade rail crossings pose a special hazard. In an urban area with heavy traffic, every closure due to a passing train creates delay for trucks on the road. CMAP estimates that cars and trucks accrued more than 7,800 hours of delay each weekday in 2011 due to train activity at at-grade crossings.⁴⁶ None of the top 10 average delay locations are within the study region; however, grade crossings especially in the SE study region (Franklin Park/Melrose Park) contribute a significant amount of delay affecting truck travel. The two highest delay locations in the study region in 2011 have undergone or are currently undergoing grade separation, including one location at the southwest corner of O'Hare where tracks crossed IL 19, and the other at 25th Ave. in Bellwood and Melrose Park. Together, these two locations saw over 150 total hours of aggregate delay in 2011. A high concentration of grade crossings is not always correlated to high delays; the Elk Grove Village area which contains a high number of at-grade crossings saw relatively low levels of delay.

At-grade rail crossings can create additional issues for trucks. Rough crossings are similar to poor pavement in that they can damage cargo and increase maintenance costs for trucks. Crossings that are not level with the road on either side can also cause trucks to “hang up” on the crossing, adding delay and cost. Stopping at a grade crossing also can result in more delay incurred by trucks than passenger cars, as more time is needed to safely slow and regain speed.

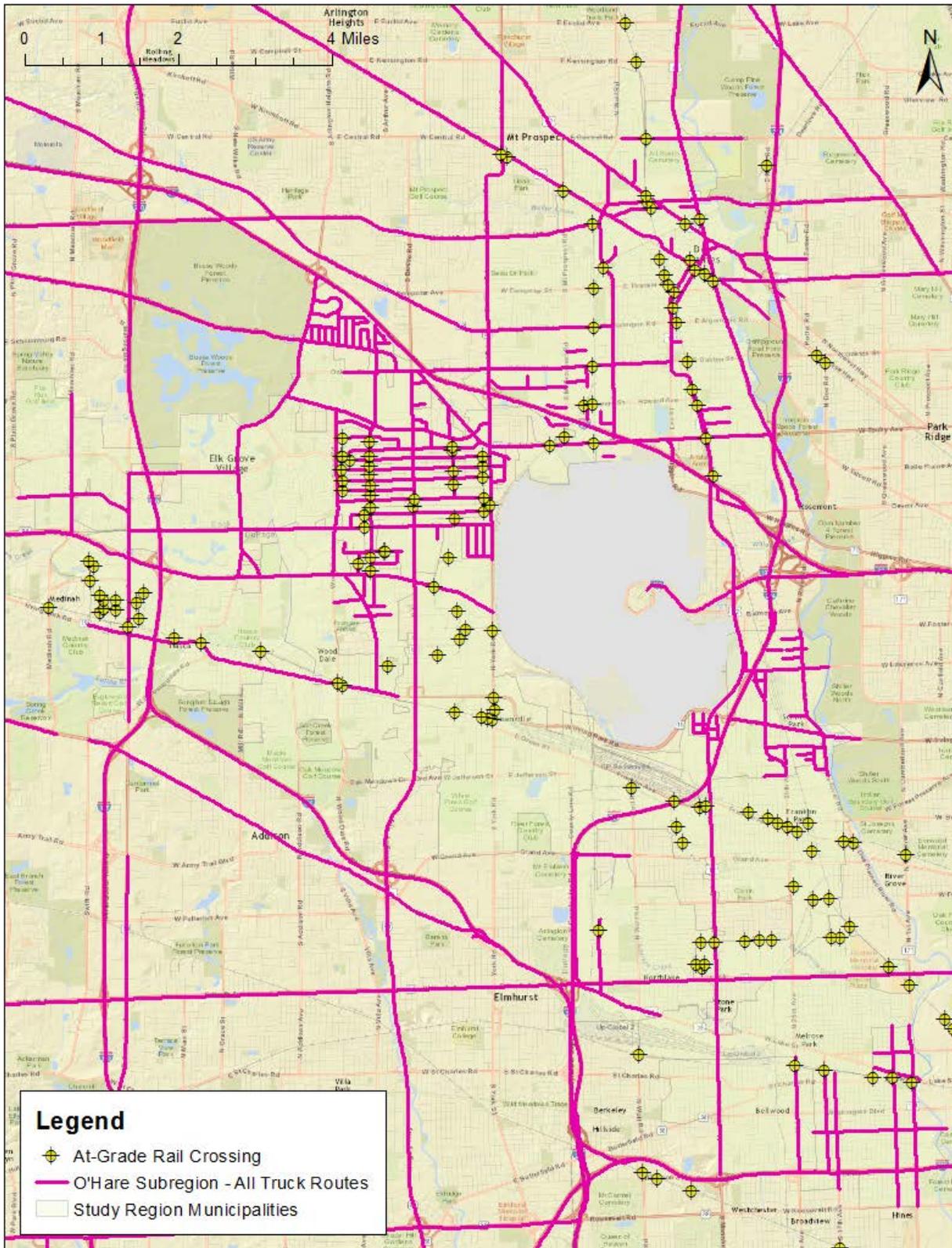
Figure 2.25 below shows the locations of at-grade rail-highway crossings in the study region.

Safety at these crossings is also a potential concern. In addition to the risk of injury or death for both truck drivers and train crews, crashes at these locations can create major delays for both the road and rail network. According to the Federal Railroad Administration (FRA), there were eight incidents at at-grade crossings in the O'Hare Subregion between 2011 and 2015 that involved a truck. None of these crashes caused an injury or fatality. Five of these occurred at or near the UP Proviso Yard/Global II terminal: four were on private or internal yard roads, and one was on Lake St.⁴⁷ The other three incidents occurred on Lunt Rd. in Elk Grove Village, Lively Blvd. in Elk Grove Village, and Foster Rd. in Bensenville. Several grade crossings in Des Plaines are assigned a high safety concern score by the FRA, including crossings on River Rd. and Pearson St. For the number of active rail lines and high volumes of truck traffic in the area, these crash statistics indicate that at-grade rail crossings are relatively well protected and rail-truck crashes are a limited concern. Truck-rail crashes are shown in Figure 2.26.

