

SOUTHWEST DETROIT TRUCK ROUTE STUDY

Prepared for:

City of Detroit
Michigan

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Executive Summary

Detroit supports domestic and international trade through its transportation infrastructure and borders, while the existing infrastructure has likely supported much more in the past than it does now. Traffic presents a potential conflict between the quality of life and business operations in the city, as well as the environment. This study was commissioned to further the City of Detroit's strategic initiatives by recommending routes within the City for vital commercial traffic in a manner that protects residents and business owners. With the growth and revitalization of Detroit, there is a dire need for finding a balance among all facets of the community. The truck study aims to find that balance and enact it as part of the development of the city.

The city has established a Strategic Plan for Transportation with milestones to be achieved over the next four years, including core values such as; increasing economic opportunity, reducing poverty, improving public safety, building a more vibrant and beautiful city, improving communications and outreach, and strengthening city functionality. With these core values in consideration, the study team has emphasized on soliciting input from residents, small business owners, large businesses, and public agencies. A public outreach program was established to educate residents about the purpose of the truck study and to identify their day-to-day issues.

Recommended Truck Route Network

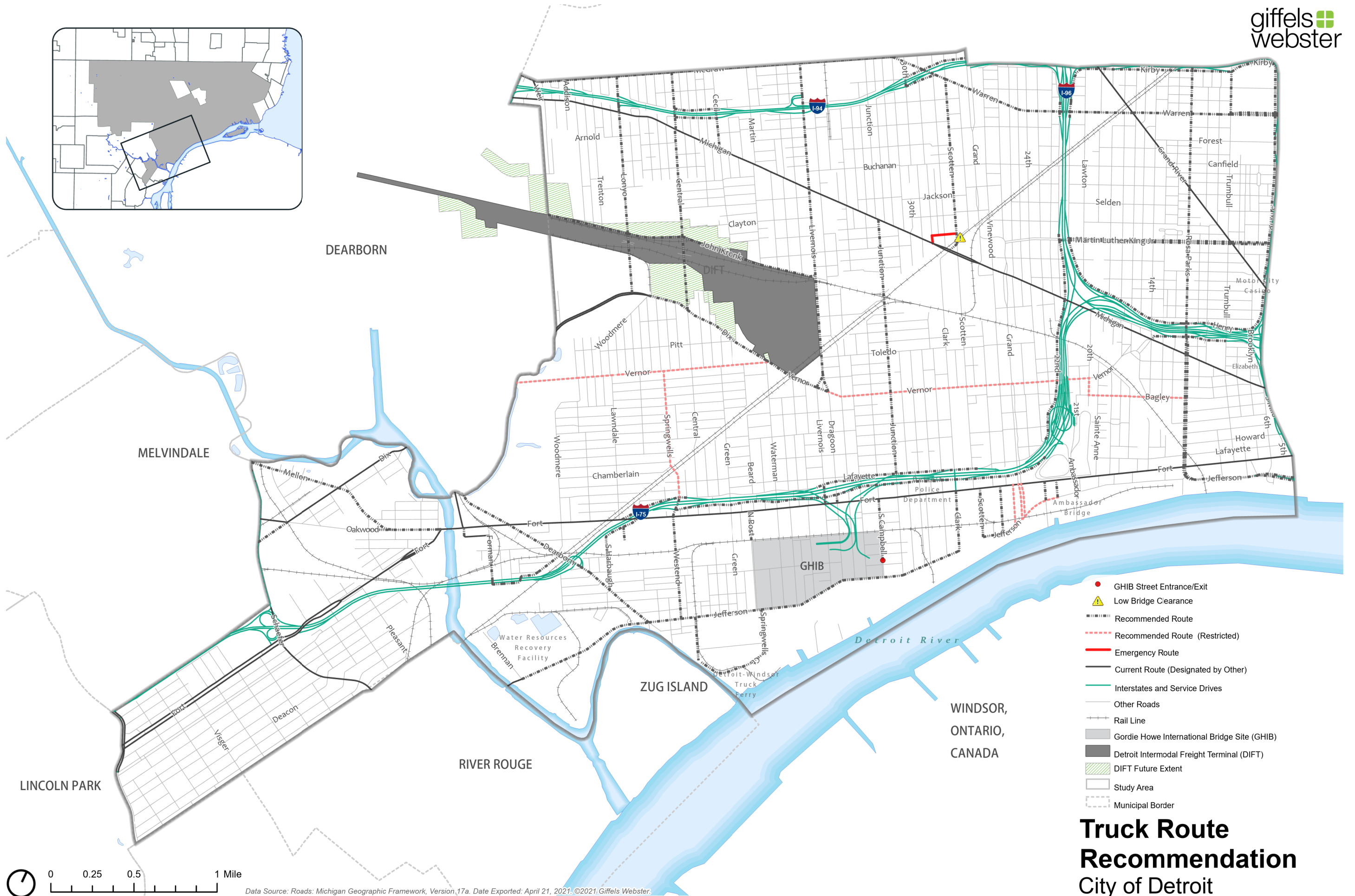
Out of 360 miles of commercially eligible streets in the study area, around 60 miles were selected to serve as recommended truck routes based on an inclusive approach. A portion of the truck route network is restricted for local deliveries or businesses only. As shown on the truck route recommendation figure, on the next page, recommended truck routes were identified along with surrounding truck routes as designated by other jurisdictions to ensure continuity and connectivity. A table with all the recommended truck route segments limits is included in **Section 6** and **Appendix G**.

Ordinance Changes

As a companion to the recommended truck route network, ordinances and enforcements are proposed in the study. Several truck route ordinance examples, implemented by other cities around the country, were reviewed for potential implementation by the city. These example truck route ordinances and enforcement language examples are further discussed in **Section 6.4** of this report and included in **Appendix A**.

Strategies for the Community

Three strategies were identified to reduce the negative impacts of commercial vehicles on the community of southwest Detroit. These strategies intend to incentivize commercial vehicle drivers and freight companies to adopt off-peak delivery programs, use cleaner forms of fuel and replace older, polluting diesel vehicles and equipment with new zero emission vehicles and equipment. Implementing each of these strategies could potentially increase the quality of life and support a healthy environment in Detroit. Lastly, education and outreach strategies were proposed to supplement the truck route and ordinance changes. The purpose of these strategies is to reach all stakeholders in southwest Detroit and educate them about the outcomes of this study.



Truck Route Recommendation

City of Detroit

Data Source: Roads: Michigan Geographic Framework, Version 17a. Date Exported: April 21, 2021. ©2021 Giffels Webster.

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1 Introduction

1.1 STUDY AREA

Detroit, as the largest city in the state of Michigan in population and size, is home to approximately 680,000 residents and encompasses approximately 139 square miles. Strategically located along the Detroit River, bordering Windsor, Ontario, Canada, and is connected to the broader Great Lakes system. Detroit and Windsor (Canada) are connected by the Ambassador Bridge and Detroit Windsor Tunnel, all of which connect to interstate systems and intermodal facilities. Commercial traffic and international trade are expected to be generated with the completion of the Gordie Howe International Bridge (GHIB), the second land commercial Port of Entry in the city with Canada.

The study area encompasses approximately 18 square miles of the city, and is bounded by Dearborn, Melvindale, Lincoln Park, and River Rouge. Interstates surrounding the study area include I-75 to the south, I-94 to the north, and I-375 and I-96 to the east. Freeways and state highways in the study area include M-10 (John C Lodge Freeway), US-12 (Michigan Avenue), M-85 (Fort Street), and M-5 (Grand River Avenue).

1.2 OBJECTIVE

The objective of this study is to establish a truck route network in southwest Detroit. Current policies and regulations, i.e., federal, state, and local, that govern truck operations were reviewed along with an assessment of city streets and public input, which all contributed in establishing a recommended truck route network. The study provides the basis for commercial vehicles and truck regulations through ordinances to serve commercial, industrial, and residential areas in southwest Detroit. For that purpose, a methodology was established to assess potential truck routes based on community input, quantitative data, roadway characteristics, and the city's master plan.

To ensure continuity and connectivity of potential truck routes, the study has accounted for current truck routes in adjacent cities including Dearborn, Melvindale, Lincoln Park, and River Rouge. In addition, to ensure high levels of connectivity, connections to the Gordie Howe International Bridge (under construction), Detroit Windsor Tunnel, and Detroit Intermodal Freight Terminal (DIFT) were incorporated in the truck route assessment.

The city's residents, automotive industry, and international trade are in need for a designated truck route network to be established along with ordinances to protect and enforce them. Understanding how commerce can best move throughout the region, servicing industrial and commercial hubs while best protecting the population and environment is at the center of this truck route recommendation.

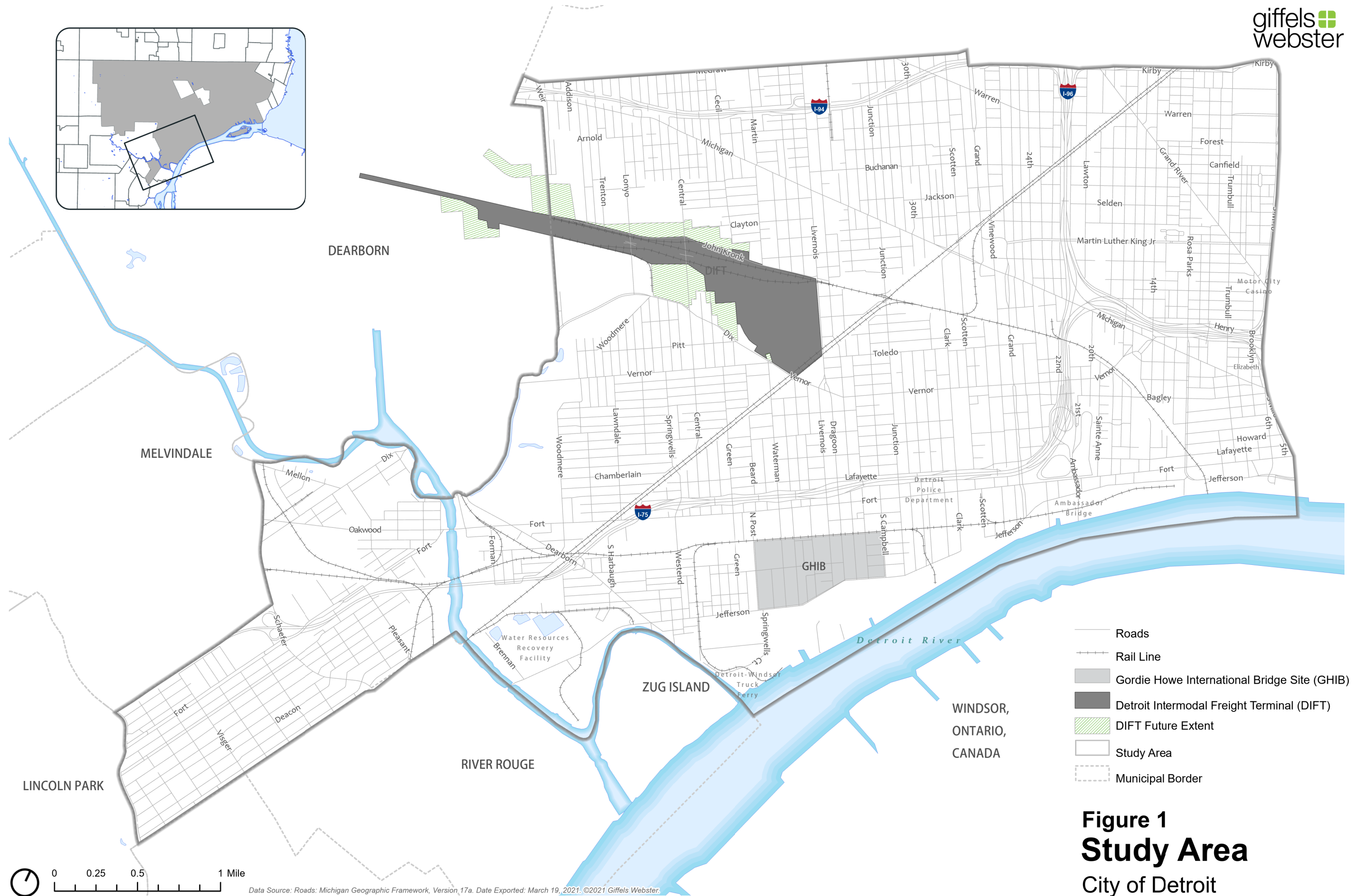
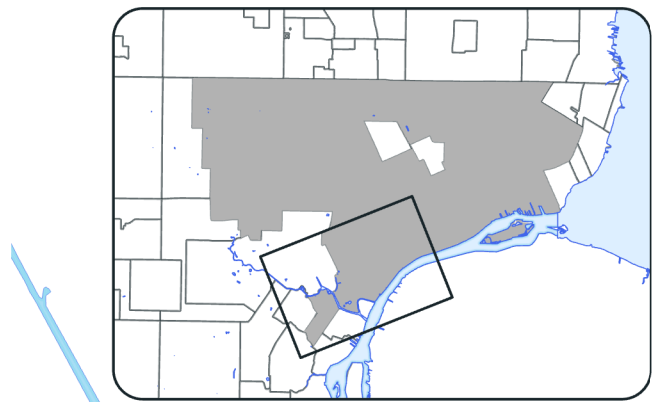
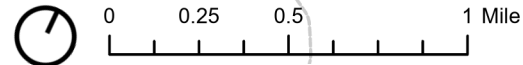
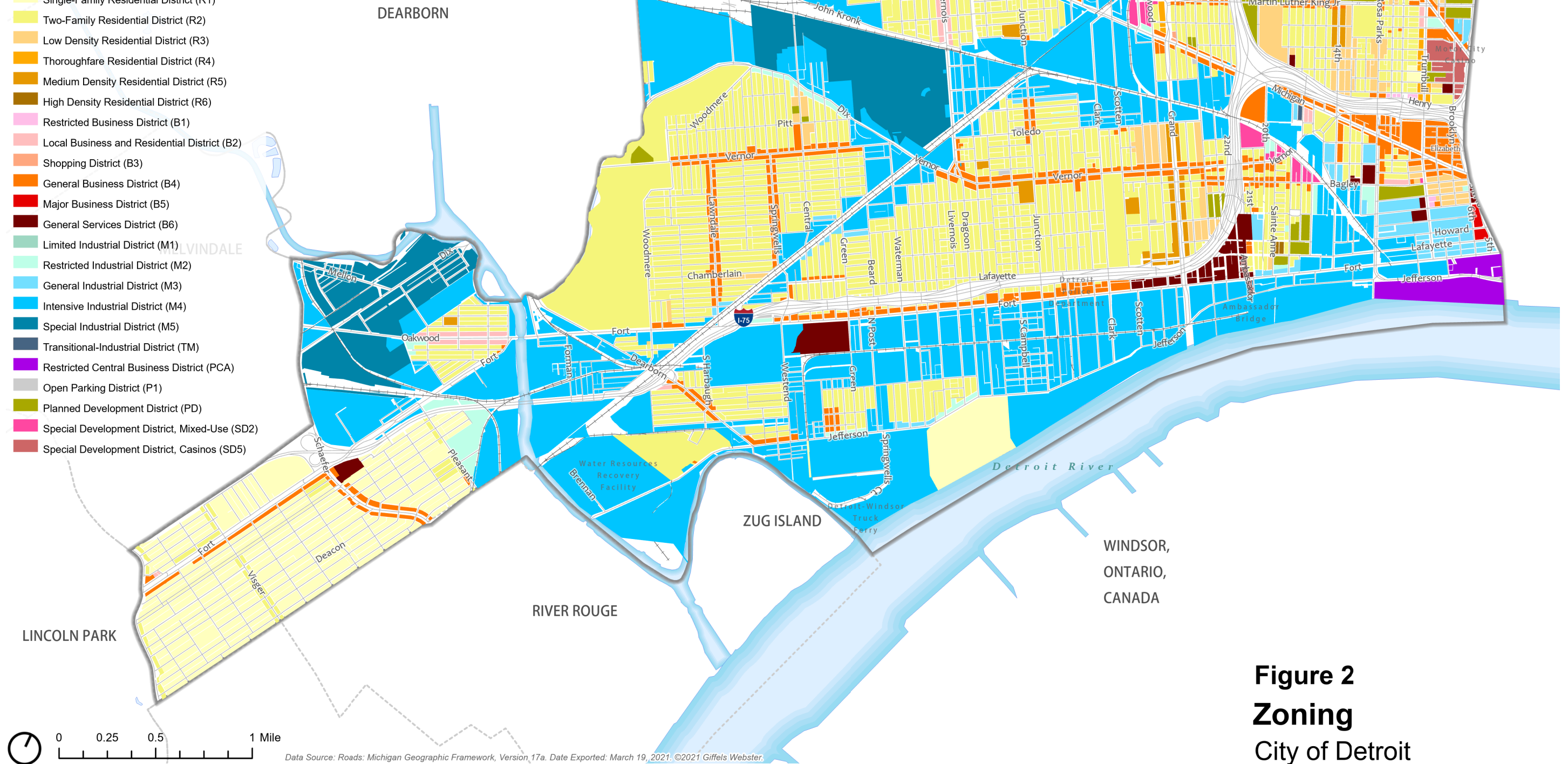