⁴⁶ http://www.cmap.illinois.gov/about/updates/-/asset_publisher/UIMfSLnFfMB6/content/rail-crossing-delays-in-metropolitan-chicago

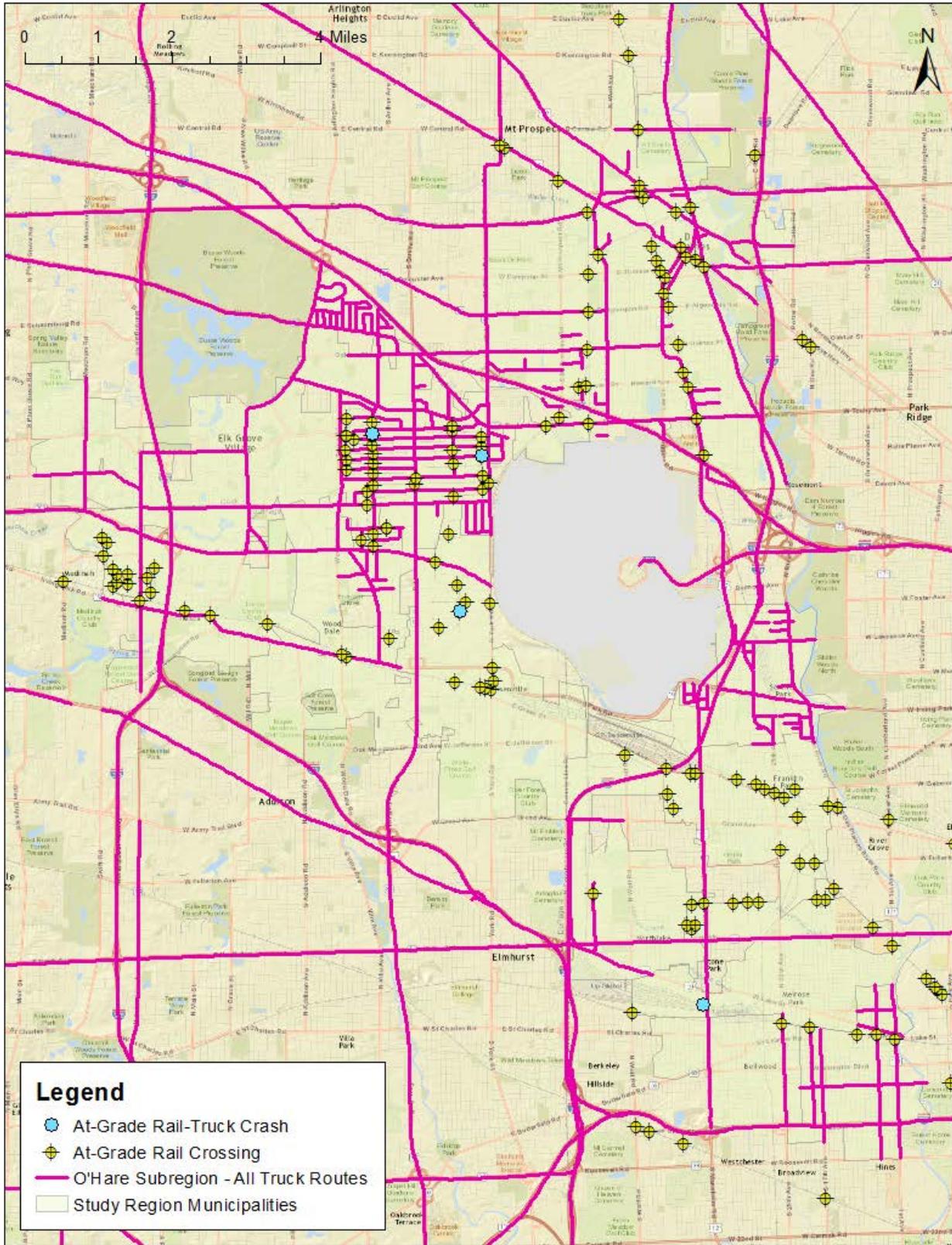
⁴⁷ The incident report does not include a narrative for this crash. There is no at-grade crossing on Lake St. at the location indicated.

Figure 2.24 O'Hare Subregion - At-Grade Highway-Rail Crossings



Source: Federal Railroad Administration

Figure 2.25 O'Hare Subregion - At-Grade Truck-Involved Incidents, 2011-2015



Source: Federal Railroad Administration

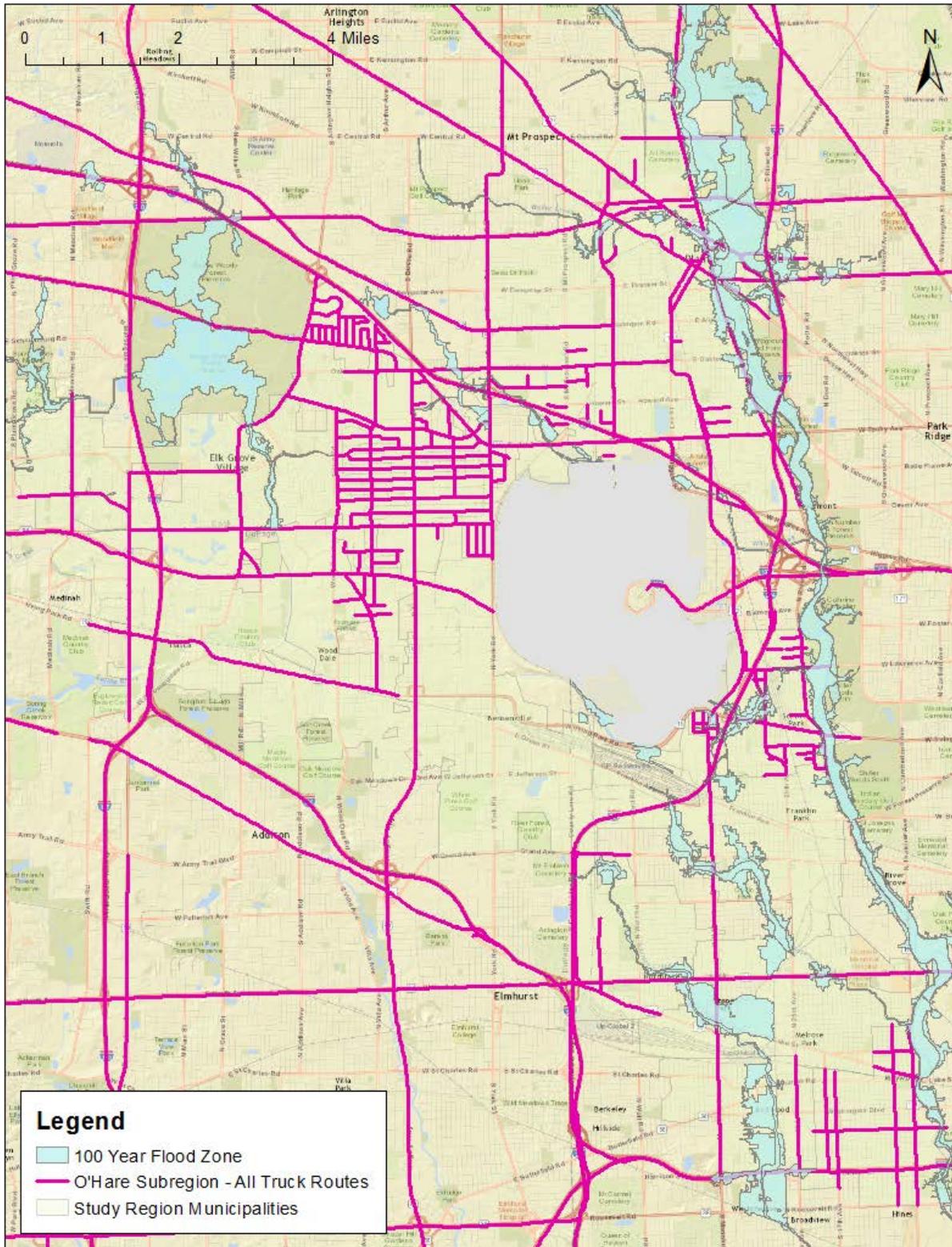
2.9 Flood Risk

The National Flood Hazard Layer (NFHL) contains information from the Federal Emergency Management Association's (FEMA) National Flood Insurance Program, including flood risk spatial data. Specifically, the 100-year flood zone in the NFHL is used in this section to identify areas that are vulnerable to the effects of climate change. It is important to note that this designation does not mean that a flood will cover a particular area once every hundred years. Instead, the flood zone is a location that has a one percent annual chance of being flooded, which means that flooding could occur more than once in a short period of time. Flood data is not available for DuPage County, so this analysis only covers Cook County municipalities.

Figure 2.27 below shows the areas of Cook County that are vulnerable to flooding. Freight facilities and important truck corridors at greatest risk for flooding include:

- Part of O'Hare airport, especially in the north and east;
- The eastern end of CP Bensenville and UP Global II;
- Industrial land uses between Mannheim Rd./ U.S. 45 and 25th Ave. between I-290 and Grand Ave.;
- Clusters of freight reliant land uses just northwest of O'Hare and in Des Plaines between U.S. 14 and U.S. 12.
- Sections of IL 19 and U.S. 45 near the southeast corner of O'Hare;
- Section of N River Rd. along the Des Plaines River in Schiller Park; and
- Grand Ave. and U.S. 45 south of CP Bensenville.

Figure 2.26 Cook County, IL – FEMA 100 Year Flood Zone



Source: FEMA National Flood Hazard Layer

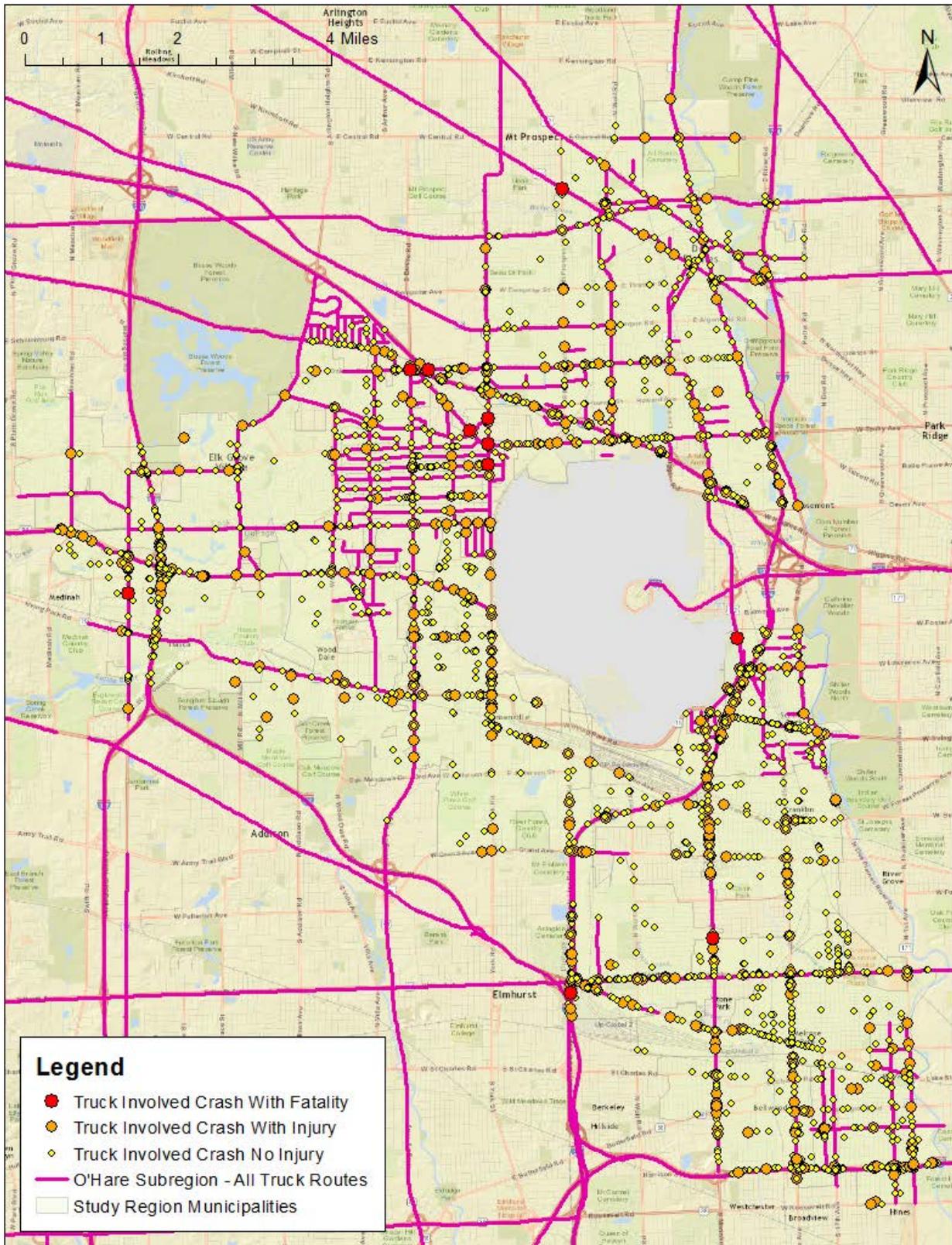
2.10 Safety

Truck crashes, injuries, and fatalities can be an indicator of problem locations. Although commercial vehicles are not at fault in all of the crashes, high incident locations or corridors can indicate areas where infrastructure improvements may be able to reduce the number of crashes.

IDOT crash data between 2010 and 2014 was examined for the municipalities in the O'Hare Subregion. Any crash involving a "Truck Single Unit," "Tractor with Semi-Trailer," or "Tractor without Semi-Trailer" was selected and mapped. The results are shown in Figure 2.28 below.