Figure 1
Study Area
 City of Detroit

Data Source: Roads: Michigan Geographic Framework, Version, 17a. Date Exported: March 19, 2021. ©2021 Giffels Webster.



- Single-Family Residential District (R1)
- Two-Family Residential District (R2)
- Low Density Residential District (R3)
- Thoroughfare Residential District (R4)
- Medium Density Residential District (R5)
- High Density Residential District (R6)
- Restricted Business District (B1)
- Local Business and Residential District (B2)
- Shopping District (B3)
- General Business District (B4)
- Major Business District (B5)
- General Services District (B6)
- Limited Industrial District (M1)
- Restricted Industrial District (M2)
- General Industrial District (M3)
- Intensive Industrial District (M4)
- Special Industrial District (M5)
- Transitional-Industrial District (TM)
- Restricted Central Business District (PCA)
- Open Parking District (P1)
- Planned Development District (PD)
- Special Development District, Mixed-Use (SD2)
- Special Development District, Casinos (SD5)



Data Source: Roads: Michigan Geographic Framework, Version, 17a. Date Exported: March 19, 2021. ©2021 Giffels Webster.

Figure 2
Zoning
City of Detroit

2 Current Ordinances

The city's current code of ordinances covers several commercial vehicle related topics, however there is no specific truck route code in place. The ordinances contain truck restrictions and prohibitions for topics such as; truck loads, truck sizes, hazardous materials transport, loading & unloading hours, idling & parking locations, noise, posted signs, oversize or overweight vehicles, and testing vehicles.

The detailed ordinance text related to this study is included in **Appendix A**. For reference, the following sample excerpts from the city's ordinances addressing truck and commercial vehicles topics are included herein:

Parking Restriction: *"Sec. 46-4-19. Parking of commercial vehicles and other specified vehicles and equipment on residential streets prohibited; taxicab exception; parking of commercial vehicles on commercial streets for one hour permitted; exceptions; temporary parking of motor homes, pickup campers, and coupled trailer coaches on residential street permitted."*

Truck Idling: *"Sec. 46-4-82. A person who, or municipality or corporate entity which, owns, operates, or leases a commercial vehicle, including a bus or truck, which exceeds a gross vehicle weight rating of 8,500 pounds, the motive power for which is provided by a diesel or non-diesel fueled engine, or owns, leases, or occupies land and has the actual or apparent dominion or control over the operation of a commercial vehicle, including a bus or truck present on such land, the motive power for which the commercial vehicle is provided by a diesel or non-diesel fueled engine, shall not allow or permit the idling, as defined in section 55-1-3 of this Code, of said vehicle's engine for more than five consecutive minutes per 60-minute period, except as permitted by section 55-4-103 of this Code."*

Truck Prohibitions: *"Sec. 33-1-48. Trucks prohibited; exceptions. No person shall operate upon or within any park, public place or boulevard any truck, as the term is defined by the Michigan Vehicle Code, or any other vehicle used for hauling or distribution of merchandise, freight or material; provided, that such truck or vehicle may be operated upon or within such parks, public places or boulevards, for the shortest possible distance, when necessary to serve any property upon such park, public place or boulevard or contiguous thereto, or when it is necessary to cross any boulevard. The provisions of this section shall not apply to vehicles operated by the recreation department."*

Truck Posted Signage: *"Sec. 46-4-61. – Prohibition and restriction of trucks operating, where posted, on highways and streets in the City. Upon the erection of proper signs sufficient to apprise the ordinarily observant person, it shall be unlawful to operate, permit or cause to be operated, upon any of the highways or streets in the City, any truck, provided that, in accordance with the posted signs, any such truck may be operated upon such highways or streets in the City for the shortest possible distance when necessary to serve any property located within or upon such highways or streets or contiguous thereto or when necessary to cross such highways or streets."*

3 Data Collection

3.1 METHODOLOGY

Comprehensive research was conducted to collect all pertinent data, including current truck routes, traffic counts, crash data, pavement conditions, bridge conditions, bridge restrictions, land use, non-motorized paths, and commercial connectors. All data collection files are included in **Appendix B**. The data was obtained from several agencies including the City’s Traffic Engineering Division (TED), City of Detroit Planning and Development Department (PDD), Detroit’s Open Data Portal, Michigan Department of Transportation (MDOT), Michigan Department of Licensing and Regulatory Affairs (LARA), and Southeast Michigan Council of Governments (SEMCOG). The collected data includes the following:

- Current Truck Routes
- Traffic Volumes (AADT)
- Truck Crash Rates
- Vehicle Classification (FHWA)
- Roadway Characteristics (i.e. # lanes)
- Pavement Rating (PASER)
- Bridge Characteristics (clearance and weight limit)
- Bridge Rating (MDOT)
- Intermodal Facilities
- Adjacent Land Use
- Future Land Use
- Sensitive Receptors
- Environmental Impact
- Local Connections
- Cross-jurisdictional Connections
- International and Statewide Connections
- Intermodal Connections
- Pedestrian & Bicycle Facilities
- Act 51 Roadway Map
- Related Studies (i.e. DIFT and DRIC)
- Improve Detroit Application
- SW Trucks En Route Application

Obtaining information from other planned projects within the study area was also part of the data collection process. Updates for ongoing or prospective projects were provided, as needed, for the Gordie Howe International Bridge (GHIB), Detroit Intermodal Freight Terminal (DIFT), and the Joe Louis Greenway (JLG). These projects are slated for completion after the publication of this report. In addition to the items listed above, input was solicited from the stakeholders through multiple approaches, as discussed in **Section 4**.

Following conversations with project stakeholders during the first community and engagement meetings, the routes frequently used by trucks in the City were identified, as shown on **Figure 3**. The land use maps for the study area were obtained from the City’s Master plan for the existing and the future land uses, as shown on **Figure 4** and **5**, respectively.

Definitions

Act 51 is a financial outreach of Michigan Transportation Funds (MTF) as provided for in PA 51 of 1951, which is distributed by MDOT to counties, cities, and villages. Fund receivers must adhere to certain Act 51 requirements to be eligible for monthly MTF revenue distributions.

Cross-jurisdictional connections are roadway segments which provide interconnectivity among neighboring municipalities.

Environmental impacts include noise, vibration, and low air quality which result from frequent truck traffic on adjacent parcels and the surrounding community.

Intermodal facilities connections in Detroit were identified from USDOT intermodal facilities map as roadway segments connecting to intermodal facilities.

Local major and minor commercial connectors were identified using the locations of commercial facilities and the origin-destination of truck traffic. Roadway segments with connections to the interstate system (I-94, I-96, and I-75) and international crossing facilities (Ambassador Bridge, Gordie Howe Bridge, and Detroit Tunnel) were considered vital to the overall benefit of the community and local businesses.

Pavement Surface Evaluation and Rating (PASER) is a system that ranks pavement surface condition on a scale range from 10 (excellent condition) to 1 (failed condition) based on distress level. An excerpt from the PASER manual is included in **Appendix B** with detailed descriptions of distress levels and relative treatment measures.

Social impacts from commercial vehicles occur in areas with frequent pedestrian gatherings or areas where social events are held.

Sensitive receptors as identified by the Environmental Protection Agency (EPA), include areas where populations more susceptible to the adverse effects of pollutants exist.

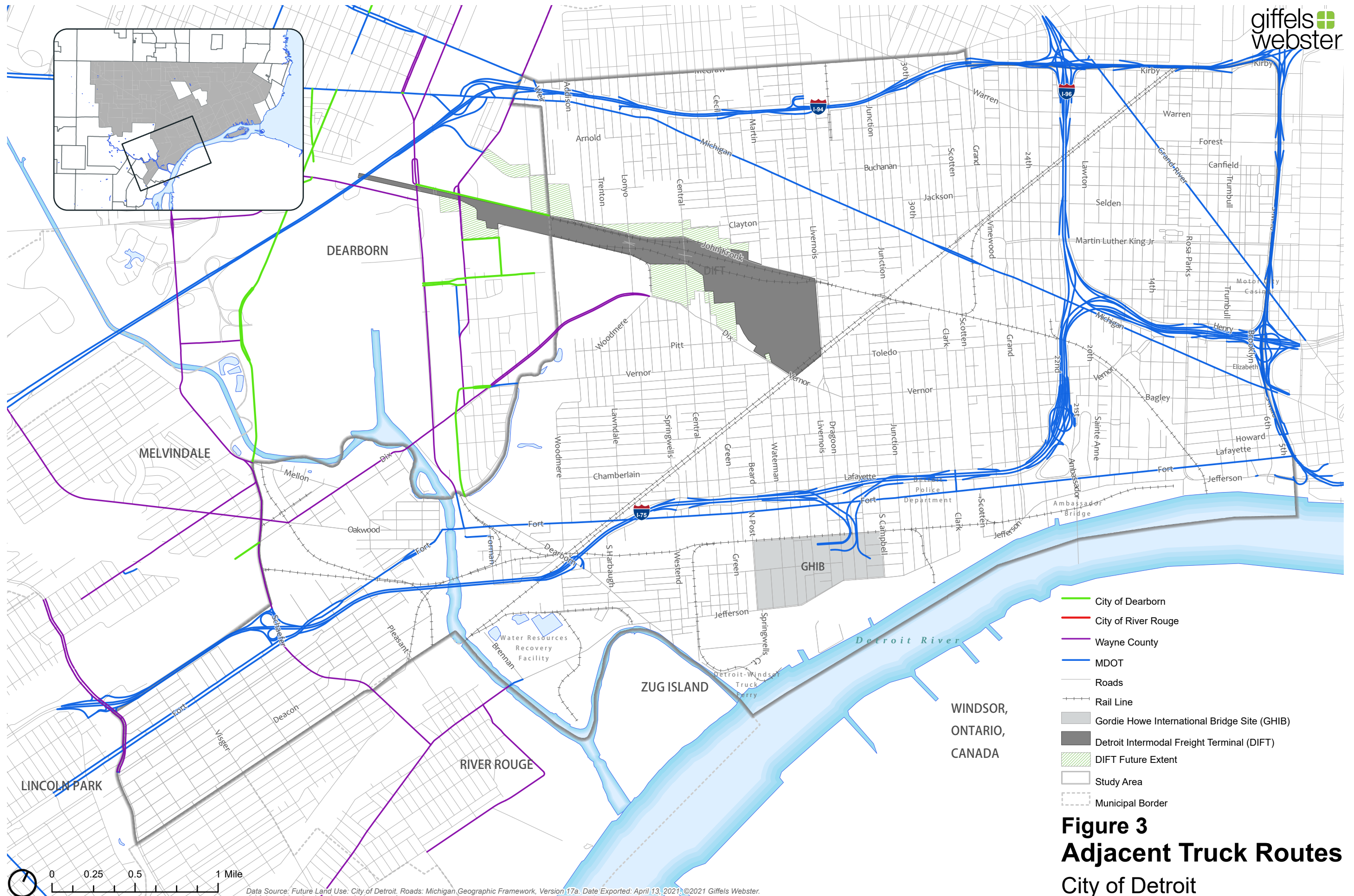
Stakeholders in southwest Detroit include residents, small business owners, public agencies, intermodal facilities, and large businesses.

Intermodal facility connectors are roadway connectors to intermodal facilities, as identified by USDOT. Road network segments overlapping with these connectors were considered more preferred. These include connections to ports along the Detroit River and River Rouge, the DIFT, the Detroit-Windsor Truck Ferry, and various points along the railway. Refer to **Section 5.5** of this report for access point locations and planned additions and closures.

Local commercial connections are roadway connections based on the City of Detroit's Transportation Plan. Most residential classifications allow for neighborhood-scale commercial development. For example, in a low-medium density residential area, small-scale commerce should exist to serve residents, therefore requiring a local commercial connection.