In this five-year span, there were 3,871 crashes involving a truck which resulted in 757 injuries and 12 fatalities. Six of those fatalities occurred on or very close to the East Higgins Rd. corridor from Elmhurst Rd. to Oakton St. The remaining fatalities were scattered throughout the municipalities with the deadliest single crash, a rear-end crash in wet weather that killed two people, occurring on I-294 near the I-290, Lake St. and North Ave. interchange. Interviews with stakeholders confirmed that this interchange along with the I-294/I-290/I-88 interchange south of this location were two of the more incident-prone locations in the study region. Interestingly, IDOT's data includes one truck-train fatality in 2011 on Mt. Prospect Rd. in Des Plaines just south of U.S. 14 which was not recorded in the FRA database. More than 55 percent (2,137) of the incidents occurred on truck routes or unrestricted local streets, with approximately 61 percent of those (1,298) taking place on the state and locally maintained truck route network included in the IDOT database.

Figure 2.27 O'Hare Subregion - Truck Involved Crashes, 2010-2014



Source: IDOT

3.0 Truck Origins and Destinations

Truck origin-destination pairings for the study region and surrounding areas was examined using a sample from Class 7 and Class 8 truck probe data developed by the American Transportation Research Institute (ATRI) with an initial analysis completed by CMAP. Although the boundaries of the CMAP travel zone system used by ATRI do not perfectly overlap the study region, they provide enough detail to produce a high level picture of where trucks in the study region and surrounding areas in Illinois and Indiana are traveling to and from. Data covered two two-week time periods, one in August and one in October of 2014, and the aggregate flows for both months were used to account for any unusual events such as a work stoppage or weather issue that could skew the data in a single month.

Two scales were used in this analysis. The first examined truck origins and destinations by individual CMAP zones for zones that intersect municipalities in the study region.⁴⁸ Figure 3.1 shows the number of truck trips originated within each zone and Figure 3.2 shows truck trips terminated in each zone using this scale.

In total, the study region zones produced 41,291 trucks in the four-week period in August and October 2014, for a daily average of 1,475 trucks.⁴⁹ The study region attracted a total of 36,382 truck trips in August and October 2014 for a daily average of 1,299 trucks. (Note that this data represents only a sample of trucks, but gives an idea of the size of the sample used to construct the maps.)

The second scale used during the analysis aggregates the ATRI zones into regions, show in Figure 3.3. The study region is split in to north, south, east, and west, with a separate O'Hare Terminal zone as the central point. Similarly, ATRI zones in the greater Chicago region were divided into north, south, east, and west regions. Figure 3.4 shows bi-directional flows for the two month period for intra-regional trips and Figure 3.5 shows flows for inter-regional trips. Table 3.1 provides a more detailed origin-destination matrix for flows between these aggregated regions.

In total, the ATRI data shows a total of approximately 906,400 trips over the four-week period or approximately 32,370 trips per day in the greater Chicago region.⁵⁰ The highest number of trips started and terminated in the greater Chicago region south of the study region which includes the northwest corner of Indiana, which suggests the importance of truck routes that connect the O'Hare region to the east and south, including major routes like I-90, I-290, and I-294.. Further, the study region-south zones which include the main intermodal rail yards and the air cargo area on the south side of O'Hare along S. Access Rd.⁵¹ generated (18,107) and received (15,432) the most truck trips of any aggregated zones in the study region. The majority of these trips either stayed in the study region-south zones or went to/from the region-south zones which are south of the O'Hare Subregion. The study-region east generated and attracted the fewest trips of any aggregated region.

It is worth noting that a significant share of truck trips stay within the study region. Of the more than 41,000 trips generated and 36,000 trips received by zones within the study region, just over 14,000 were intra-study

⁴⁸ A single CMAP zone which covers the O'Hare passenger terminals and main runways was included as a separate region and as part of the Study Area for aggregate totals, even though the zone is not technically part of any of the participating municipalities.

⁴⁹ Based on 28 calendar days.

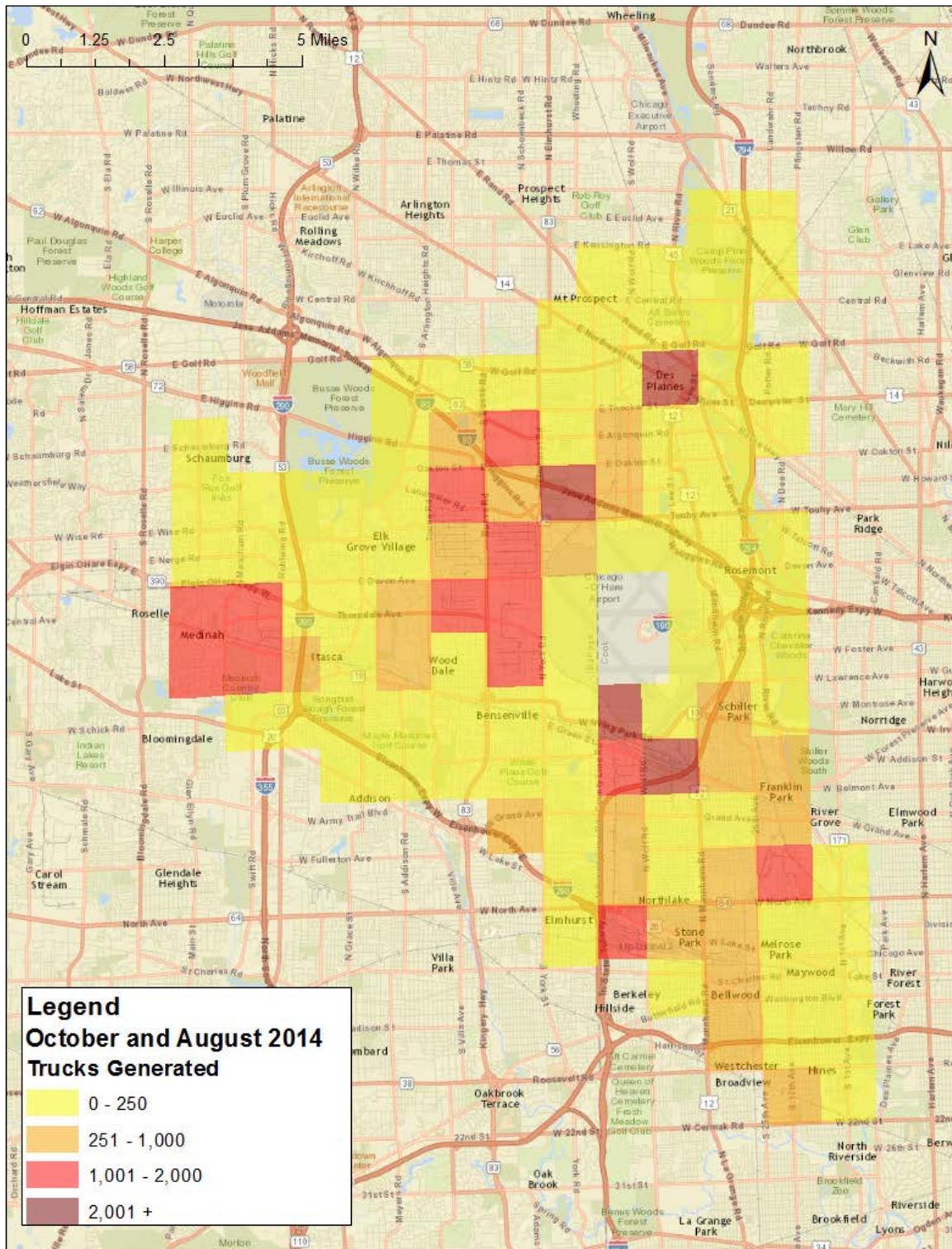
⁵⁰ Combines inbound, outbound, and intra region trips.