Connectivity: Commercial and industrial land uses are considered truck traffic generators, therefore, roadway segments connecting to local truck traffic generators were considered more

preferred. Connectivity to interstate and international interchanges as well as connections to cross-jurisdictional truck routes, were considered more preferred. Connections within or closely adjacent to the project area includes connections to Gordie Howe International Bridge, Ambassador Bridge, Detroit-Windsor Tunnel, I-94, I-75, I-96, and connections to Dearborn, River Rouge, Melvindale, and Ecorse.



- City of Dearborn
- City of River Rouge
- Wayne County
- MDOT
- Roads
- Rail Line
- Gordie Howe International Bridge Site (GHIB)
- Detroit Intermodal Freight Terminal (DIFT)
- DIFT Future Extent
- Study Area
- Municipal Border

Figure 3
Adjacent Truck Routes
 City of Detroit

Data Source: Future Land Use: City of Detroit, Roads: Michigan Geographic Framework, Version 17a, Date Exported: April 13, 2021, ©2021 Giffels Webster.

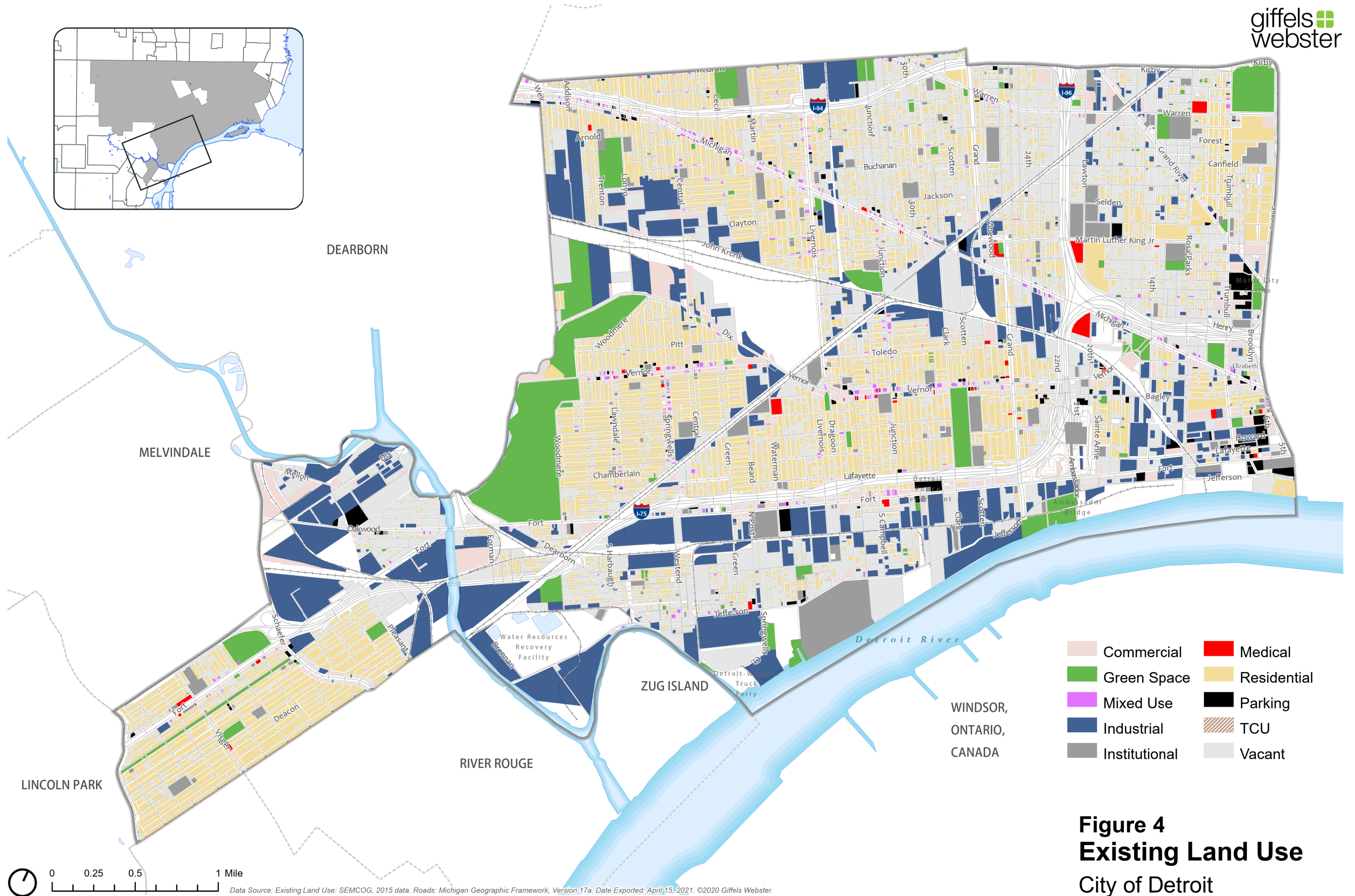


Figure 4
Existing Land Use
 City of Detroit

Data Source: Existing Land Use: SEMCOG, 2015 data. Roads: Michigan Geographic Framework, Version 17a. Date Exported: April 15, 2021. ©2020 Giffels Webster.

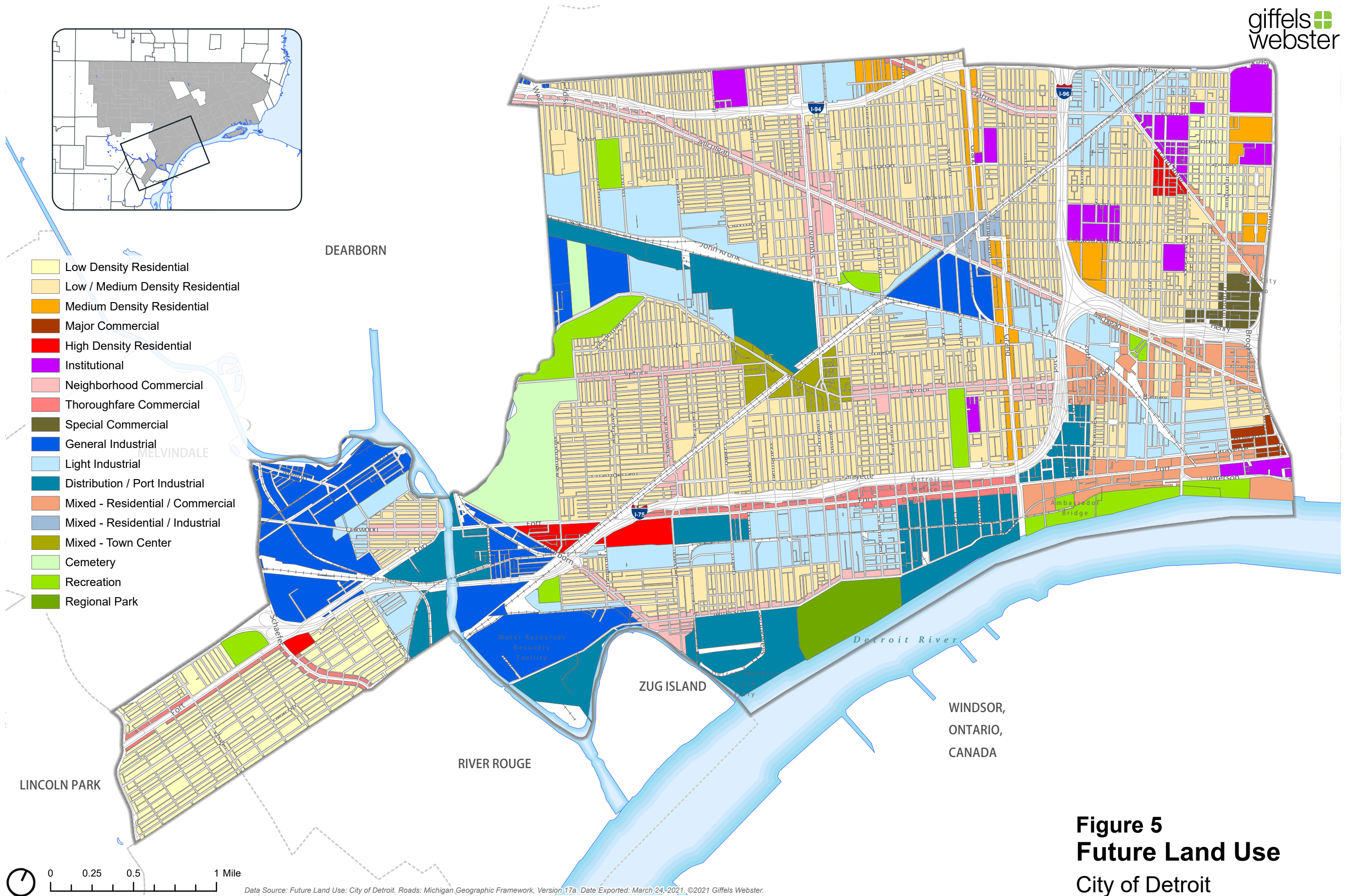


Figure 5
Future Land Use
City of Detroit

Data Source: Future Land Use: City of Detroit, Roads: Michigan Geographic Framework, Version 17a. Date Exported: March 24, 2021. ©2021 Giffels Webster.

3.2 RELATED STUDIES

A variety of related studies were reviewed to investigate best practices for a truck route assessment, establishing ordinances and enforcements. This review was initiated following recommendations by the community-based organization working group/subcommittee. **Table 1** includes a summary of truck studies that were conducted for regions and cities with similar economical and geographical elements, as well as environmental and public health concerns, as in Detroit. The recommendations from each study are summarized in the table below, which were investigated as part of industry-wide best practices for truck route designations. All related studies are included in **Appendix C**. In addition, other studies pertaining to the DIFT and GHIB were reviewed as part of this research.

Table 1: Summary of Related Truck Studies

Related Study Title	Related Study Recommendations
East Oakland Truck Route Assessment Report Oakland, CA	_ Implement changes to through, restricted, and local truck routes. _ Provide sign posting, public awareness & education, and improvements.
Citywide Truck Route Study Tampa, FL	_ Implement changes to the ordinance for truck definition, Central Business District truck routes, and truck operator violations. _ Provide truck route system changes, sign posting, and tracking truck route violations.
Truck Route Study and Policy San Mateo, CA	_ Implement changes to the current policies to minimize traffic diversion, restrict truck through traffic, and add a system of truck route signage. _ Implement changes to truck route designated streets based on roadway classification, adjacent land-use, connectivity, and physical constraints.
Off-Peak Delivery: A Pilot Project for the Chicago Region Chicago, IL	_ Implement off-Peak Delivery to provide faster travel speeds, increased productivity, more reliable deliveries, increased quality of life, and financial savings. _ Provide financial incentives for receivers and carriers to implement an OPD.
Guidebook for Understanding Urban Goods Movement Atlanta, GA – Baltimore, MD Washington, D.C. – Nashville, TN New York City and Buffalo, NY London – Toronto – Bristol	_ Implement out-of-hours delivery to improve driver & fleet productivity, reduce environmental footprint, and reduce wider impacts (crashes, noise, parking, etc.). _ Implement freight consolidation centers to reduce truck traffic levels, reduce environmental impacts, and improve efficiency.

*This table is for informational purposes and summarizes related recommendations, reviewers are encouraged to explore the related studies and supplemental information included in Appendix C.

4 Public Involvement

Public input is considered one of the most important facets of this project. The public involvement plan revolved around three key elements: community meetings, steering committee meetings, and websites & mobile applications. This plan provided communication channels which were used to obtain feedback and concerns from the public. All agendas, meeting minutes, sign-in sheets, and materials associated with the public involvement plan are included in **Appendix F**.

4.1 COMMUNITY MEETINGS



Six community meetings were hosted between July and October 2019. Meetings were held at the Roberto Clemente Recreation Center, Delray Recreation Center, and the Conely Public Library. Spanish and Arabic interpreters were made available at each of the community meetings. Attendees were encouraged to sign-in and locate their general location of interest using a push pin and a map of the area to help determine geographic turnout. At the end of the meetings attendance numbers were estimated to capture the number of attendees who didn't sign in upon arrival. Each meeting followed the same agenda and included open house, short presentation, open discussion, and listening session. Meeting attendees consisted of residents, community organization representatives, small business owners, and those who work in the study area. Representatives from TED and City Council were also present at each meeting.

Community members were informed of the meetings through flyers distributed to their homes, posters displayed at local businesses, and on the City of Detroit's website. Flyers were handed out to every address within a 300-foot buffer from a road that might be considered for the final recommendation. In addition, posters were given to small businesses in the study area. Both the posters and the flyers were printed in English, Spanish, and Arabic. A sample flyer is shown below.

SW TRUCKS EN ROUTE

The City of Detroit is creating our first designated truck route network! And we need YOUR HELP to do it right.

OVERVIEW

This pilot study will tell us which streets are the best places for trucks to go. With this study we'll be able to prioritize signage, road repairs, traffic enforcement, and even create City ordinances.

As the neighborhood that built the car and put the nation on wheels, Southwest Detroit is the best place to lead the way. Together we will create a clear and fair plan that works for us all!

Residents, local stores, commerce, parks, and schools—all are important! The City of Detroit wants to decide the best truck routes to keep everyone safe and on the move in Southwest Detroit.

ADA Accommodation

With advance notice of seven calendar days, the City of Detroit will provide interpreter services at public meetings, including language translation and reasonable ADA accommodations. Please contact the Civil Rights, Inclusion, and Opportunity Department at 313-224-4950, through the TTY number 711, or e-mail crio@detroitmi.gov to schedule services.

Con aviso previo de siete días calendario, la Ciudad de Detroit proporcionará servicio de interpretación en reuniones públicas, incluida la traducción de idiomas y las acomodaciones razonables de ADA. Para programar los servicios comuníquese con el Departamento de Derechos Civiles, Inclusión y Oportunidad al 313-224-4950, a través del número TTY 711, o envíe un correo electrónico a crio@detroitmi.gov.

TUESDAY MEETINGS

July 9
Introduction Meeting
Roberto Clemente Recreation
2631 Bagley St.
Detroit, MI 48216

August 20
Check-in Meeting
Conely Library
4600 Martin St.
Detroit, MI 48210

October 22
Results Meeting
Roberto Clemente Recreation
2631 Bagley St.
Detroit, MI 48216

All Tuesday meetings from 5:00 PM – 7:30 PM

THURSDAY MEETINGS

July 11
Introduction Meeting
Delray Rec Center
420 Leigh
Detroit, MI 48209

August 22
Check-in Meeting
Delray Rec Center
420 Leigh
Detroit, MI 48209

October 24
Results Meeting
Delray Rec Center
420 Leigh
Detroit, MI 48209

All Thursday meetings from 5:30 PM – 8:00 PM

مع العلم سيقام هذا اللقاء في مقر مدينة ديترويت. يمكنكم معرفة المزيد عن الخدمات المتاحة من خلال الاتصال بالرقم 313-224-4950 أو إرسال بريد إلكتروني إلى crio@detroitmi.gov.

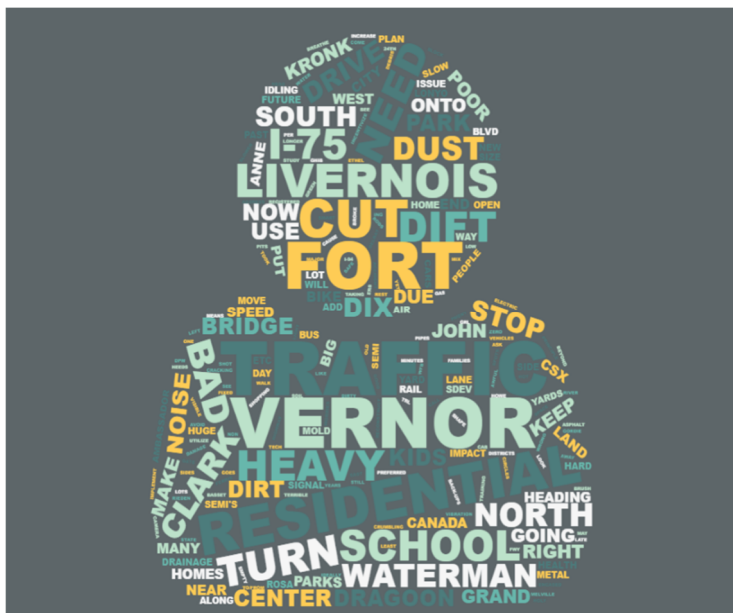
FREE FOOD KIDS WELCOME TRANSLATORS PROVIDED

For more information, please visit swtrucksroute.com

Comments received during each of the community meetings were input into the web application developed for the project, categorized, and synthesized into useful information in the truck route assessment.

Introduction Meetings (July 9th & July 11th)

The Introduction Meetings were hosted at the Roberto Clemente Center and the Delray Recreation Center. A twenty-minute presentation was given to introduce the project and discuss the challenges in designating a future truck route network. Principal concerns addressed in these meetings include safety, economic development, health, neighborhood character and efficiency. Existing conditions were also reviewed, including existing truck routes (MDOT and Wayne County), traffic volumes, pavement condition and future land use, all of which were shown on separate maps posted around the room. These maps were made available to the attendees at the meetings to review how truck routes would look like in their area and what would be acceptable from their perspective. The maps were divided into four geographic subareas which attendees were encouraged to visit, as needed. Facilitators were present at each geographic subarea to listen and document the concerns and comments of the attendees. Using sticky notes, the comments were placed on one of the Existing Conditions maps. A word cloud was developed based on public input, highlighting frequently used words in larger text and less used words in small text.



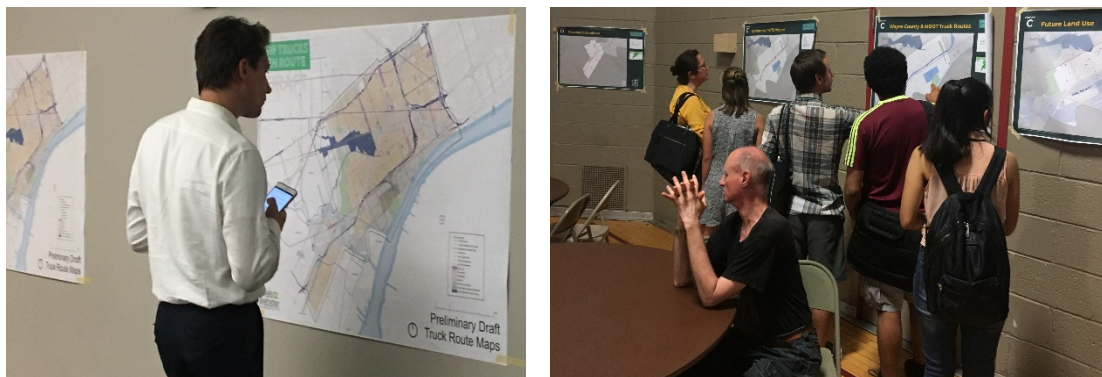
Check-In Meetings (August 20th & August 22nd)

The Check-In Meetings were hosted at the Conely Public Library and The Delray Recreation Center. The presentation included a project recap and a summary of what the project team heard at the first set of meetings. The Elimination Criteria was explained and how roadway segments deemed not suitable for trucks were eliminated from the evaluation. Maps of the roadway segments remaining in the evaluation were then made available for review. The remaining roadway segments were symbolized as one of three types; existing truck routes, potential truck routes, and potential commercial restricted truck routes. It also displayed future land use, demonstrating the industrial hubs, commercial corridors, and residential neighborhoods. This allowed for a concentrated conversation on only the roadway segments that were under evaluation and gave context to why they might be appropriate. Facilitators were present to guide conversation, listen and document the feedback at each of the map stations.



Results Meetings (October 22nd & October 24th)

The Results Meetings were hosted at the Roberto Clemente Recreation Center and the Delray Recreation Center. The presentation recapped the previous meetings and presented the Screening Criteria results, which ranked the roadway segments from least preferred to most preferred based on multiple factors. Best practices from other cities were reviewed and used as a guide from which attendees were asked to share which practices should be recommended for specific locations of concern. The maps shown at these meetings were an updated version of the map shown at the Check-In Meetings, showing potential routes and potential restricted commercial routes. Attendees were given color-coded stickers to place on the map, indicating where they saw the opportunity for modifications to the current roadway system. Modifications included signal and/or intersection improvements, roadway improvement, residential buffering for noise and dust, truck size restrictions, delivery time restrictions, and idling restrictions. Facilitators were present to answer questions and encourage participation at each map.



Outcome

The comments were catalogued in a web-based mapping application created for the study and then grouped by overarching categories. Heat maps were created using the categories, see **Appendix D**. The heat maps were helpful in evaluating where consensus existed on a given issue, whether it be referring to a traffic signal issue or a dust and debris issue. This information was used to augment the modification screening criteria and develop the improvement recommendations.

4.2 STEERING COMMITTEE

A steering committee consisting of representatives from local agencies (i.e. SDBA), residents, City of Detroit Traffic Engineering Division, and Police Department was closely involved in discussing the project and its phases. The project's kick-off meeting held on January 24th, 2019 was followed by the first steering committee meeting held on March 26th, 2019 at the City's Traffic Engineering Division offices. Bi-weekly to monthly regular meetings were conducted to have open discussions with any representative wishing to discuss recent issues or check on the progress of the study. The purpose of the steering committee was to open the doors to hear issues and concerns brought up by anyone in the community, which were later used in assessing truck route roadway segments in the city.

4.3 WEBSITES AND MOBILE APPLICATIONS

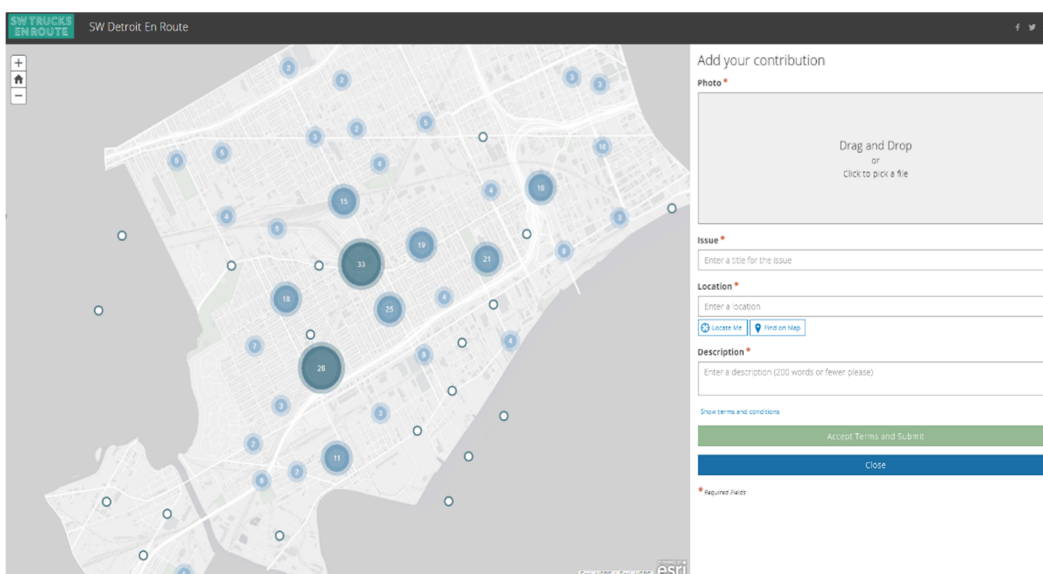
To obtain public feedback on a larger scale, a web-based mapping application, SW Trucks En Route, was created for the project using ESRI's Story Maps template. The crowdsource template was used to allow for public input from any person with access to the internet, especially hoping for input from residents and small business owners. This template was chosen because participants could post anonymously without having to sign-up for a special account, which might act as a major barrier to participation.

SW Trucks En Route was designed specifically for this study and serves as an important tool for residents to express concerns in the community related to truck traffic. The application provides users with a dynamic map where they can post comments and review all other comments submitted to the application.

To use it, participants would navigate to the web application on their mobile phone or computer. Next, they upload an image, tag the location by pointing and clicking on the map or using location services, and type in the comment. All comments received at the community meetings were manually logged into the web application afterwards, for which, the City of Detroit logo or a city aerial was used as a placeholder. The comments could also be easily pulled into desktop software, where the comments were categorized, and consensus heat maps were created.

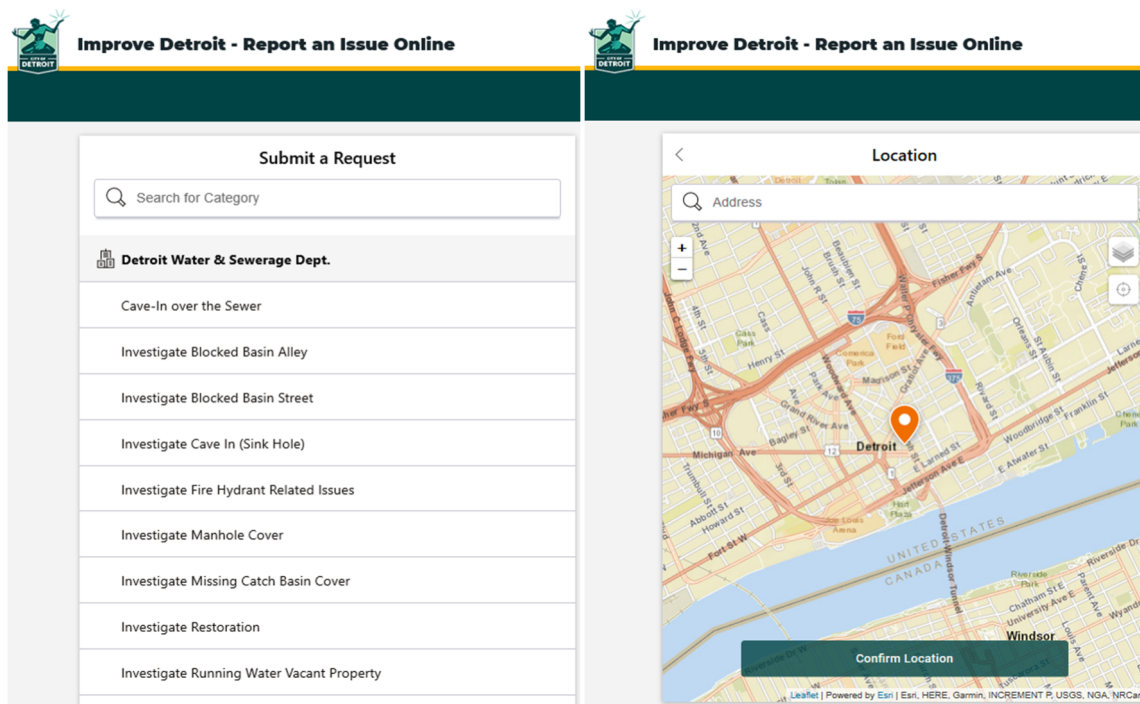
In the period of the study, the web application received over 700 views, averaging approximately 4 views per day. There were also 360 records entered the web application. A snapshot of the web application is shown below. The website for SW Trucks En Route web application could be access through the following link:

<https://detroitmi.gov/departments/department-public-works/complete-streets/sw-trucks-en-route-pilot-study>



The City of Detroit also has a web application named Improve Detroit which is used by residents (or anyone) to report on any issues in the city such as running water, potholes, damaged street signs, and other issues directly to the City Hall. The feedback from this application with regards to truck traffic issues was taken into consideration in this study as part of the outreach program. A snapshot of the web application is shown on the next page. The website for Improve Detroit application is:

<https://detroitmi.gov/ImproveDetroit>



A series of heat maps was created based on data from the Southwest Trucks En Route and Improve Detroit websites and mobile applications, see **Appendix D**. This data contains issues and concerns identified by the community in the study area. The heat maps display the concentration of issues such as air pollution, speeding, noise, large trucks, potholes, traffic operations, and others. **Figure 6** is the community meeting attendance heat map, which shows areas of most interest as identified through the public involvement process of this project.