⁵¹ The air cargo facilities on the north side of O'Hare are included in the study region-north aggregate zones, those in the southeast are split between the study region-east and study region-south zones.

region trips. The majority of the trips generated in the study region-north, study region-south, and study region-west terminated within the same region. The exception to this were trips from the study region-east where slightly more trucks terminated in the study region-south than in the study region-east.

Figure 3.1 O'Hare Subregion - Truck Origins by ATRI Zone

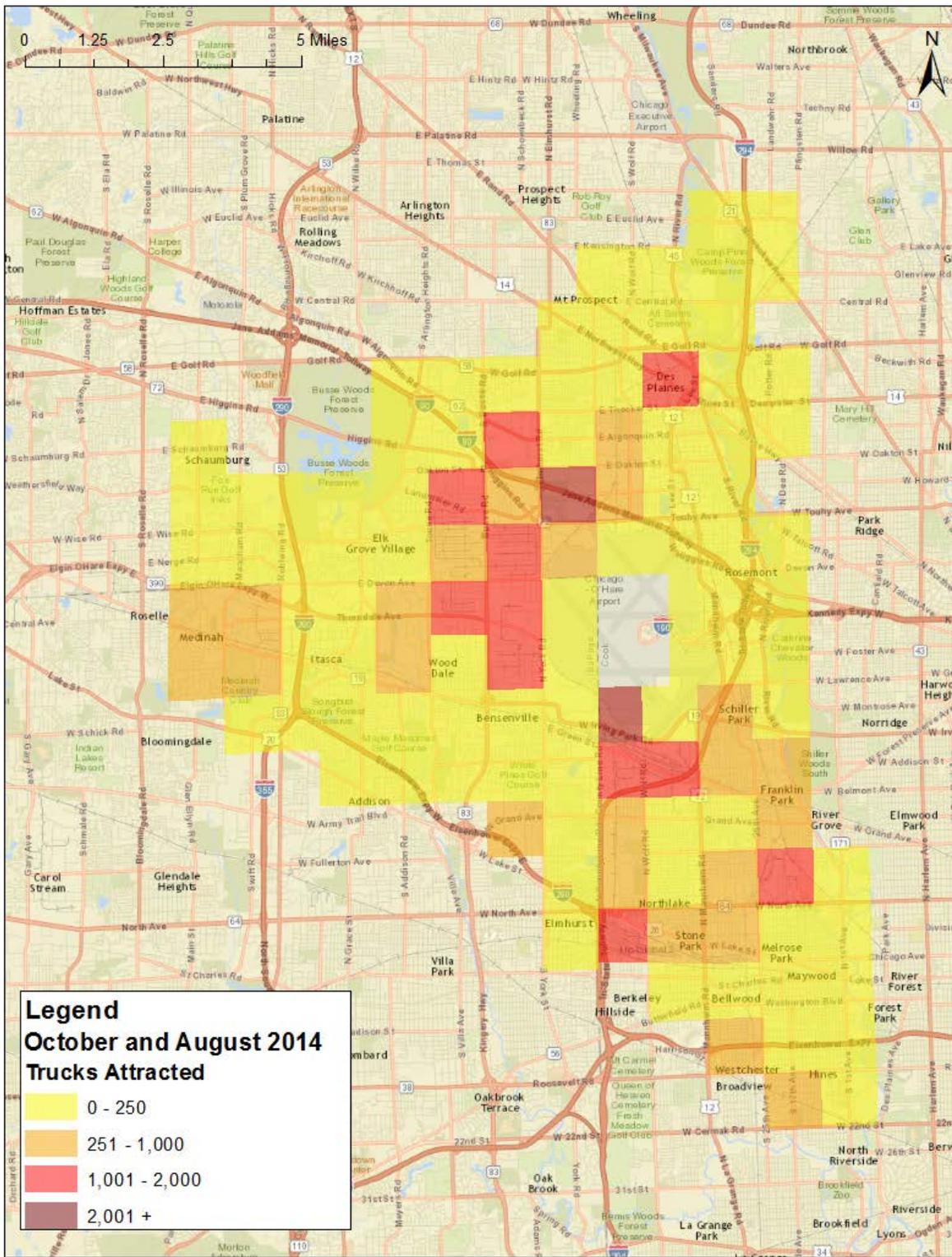
August and October 2014



Source: ATRI data, analyzed by CMAP and CS

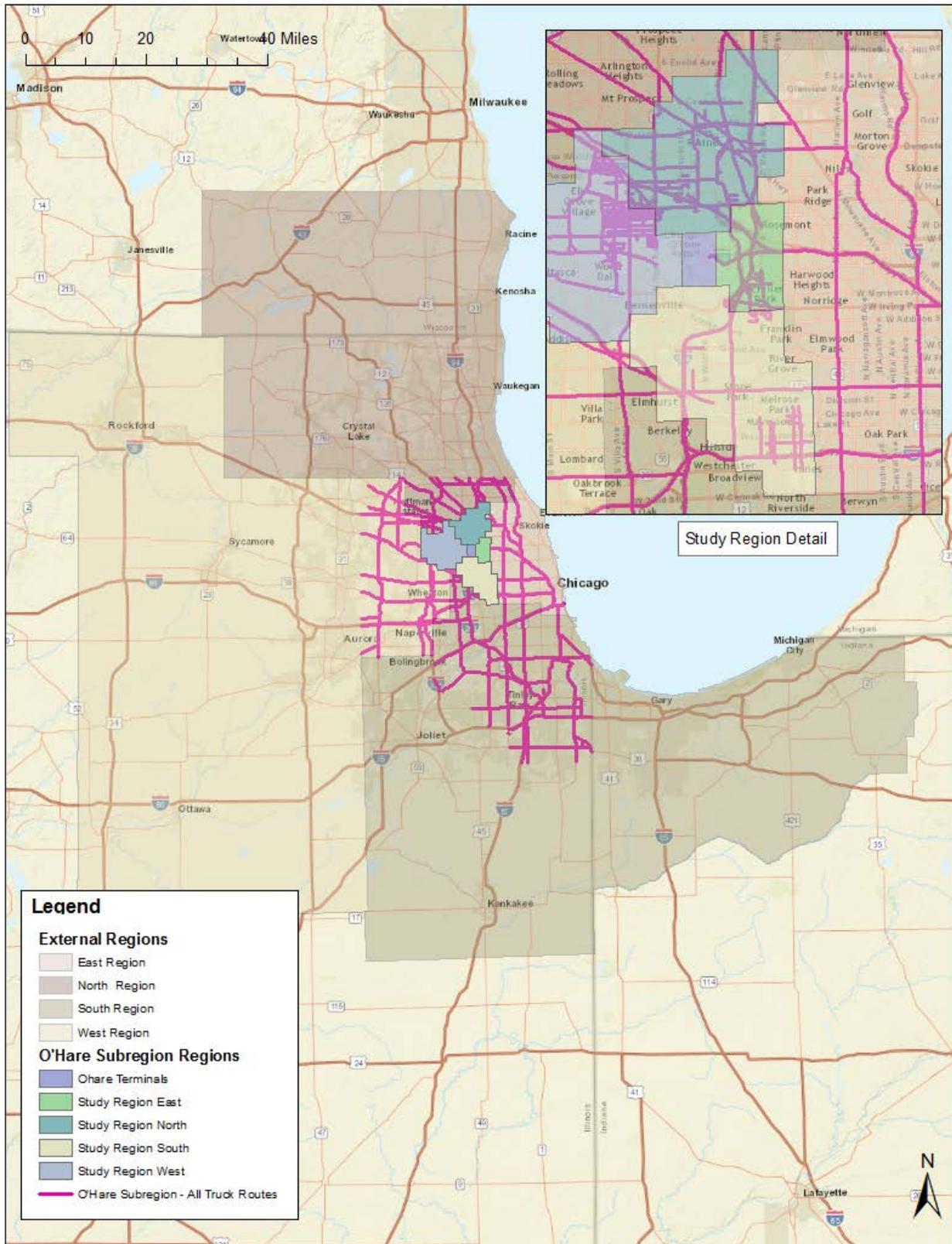
Figure 3.2 O'Hare Subregion - Truck Destinations by ATRI Zone

August and October 2014



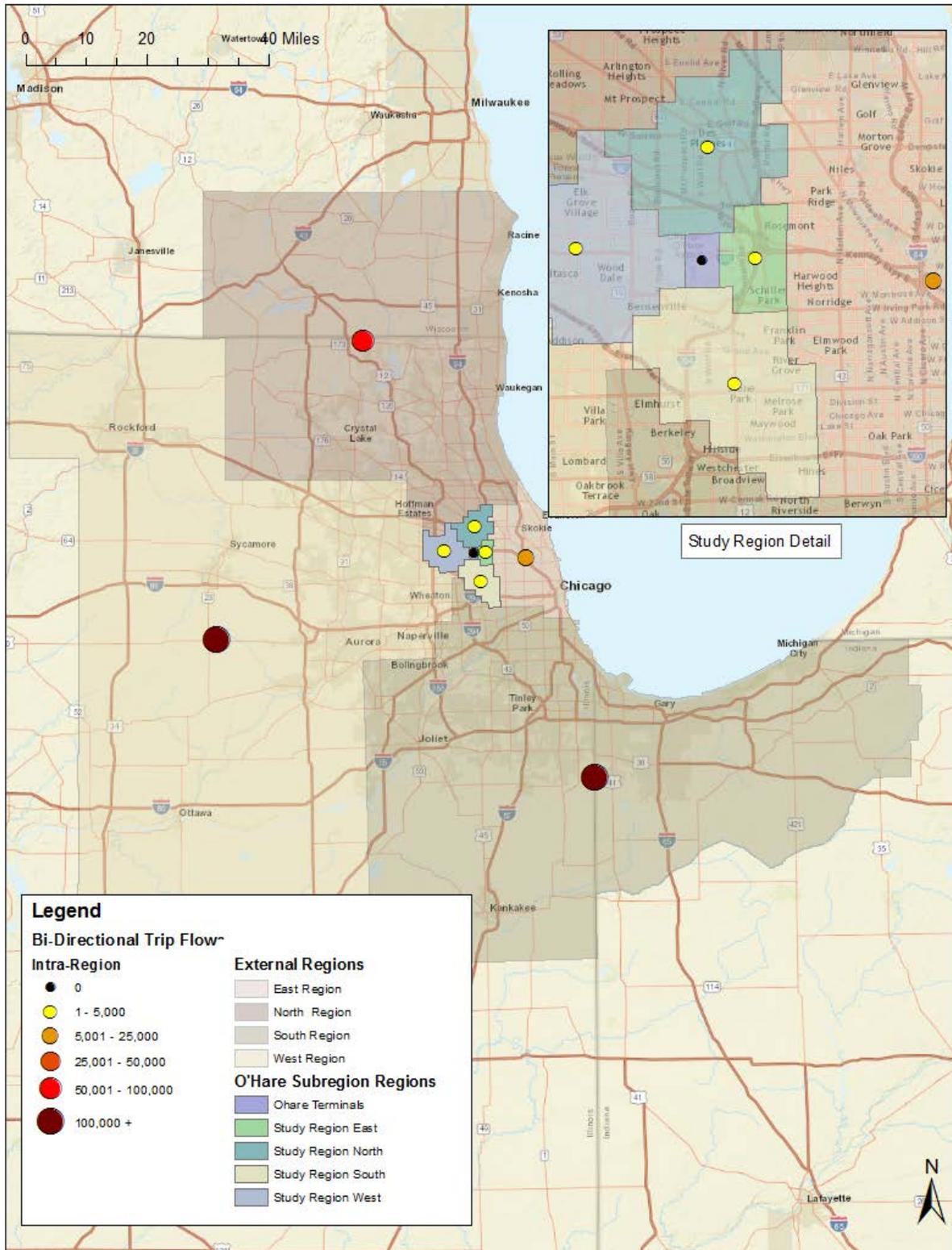
Source: ATRI data, analyzed by CMAP and CS