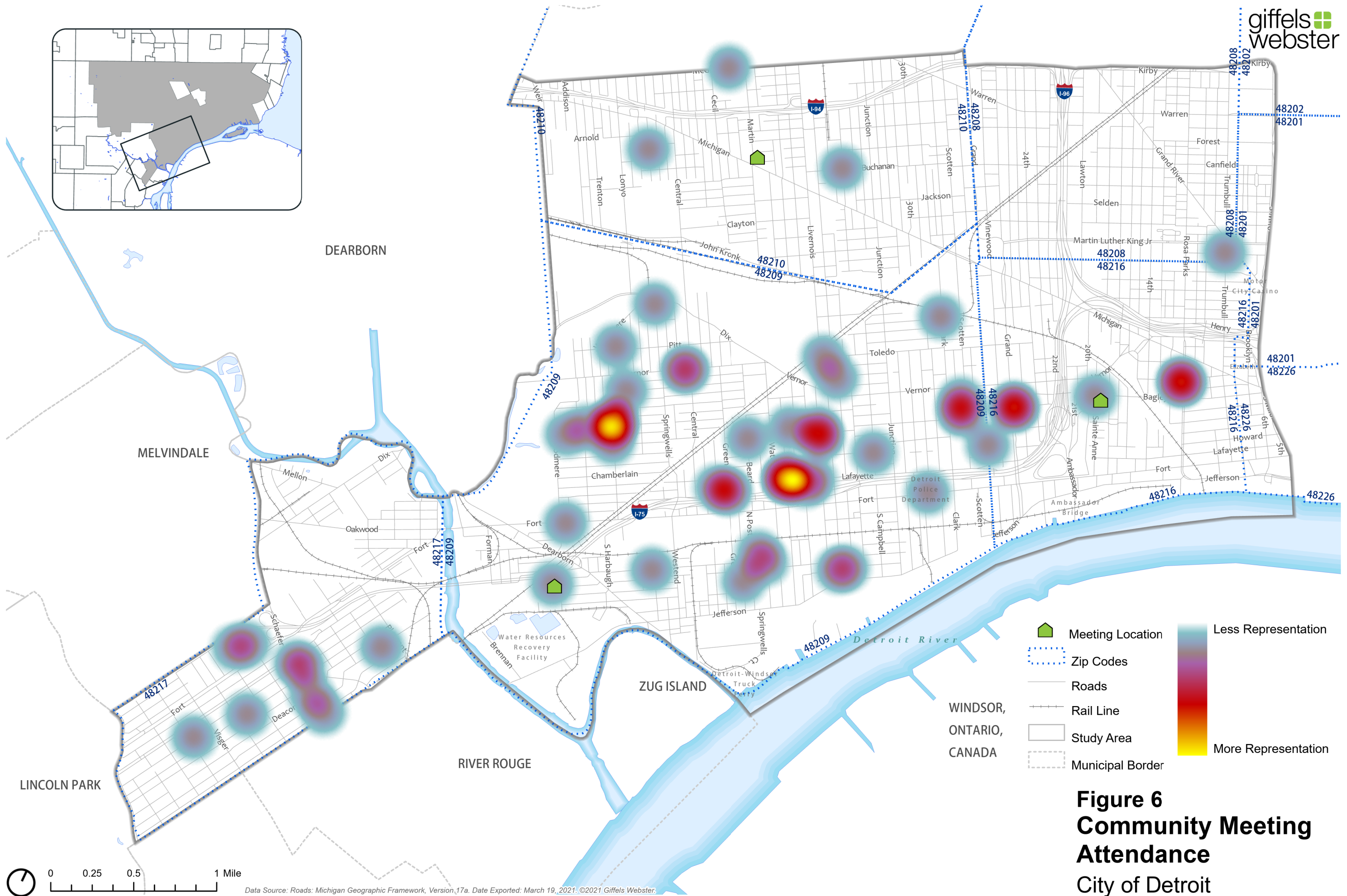


Figure 6
Community Meeting Attendance
 City of Detroit

Data Source: Roads: Michigan Geographic Framework, Version 17a. Date Exported: March 19, 2021. ©2021 Giffels Webster.

4.4 STAKEHOLDERS OUTREACH

Stakeholders in southwest Detroit are the main users of the roadway network in the study area and play an important role in selecting the potential truck routes. To account for public and private stakeholders needs, the study team launched a stakeholder outreach program to solicit input by interviewing stakeholders and to obtain answers for a questionnaire developed specifically for this purpose. The questionnaire was designed to obtain information such as the nature of truck operations, challenges and improvement suggestions, origin & destination information, and the most utilized roadways in the city. The stakeholders were divided into five organization types with similar truck operations in the outreach process to guarantee a feedback was obtained from several stakeholders in each organization type.

Stakeholder Questionnaire

The following questions were used to obtain feedback in the stakeholder outreach program.

1. What operational challenges do you currently face in the City?
2. What would improve your operations in the City?
3. Can you provide origin/destination information for our use in the study?
4. Where are most of your clients located?
5. What are the most utilized roads by inbound/outbound trucks?
6. Do you have a fleet of trucks? What is the typical truck type?
7. What is the typical truck type operated by others making visits to your business?
8. What are the typical operation hours?
9. How many trucks operate daily, weekly, or monthly?
10. Are there any seasonal changes to truck operations and route selection?

Stakeholder Feedback

Through the stakeholder questionnaire, we were able to identify highly utilized roadways and primary routes used by trucks in the city which were then considered in the truck route assessment. Challenges that truck drivers face include roadway construction and closures which encourage truck drivers to use alternate routes or causes delays in deliveries. Most trucking companies experience slowing operations and deliveries in the winter season due to difficult driving conditions and frost laws which reduces payload and forces alternative routes. Several stakeholders indicated that improvements for traffic operations and signage would positively impact the trucking industry, provide efficient operations, and promote safer roadways for everyone. They added suggestions for roadway capacity improvements for trucks to be accommodated on roadways during seasonal changes. A summary of stakeholder outreach meetings and surveys is included below.

1. A meeting was held between the study team and Gordie Howe International Bridge authority to discuss the impacts of the international bridge and US Port of Entry on the community of southwest Detroit and how the commercial traffic will access local roads and highways. The

US Port of Entry (POE) is planned to direct commercial vehicles to I-75 only for the inbound traffic (Canada to USA), while inbound passenger cars will have access via I-75 and Campbell Street. For the outbound traffic (USA to Canada), all vehicles will have local access to the US Port of Entry via I-75 and Campbell Street.

The GHIB project will provide roadway improvements to Campbell Street & Green Street, in addition to improving surrounding intersections to increase capacity and improve geometry at local streets. Discussions with GHIB authority indicated that no truck queuing issue is anticipated at the local access on Campbell Street, as there will be abundant area inside the POE for truck and vehicle stacking. Traffic and environmental reports conducted for the GHIB project are publicly available, therefore, information pertaining to the truck route study was utilized where appropriate to evaluate potential truck routes and connections to local streets.

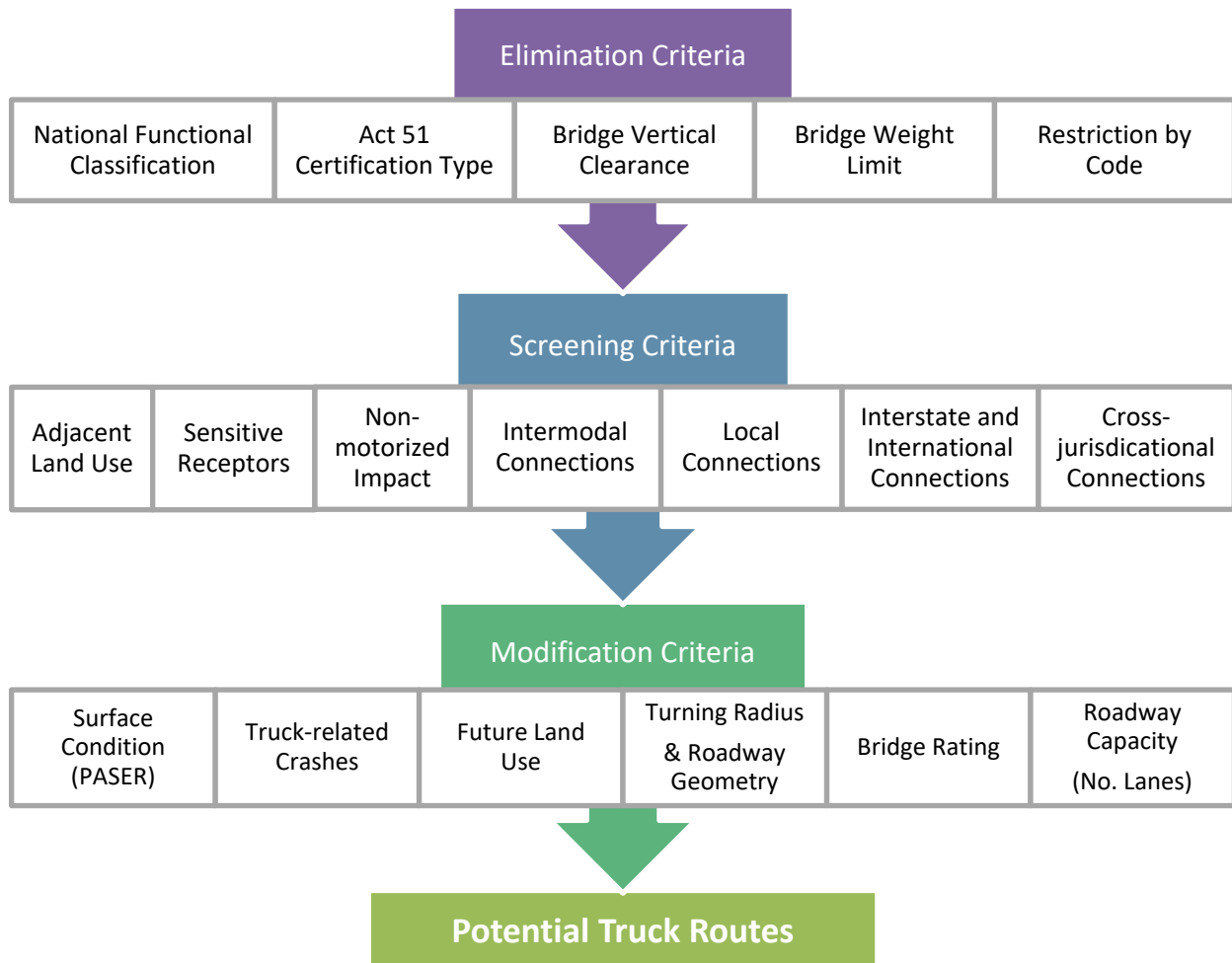
2. In collaboration with Southwest Detroit Business Association (SDBA), the study team reached out to small business owners in southwest Detroit with a survey seeking information about typical business operations and truck routes. Business owners were presented a map of city streets to trace typical truck routes used for deliveries, in addition to answering questions about their commercial fleet. During this outreach, the study team faced a difficulty in obtaining responses from a large pool of business owners, however, a representative number and type of businesses was eventually contacted successfully for this survey. The responses from this survey were combined and documented on a map for reference in **Appendix F**.

The results of this survey indicated that most of the current truck operations are utilizing routes currently designated as truck routes or recommended in this study. A portion of the surveyed businesses are currently using streets adjacent to truck routes for deliveries and turnarounds, which is considered a controlled use of low impact. Several streets currently used for truck operations are neither designated truck routes nor recommended by this study. These streets are eliminated by this study as potential truck routes, however, the study offers alternative truck routes for businesses affected by this elimination, as recommended in Section 6 of this report. As discussed in Section 5, the elimination process accounted for multiple criteria that address community needs. In addition, a scoring system was utilized to identify city streets that are most appropriate for commercial use.

5 Truck Route Assessment

5.1 METHODOLOGY

Assessment of the city roadways for potential truck routes was conducted using all the items in the data collection section in addition to public involvement feedback. Roadway attributes were grouped into three assessment levels, each with criteria to select roadway segments that could accommodate commercial vehicles. The following chart illustrates the truck route assessment workflow and the criteria under each assessment level. Several illustrative maps of the study area were created to show key criteria individually, as included in **Appendix E**.



5.2 ELIMINATION CRITERIA

The first assessment level is called the “Elimination Criteria” and it focuses on eliminating roadway segments that do not meet the minimum requirements for a truck route designation. The attributes associated with the Elimination Criteria are the National Functional Classification, Act 51 certification type, Bridge Vertical Clearance, Bridge Weight Limit, and restrictions by Code of Ordinance (only Grand Blvd is currently restricted). The criteria is shown on **Table 2**.

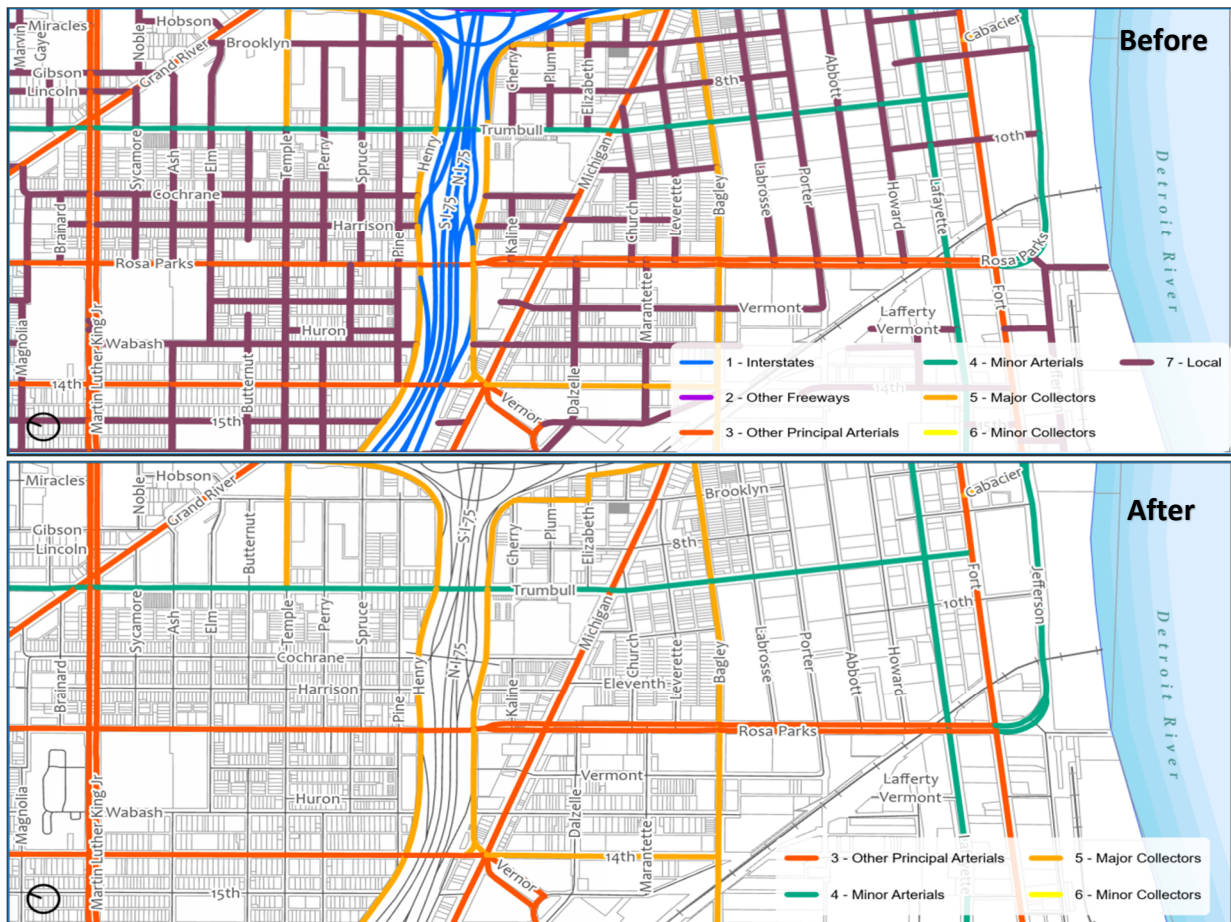
Table 2: Elimination Criteria

Elimination Criteria	Requirement
National Functional Classification	Local
Act 51	City Local
Bridge Vertical Clearance	12'0"
Bridge Weight Limit	MDOT Posting, Closure, or Advisory
Restriction by City/Code*	As per Sec 33-1-48 and Sec 46-4-61

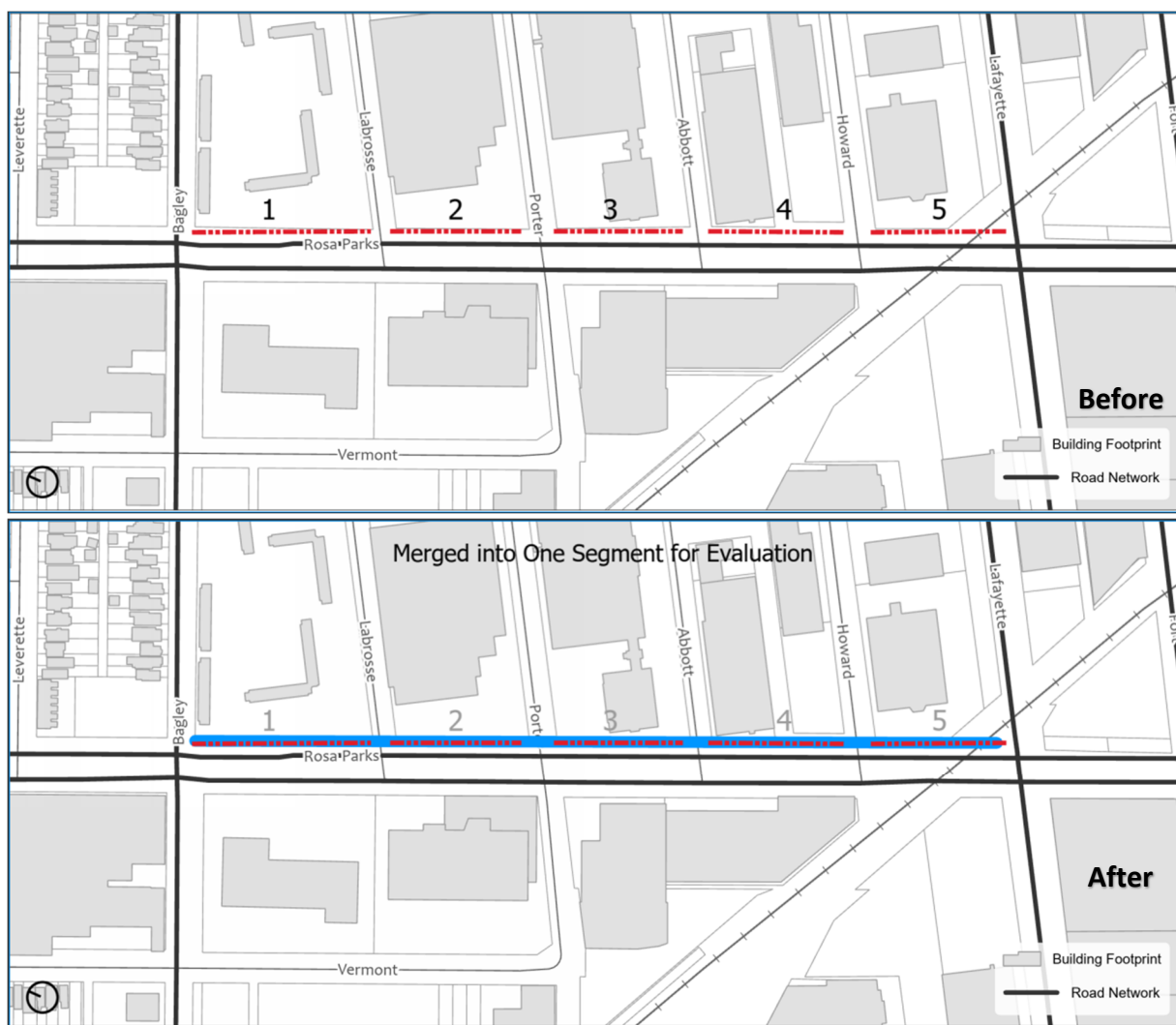
*Grand Boulevard was eliminated from consideration as a truck route due to Code of Ordinances Section 33-1-48. Note though that trucks are allowed local access via the shortest distance practical to service properties per Sec 46-4-61.

Data Synthesis

The MDOT Michigan Geographic Framework (MGF, Version 17a) was selected as the basis for the road network. The schema was altered to support the subsequent Geographic Information System (GIS) analysis. Much of the Elimination Criteria data is embedded in the MGF, allowing for a simple query to select local residential roads that are not appropriate for the final recommendation. Roadway segments classified as 'Local' under the National Functional Classification (NFC) and those classified as Act 51 "City Minor" were eliminated from the road network. The two diagrams included below show a sample of the roadway network before and after this elimination step.



Roadway segments prohibited by the City’s code of ordinance were eliminated, including Grand Boulevard. Exceptions to this prohibition are described in Sec. 33-1-48 and 46-4-61 of the code of ordinance. After roadway segments classified as local or prohibited by the City’s code of ordinance were eliminated, the remaining roadway network in GIS was comprised of multipart lines, which were merged together between intersections to ensure any limitation imposed on any part of the multipart line would be carried by the entire length of roadway between intersections. The two diagrams shown below are examples of the merging step which was used to facilitate the assessment process. Once the roadway segments were merged, the screening data was used to assign values using spatial analysis in the GIS. The resulting roadway network from the elimination criteria is shown on **Figure 7**.



Bridge data was then imposed onto the road network GIS and further eliminated any road that passed under a bridge with 12’0” clearance, per city ordinance. Bridges with lower weight limits than the truck maximum axle-loading were also eliminated. This process left 103 miles of 360 total mileage of roadway segments to be evaluated.

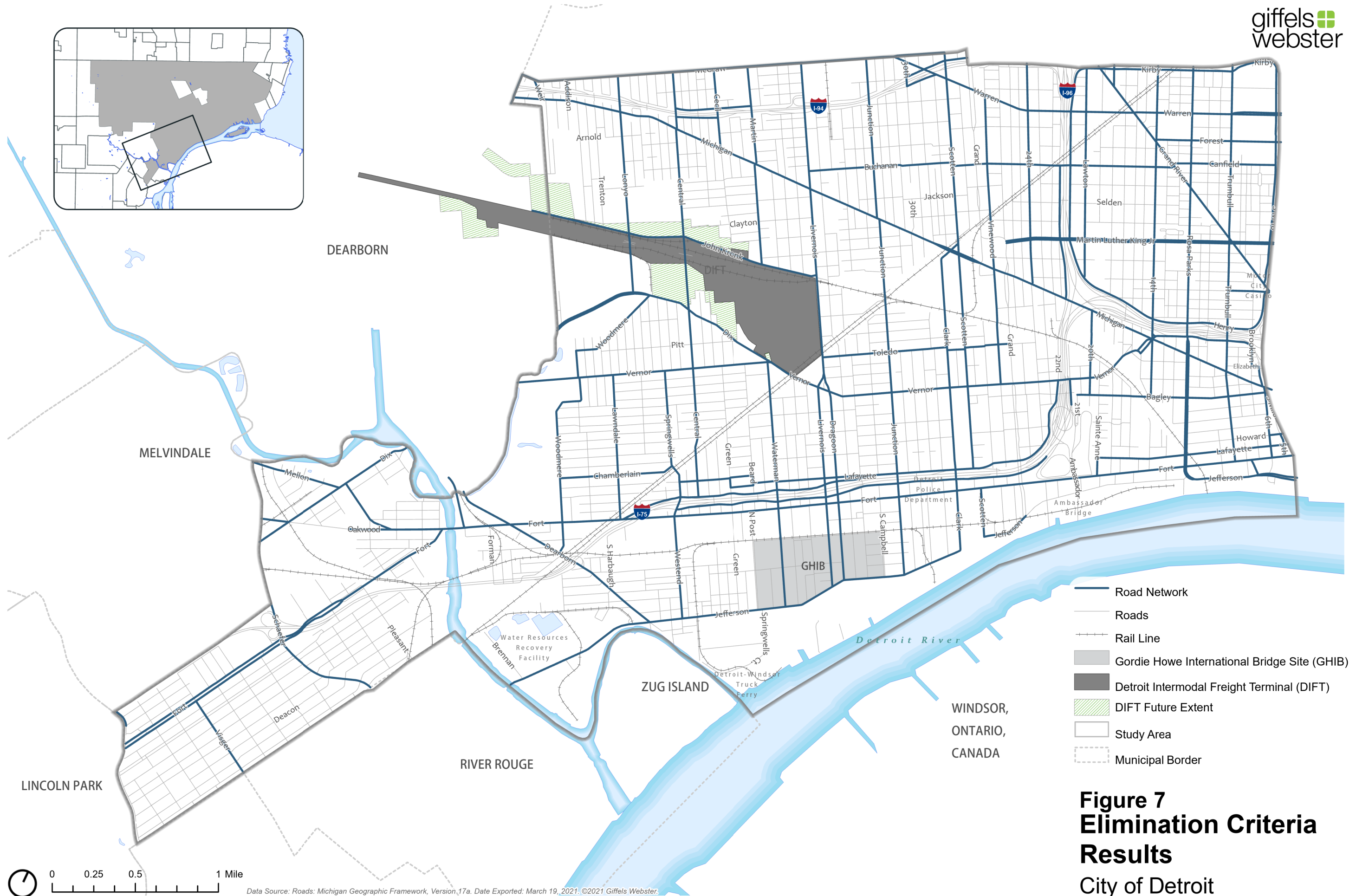


Figure 7
Elimination Criteria
Results
 City of Detroit

5.3 SCREENING CRITERIA

The second assessment level is called the “Screening Criteria,” which uses a scoring system to rank each roadway segment from the least to the most preferred truck routes based on specific criteria. The Screening Criteria is intended to inflict real-world circumstances on the roadway network in GIS. Data in this assessment addressed connectivity, adjacency, and sensitive receptors. The resulting roadway network from the screening criteria is shown on **Figure 8**. This criteria focuses on revealing the advantages and disadvantages of each roadway segment based on the following items:

Table 3: Screening Criteria

Screening Criteria	Details
Adjacent Land Use	Residential, Institutional, Mixed-use, Commercial, and Industrial
Sensitive Receptors	In proximity (e.g. 100 ft)
Non-motorized Impact	Trails, Bike Lanes, and Shared-use Paths
Environmental Impact	Noise, Vibration, and Air Quality
Connectivity	Intermodal, Local Commercial, International, and Cross-jurisdictional

A scoring system was developed for each segment based on the methodology of least and most preferred. The scoring system and the score of each segment are included in **Appendix G**. For instance, if the adjacent land use for a roadway segment was more than 80% residential land use then a score of -5 was assigned as it is a least preferred land use mix for truck routes designation. In another example, if a roadway segment provides cross-jurisdictional connectivity to a neighboring truck route system, a score of +5 will be assigned as it is a preferred criterion. Each roadway segment under the Screening Criteria level was assigned a total score based on criteria and scoring system, as discussed above, and then ranked among the roadway network. The result of this assessment is shown on **Figure 8**, with roadways ranked from least to most preferred.

Data Synthesis

Using SEMCOG’s existing land use data, land use mixes were assigned to each roadway segment. Roadway segments were less preferred if the land use mix was primarily residential and institutional, and more preferred if the land use mix was primarily industrial or commercial. An 80-foot buffer around the road network was used to select existing land use parcels. The parcels were then spatially joined with the road network segments. The result was calculated to determine percentage of residential, institutional, mixed-use/commercial, and industrial mixes.

Data obtained from Michigan Department of Licensing and Regulatory Affairs (LARA) was used to locate sensitive receptors including licensed childcare, adult care, medical centers, and hospitals. School and recreation center data was taken from the City of Detroit’s Open Data Portal. A 100-foot buffer was placed around these areas and used to select road network segments that interface with identified sensitive receptors. These roadway segments were scored as less preferred.

Two major non-motorized projects are underway within the study boundary, the Iron Belle Trail and the Joe Louis Greenway. The Iron Belle Trail is a statewide trail system stretching from Belle

Isle in Detroit to Ironwood, a city in the Upper Peninsula, bordering Wisconsin. The trail system comprises two trails, hiking and biking. The biking trail borders the eastern side of Michigan and the hiking trail borders the western side. The Joe Louis Greenway, while not finalized, will course through the study area. This is a bike trail that circles the city. Road network segments adjacent or intersecting either trail were considered less preferred.