Figure 3.3 Greater Chicago Area ATRI Zones



Source: ATRI, IDOT, CS

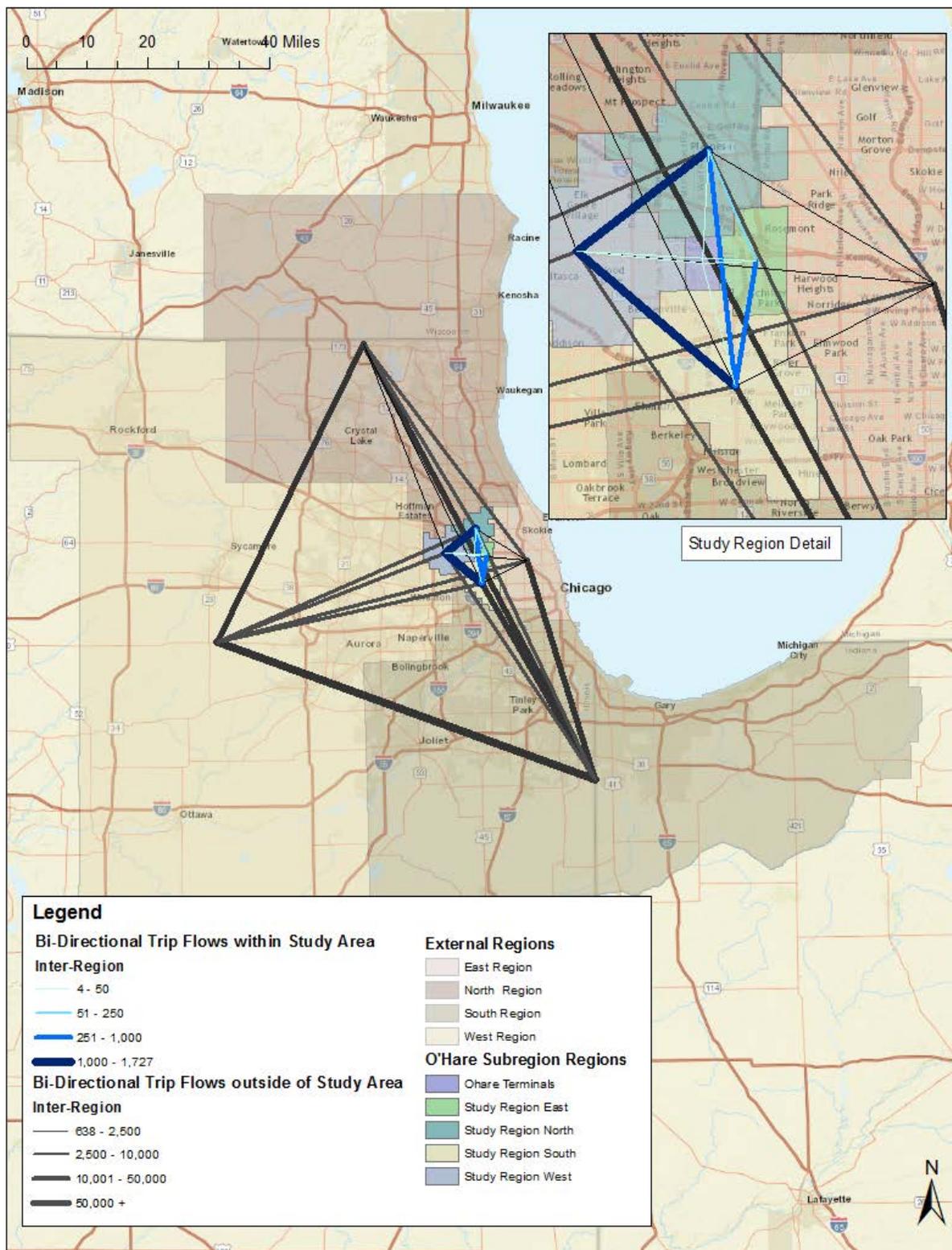
Figure 3.4 Greater Chicago Area Intra-Region Truck Trips
August and October 2014



Source: ATRI data, analyzed by CMAP and CS

Figure 3.5 Greater Chicago Area Inter-Region Truck Trips

August and October 2014



Source: ATRI data, analyzed by CMAP and CS

Table 3.1 ATRI Truck Trip Matrix, August and October, 2014

Origin	Destination											Total Originating
	Study Region-O'Hare Terminal	Study Region-North	Study Region-West	Study Region-South	Study Region-East	Study Region-Aggregate*	Region-North	Region-West	Region-South	Region-East	Unknown Destination	
Study Region-O'Hare Terminal	0	3	3	7	6	19	4	2	28	4	0	57
Study Region-North	5	1,816	901	644	234	3,100	1,680	1,749	1,734	530	1,035	9,831
Study Region-West	1	838	3,537	713	22	5,111	960	2,405	2,767	325	897	12,459
Study Region-South	4	286	715	4,215	220	5,440	1,195	2,348	5,543	901	2,729	18,107
Study Region-East	11	41	27	221	133	433	62	68	184	48	44	837
Study Region-Aggregate*	21	2,984	5,183	5,500	415	14,103	3,901	6,572	10,256	1,808	4,705	41,291
Region-North	1	1,667	884	1,157	88	3,797	59,660	10,485	20,347	1,849	13,583	109,708
Region-West	5	1,596	2,448	2,125	62	6,236	10,710	142,157	53,242	2,307	52,737	267,379
Region-South	26	1,786	2,770	5,710	175	10,5467	19,454	55,496	288,996	8,380	80,527	463,271
Region-East	2	468	313	940	56	1,779	2,030	2,269	8,089	9,534	1,080	24,775
Total Terminating	55	8,501	11,598	15,432	796	36,382	95,755	216,979	380,930	23,878	152,632	

Source: Source: ATRI data, analyzed by CMAP and CS. *Study region Aggregate includes O'Hare Terminal Zone which is not technically within any of the participating municipalities. Flows highlighted in grey are to/from areas outside the O'Hare Subregion. These trips may pass through the area but are unlikely to utilize local routes.