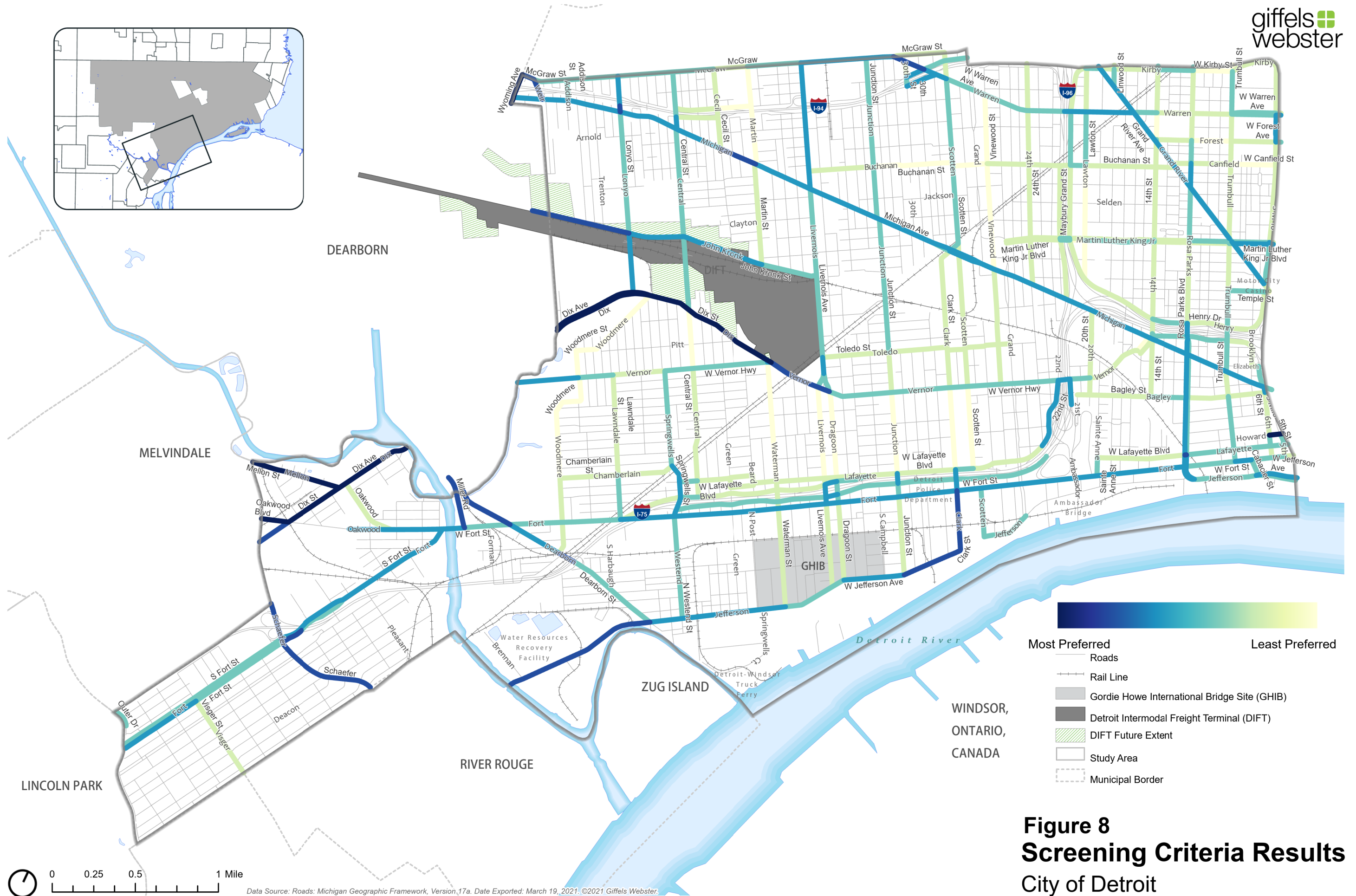


Figure 8
Screening Criteria Results
 City of Detroit

Data Source: Roads: Michigan Geographic Framework, Version 17a. Date Exported: March 19, 2021. ©2021 Giffels Webster.

5.4 MODIFICATION CRITERIA

A third assessment level was developed to identify roadway segments requiring improvements for an increased suitability as truck routes. The third assessment level, called “Modification Criteria”, includes the following items:

Table 4: Modification Criteria

Modification Criteria	Details
Pavement Condition	PASER Rating: 4 or below
Number of Crashes	“High” Number of Truck Related Crashes
Future Land Use	Master Plan Land Use Changes
Geometric Improvements	Sub-standard Curb Radius and Intersection Geometry
Bridge Condition	MDOT Bridge Rating: Poor

Data Synthesis

The least preferred roadway segments were selected from the Screening Criteria network using a set of criteria as listed above. Data assigned to the Modification Criteria includes surface type and condition, truck-related crashes and fatalities, turning radius, bridge ratings, number of lanes and width. Roadway segments selected in this assessment level are potential candidates for improvements. For instance, a roadway segment with pavement condition PASER rating of 3 would potentially increase in preference for a truck route if improved to meet a PASER rating of 5. Another example, a segment with a high number of crashes or a fatal crash would potentially increase in preference for a truck route if effective countermeasures are implemented. The recommended improvements are further discussed in Section 6 of this report.

5.5 GHIB TO DIFT NAVIGATION SCENARIOS

Following input from study stakeholders and questions about the streets that could be used by trucks between Gordie Howe International Bridge (GHIB) and Detroit Intermodal Freight Terminal (DIFT), an investigation was performed to determine available navigation scenarios with shortest traveled miles. This investigation has considered the undergoing bridge removals on I-75 (Waterman, Dagoon, and Junction bridges) and surrounding roadway improvements.

The navigation scenarios evaluated the shortest route options between GHIB and DIFT using freeways and local streets. As shown on the diagram below, multiple navigation options are available via Springwells Street, Vernor Highway, Dix Avenue, Central Street, John Kronk Street and Junction Street. The navigation options could be used for a round trip and require using Vernor Highway for a small length. Further traffic studies are recommended to determine the volume and classification of commercial traffic utilizing each street.

The construction of freeway ramps from/to GHIB and I-75 will provide a faster route for commercial traffic heading to the DIFT. The navigation option from GHIB to DIFT via freeway will require utilizing I-75 and local streets for a portion of the trip. Local streets that could be utilized for this navigation option are Springwells Street and Vernor Highway.



The image shown above is illustrating multiple navigation scenarios (in Yellow and Green) for commercial vehicles which could be utilized between the Detroit Intermodal Freight Terminal (DIFT) and Gordie Howe International Bridge (GHIB). Based on the latest DIFT plans, multiple new entrances should be installed and the temporary entrance should be closed. The entrance at Dix/Waterman intersections is planned for future closure, while new entrances are planned for installation on Livernois, John Kronk, and Wyoming (this street is outside the study area), as shown on the image.

6 Recommendations

The study provides a series of recommendations that should be adopted by the City of Detroit to accompany the recommended truck routes and promote safety. The following recommendations are based on a series of technical evaluations, public involvement program, related case studies, best practices, and industry standards. Several streets currently classified as City Local or Minor were selected for a truck route, therefore, it is recommended to reclassify them to City Major.

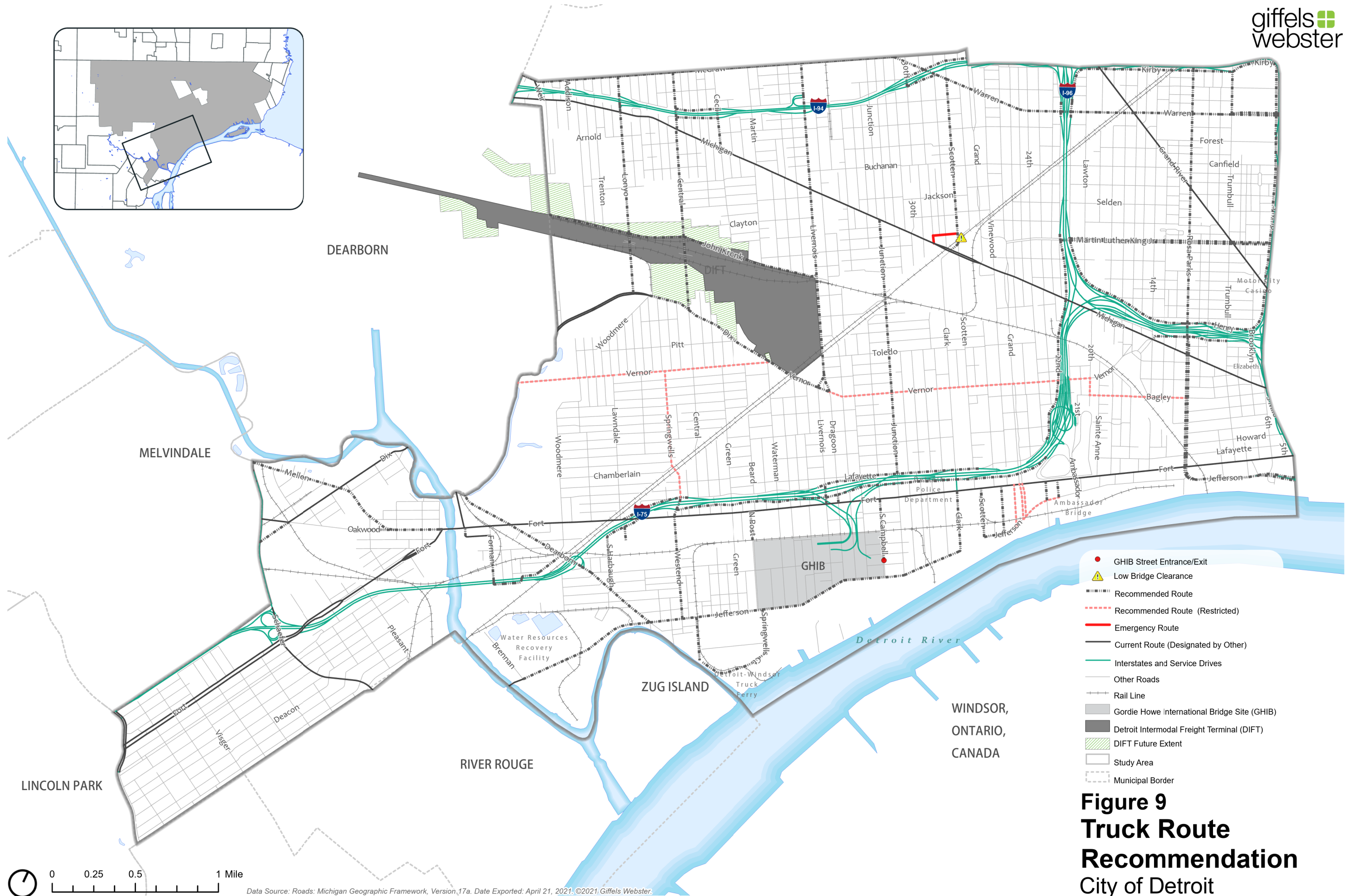
6.1 RECOMMENDED TRUCK ROUTE

The recommended truck routes are based on data collection, public involvement, and truck route assessment. The truck routes recommended by this study are included in **Table 5** with segment limits and restriction applicability. Streets recommended for reclassification are highlighted (blue) in Table 5. As shown on **Figure 9**, the recommended truck route map consisted of recommended routes and restricted commercial routes. Restricted commercial routes were identified in collaboration with project stakeholders during the public involvement phase of the study. In addition, routes as designated by other jurisdictions are shown as part of the recommended truck route network. Next, improvements are discussed for the recommended truck routes.

Table 5: Recommended Truck Routes

#	Roadway	From	To	Note
1	McGraw Street	Wyoming Avenue	W Warren Avenue	
2	Warren Avenue	McGraw Street	John C Lodge Freeway	
3	Martin Luther King Jr Blvd	Jeffries Freeway Service Drive	John C Lodge Freeway	
4	John Kronk Street	Stecker Street	Livernois Avenue	
5	Dix Street	Woodmere Street	Dragoon Street	
6	W Vernor Highway	Dragoon Street	20 th Street	Restricted
7	Vernor Highway	Riverside Drive	Dix Street	Restricted
8	Mellon Street	Schaefer Highway	Oakwood Boulevard	
9	Oakwood Boulevard	Mellon Street	Fort Street	
10	S Dix Street	Schaefer Highway	Oakwood Boulevard	
11	Dearborn Street	Riverside Drive	W Jefferson Avenue	
12	Forman Street	Flora Street	Carbon Street	
13	Carbon Street	Forman Street	Dearborn Street	
14	Brennan Street	GLWA/DWSD Facility	W Jefferson Avenue	
15	W Jefferson Avenue	Brennan Street	S Clark Street	
16	Springwells Court	W Jefferson Avenue	"End"	
17	Zug Island Road (private)	W Jefferson Avenue	Zug Island	
18	W Jefferson Avenue	Rosa Parks Boulevard	John C Lodge Freeway	
19	Lonyo Avenue	McGraw Street	John Kronk Street	
20	Central Street	McGraw Street	Dix Street	
21	Livernois Avenue	McGraw Street	Dix Street	
22	Dragoon Street	Livernois Avenue	Vernor Highway	
23	Junction Street	Michigan Avenue	N I-75 Service Drive	

#	Roadway	From	To	Note
24	Scotten Street	W Warren Avenue	Torrey Avenue	
25	Torrey Avenue	Scotten Street	28 th Street	Emergency
26	28 th Street	Torrey Avenue	Michigan Avenue	Emergency
27	Rosa Parks Boulevard	I-94	W Jefferson Avenue	
28	Trumbull Street	I-94	Warren Avenue	
29	W Edsel Ford Service Drive	Trumbull Street	John C Lodge Service Dr	
30	John C Lodge Service Drive	W Edsel Ford Service Drive	W Forest Avenue	
31	Harbaugh Street 20 th Street	W Fort Street	Dearborn Street	
32	Springwells Street	Vernor Highway	W Fort Street	Restricted
33	S Westend Street	W Fort Street	W Jefferson Avenue	
34	S Campbell Street	W Fort Street	W Jefferson Avenue	
35	S Clark Street	W Fort Street	W Jefferson Avenue	
36	Clark Avenue	Scotten Street	Michigan Avenue	
37	Bagley Street	20 th Street	Rosa Parks Boulevard	
38	20 th Street	W Vernor Highway	Bagley Street	
39	Reisener Street	W Fort Street	Flora Street	
40	Scotten Avenue	W Fort Street	W Jefferson Avenue	
41	Addison Avenue	McGraw Street	Michigan Avenue	
42	Cecil Avenue	SB I-94 Off-Ramp	Michigan Avenue	
43	N I-75 Service Drive	Fort Street	SB I-75 Off-Ramp (E of Springwells)	
44	N I-75 Service Drive	SB I-75 On-Ramp (W of Livernois)	SB I-75 Off-Ramp (E of Scotten)	
45	S I-75 Service Drive	Springwells Street	SB I-75 Off-Ramp (E of Grand Blvd)	
46	W I-96 Service Drive	SB I-96 Off-Ramp (N of Warren)	SB I-96 On-Ramp (S of Warren)	
47	W I-96 Service Drive	SB I-75 On-Ramp (N of Howard)	SB I-96 Off-Ramp (N of MLK Blvd)	
48	S I-94 Service Drive	Warren Avenue	Trumbull Street	
49	W J C Lodge Service Drive	Trumbull Street	W Grand River Avenue	
50	N I-75 Service Drive	Martin Luther King Blvd	Temple Street	
51	S I-75 Service Drive	Michigan Avenue	Trumbull Street	
52	N I-94 Service Drive	Central Street	SB I-94 Off-Ramp (E of Cecil)	
53	S I-94 Service Drive	Central Street	Cecil Avenue	
54	N I-94 Service Drive	SB I-94 On-Ramp (W of 30 th St)	SB I-94 Off-Ramp (E of Grand Blvd)	
55	W. Jefferson Avenue	Scotten Street	Swain Street	
56	Swain Street	W. Jefferson Avenue	Fort Street	
57	23 rd Street	W. Jefferson Avenue	Fort Street	
58	24 th Street	W. Jefferson Avenue	Fort Street	
59	Vinewood Street	W. Jefferson Avenue	Fort Street	Restricted
60	W. Jefferson Avenue	23 rd Street	W. Grand Boulevard	Restricted
61	Northbound W. Grand Blvd	W. Jefferson Avenue	Fort Street	Restricted



- Ghib Street Entrance/Exit
- ⚠ Low Bridge Clearance
- Recommended Route
- Recommended Route (Restricted)
- Emergency Route
- Current Route (Designated by Other)
- Interstates and Service Drives
- Other Roads
- Rail Line
- Gordie Howe International Bridge Site (GHIB)
- Detroit Intermodal Freight Terminal (DIFT)
- DIFT Future Extent
- Study Area
- Municipal Border

Figure 9
Truck Route
Recommendation
 City of Detroit

0 0.25 0.5 1 Mile

Data Source: Roads: Michigan Geographic Framework, Version 17a. Date Exported: April 21, 2021. ©2021 Giffels Webster.

