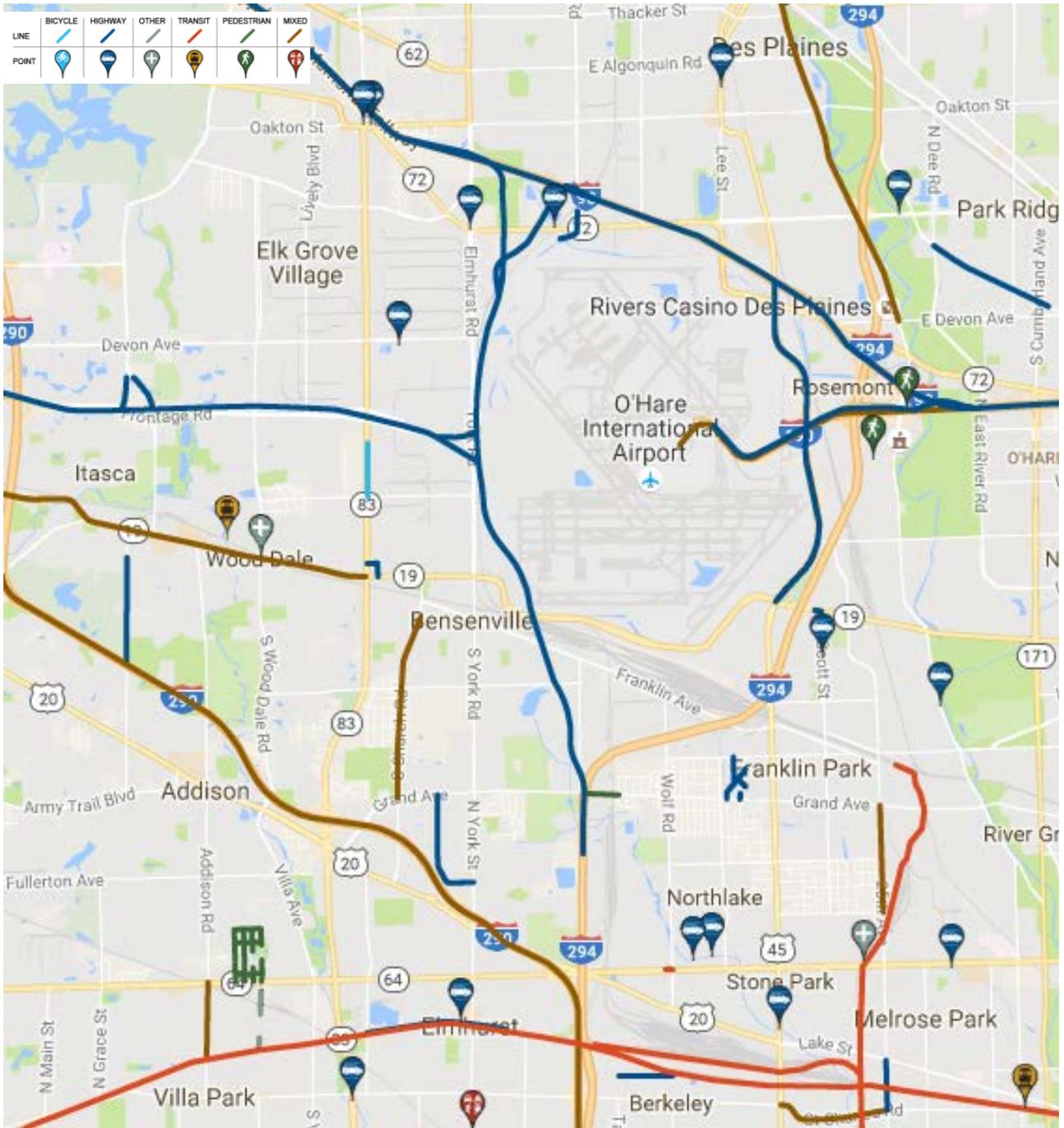
4.0 Planned Improvements

Figure 4.1 below shows all projects currently included in the FY 2014-2019 CMAP Transportation Improvement Program (TIP).⁵² Although many of these projects, especially those in the highway, mixed, or other categories, can impact freight, there are several that directly impact key corridors in the region. In addition to the Elgin-O'Hare West Access project described earlier, projects that will influence truck traffic include (note some projects listed are underway or completed):

- I-90 Jane Addams Memorial Tollway Plaza #9 to IL 43 – Add lanes, add new leg to interchange, build a new interchange, and reconfigure a bridge (Project 03-96-0004);
- Resurfacing of IL 19 in Wood Dale and Itasca (Project 08-15-0025);
- Intersection improvements at the IL 83/IL 72/Busse Rd. intersection (Project 03-11-0012) —this corridor was identified as a key safety concern in the current conditions analysis;
- Resurfacing of 25th Ave. in Franklin Park (Project 04-14-0011); and
- Railroad grade separation on 25th Ave. in Melrose Park over the tracks east of UP Global II (Project 04-99-0003).

⁵² <http://www.cmap.illinois.gov/programs-and-resources/tip/tip-documentation>

Figure 4.1 O'Hare Subregion - CMAP TIP Projects FY 2014-2019



Source: <http://www.cmap.illinois.gov/programs-and-resources/tip/tip-data/tip-map>

Appendix A. O'Hare Subregion – Key Truck Provisions of Local Ordinances

Truck Regulation Feature	Bellwood	Bensenville	Des Plaines	Elk Grove Village	Franklin Park	Itasca	Maywood	Melrose Park	Northlake	Schiller Park	Wood Dale
1. Municipal-Wide Maximum Load Less than 40 Tons	✓ Schedule VII		✓ (4 Tons) 7-4-18(C)	✓ (5 Tons) 6-4-6(A)	✓ (5 Tons) 6-6H-4(b)	✓ (5 Tons) 75.15		✓ (16-20 Tons) 10.16.090	✓ 73,280 lbs 6-8-11(B)		✓ (9 Tons) 15.1711(A)
2. Certain Streets or Areas Exempted from (1)	✓ Schedule VII		✓ See (9) and (10) 7-4-18(C)	✓ 6-4-6(A)		✓ 75.15(E)					
3. Pickups and/or Deliveries Exempted from (1)	✓ Schedule VII		✓ 7-4-18(C)(2)			✓ 75.15(C)					✓ 15.1711(B)
4. Municipal-Wide Truck Prohibition		✓ 5-3-3(A)									
5. Certain Streets or Areas Exempted from (4)		✓ 5-3-3(A)									

Truck Regulation Feature	Bellwood	Bensenville	Des Plaines	Elk Grove Village	Franklin Park	Itasca	Maywood	Melrose Park	Northlake	Schiller Park	Wood Dale
6. Pickups and Deliveries Exempted from (4)											
7. Trucks Prohibited from Certain Streets	✓ Schedule VIII					✓ Schedule VI	✓ Schedule V			✓ 70.057(E)	✓ 15.2017 Schedule XVII
8. Load Limits Less than 40 Tons for Certain Streets		✓ (5 tons) 5-3-5		✓ (12 tons) 6-4-6(B)	✓ 6-6H-7		✓ Schedule V		✓ (5 Tons) ("Residential Streets") 6-8-33		
9. Class II or Class III Truck Routes Designated Pursuant to ILCS			✓ 7-4-18(B)(1)							✓ Schedule IV	
10. Non-Designated Truck Routes Identified			7-4-18(B)(2)								

Truck Regulation Feature	Bellwood	Bensenville	Des Plaines	Elk Grove Village	Franklin Park	Itasca	Maywood	Melrose Park	Northlake	Schiller Park	Wood Dale
11. Truck Routes in (2), (5), and/or (10) Have Been Submitted to IDOT as Preferred Truck Routes Pursuant to ILCS											
12. ILCS Authority Cited for Truck and Load Limits	✓ 75.10 75.15(C)		✓ 7-4-18(A)(3)		✓ 6-6H-4	✓ 75.10(D)	✓ 71.13(C)			✓ 70.057 (C)	
13. Reasonable Access Exempted from Restrictions					✓ 6-6H-4		✓ 71.15(A)		✓ 6-8-2(B) 6-8-6(E)	✓ 70.059(A)	

Source: CMAP. December 2016