6.2 TRUCK ROUTE IMPROVEMENTS

The improvements discussed in this section apply to roadway segments identified in the screening criteria assessment level as preferred truck routes. In addition, improvements for roadway segments and intersections were recommended based on input from stakeholders during the public involvement phase. The improvements shown in **Table 6** are grouped by intersection, segment, and bridge to address specific deficiencies. In the next paragraphs, improvements are discussed for high-priority locations based on the analytical data and stakeholder outreach feedback, which raised flags for several locations in the study area where improvements are recommended. Truck signage examples, as per the Michigan Manual on Uniform Traffic Control Devices (MMUTCD), which could be installed depending on the recommendations discussed in the next paragraphs are included on next page and in **Appendix B**.

Table 6: Recommended Improvements

Roadway	Improvement Type	Details
Intersection	Traffic signal upgrade	-Install signal heads for left or right-turn -Install vehicle detection system
	Traffic signal retiming	-Optimize signal timings
	New traffic signal	-Signal warrant analysis
	Geometric modification	-Modify curb radius
	Safety	-Crash countermeasures -Street lighting
Segment	Widening	-Construct additional lane
	Resurfacing	-Resurfacing program
	Pothole patching	-Maintenance program
	Noise reduction	-Install noise barrier (adjacent to freeways) -Install traffic calming device -Reduced speed sign
	Restriction signage*	-Signage for time restriction -Signage for truck size restriction -Signage for truck route -Signage for no trucks
	Safety	-Road diet -Street lighting
	Environmental	-Dust management -Street sweeping -Vegetative buffers -Emissions assessment
Bridge	Restriction signage*	-Signage for weight limit -Signage for vertical clearance limit

*Note: All time, size, weight, and vertical clearance restrictions should be examined with the city and state department of transportation before installation. *For specific restrictions, see the recommended ordinance changes under Section 6.4. Signage examples are shown on next page and included in Appendix B.*

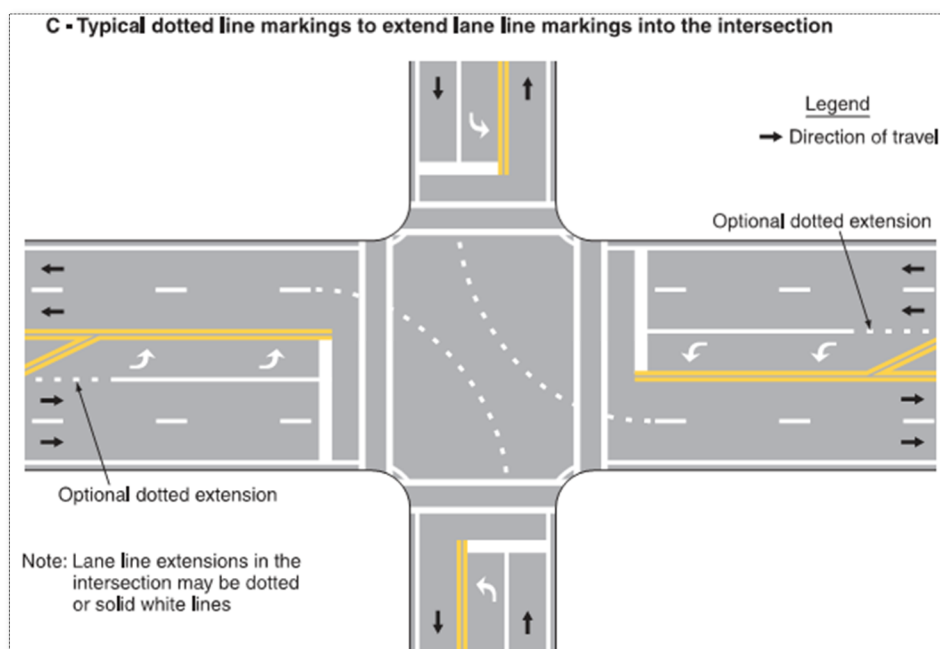
Sign Type	Examples					
Truck Size & Weight & Clearance Restrictions	 R12-1	 R12-4	 R12-5	 R12-3	 R12-2	 W12-2
Truck Route & Trucks Prohibited	 R5-2	 R14-5	 R14-1	 R5-4		
Parking Restrictions	 R8-3a	 R8-3	 R7-2	 R7-1		
Pedestrian	 R10-15	 R1-5b				

Vernor Highway/Dix Avenue (from Waterman Street to Dagoon Street):



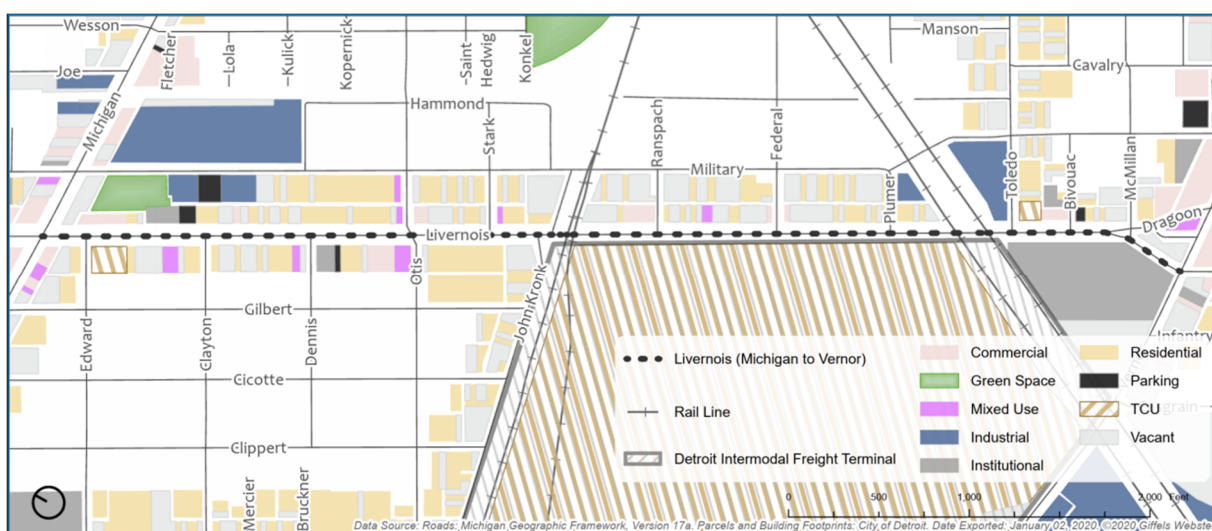
This segment of Vernor Highway/Dix Avenue is currently experiencing multiple issues which are affecting traffic operations and adversely impacting neighboring residents. The intersection of Dix Avenue with Vernor Highway and Waterman Street has been a source of residents' complaints due to its unusual geometry and limited intersection sight distance. In addition, the location of the CSX's temporary entrance at this intersection is associated with the heavy presence of commercial vehicles on this segment of Vernor Highway/Dix Avenue. Other issues received from the stakeholders for this segment include dust, noise, vibration, gravel on the road, truck idling, and truck queuing at the CSX's temporary entrance. The recommended improvements for this segment are as follows:

- Close the CSX's temporary entrance
- Install lane line extensions through intersections to reduce driver confusion. See illustration below (source: MMUTCD).



- Install an exclusive right-turn lane on the westbound approach at CSX’s temporary entrance to reduce queueing of trucks. (**Note:** This improvement is considered a short-term solution for the current temporary CSX access point at Dix & Waterman. Relocating this entrance would provide a better solution).
- Conduct a signal retiming study and coordinate signals along the corridor for improving traffic operations.
- Conduct a study to evaluate potential intersection geometry modifications.
- Post signs to prohibit idling and parking of trucks outside the CSX entrance.
- Require street sweeping services by CSX and on-site dust management efforts.
- Rehabilitate pavement.

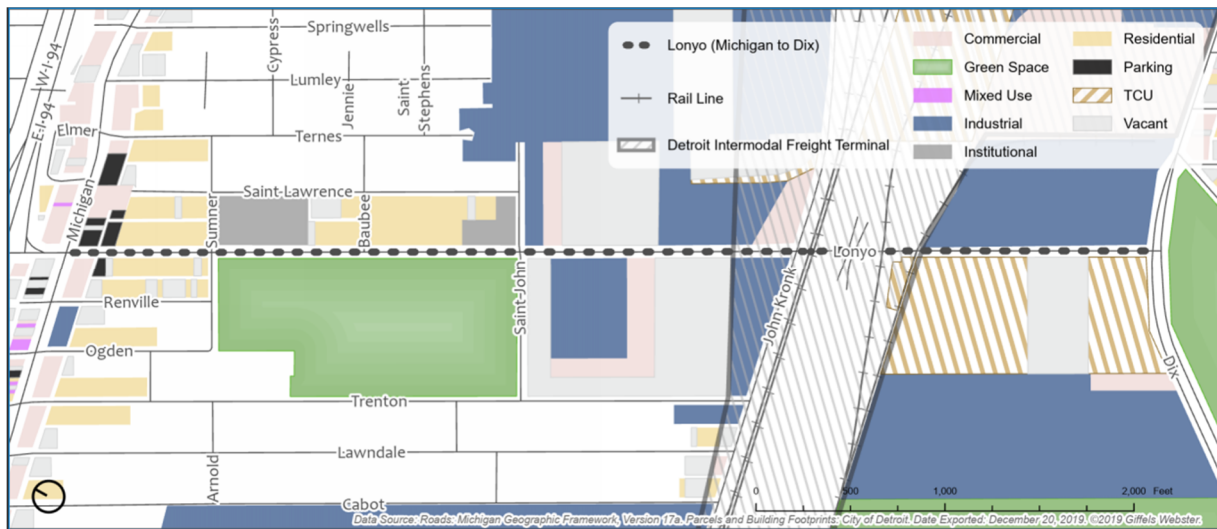
Livernois Avenue (from Michigan Avenue to Vernor Highway)



The segment of Livernois Avenue from Michigan Avenue to Vernor Highway is four-lane roadway with on-street parking provided on both sides of the road and a center two-way left-turn lane. The adjacent parcels to this segment are mixed-use and industrial land uses. The pavement condition for this segment is good, based on PASER ratings. The presence of commercial vehicles on this segment is expected due to its mixed-use nature and strategic connectivity, however, the heavy use of commercial vehicles is concerning residents because of the exposure to noise, dust, and vehicle exhaust. Truck idling or parking was also noted by residents in the area. The recommended improvements for this roadway segment are as follows:

- Require street sweeping services by Norfolk Southern (NS) and on-site dust management efforts .
- Post signs to limit idling and parking of trucks.
- Install speed limit warning devices.

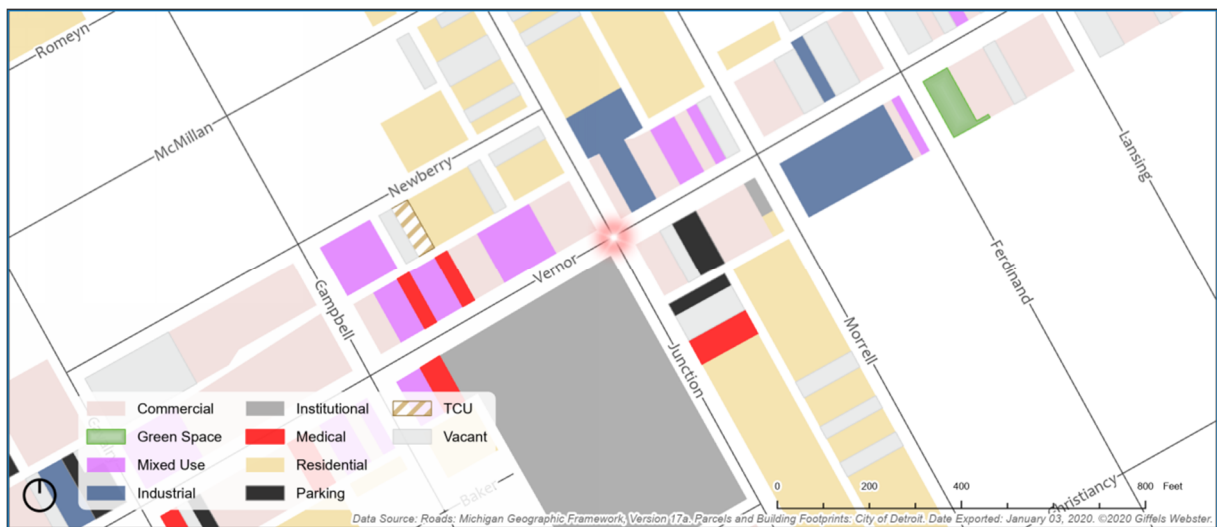
Lonyo Street (from Michigan Avenue to Dix Avenue)



Lonyo Street from Michigan Avenue to Dix Avenue is a two-lane roadway. The adjacent parcels to this segment are predominantly residential north of John Kronk Street and industrial south of it. The pavement condition for the south portion of this segment is poor, based on PASER ratings. The presence of commercial vehicles on this segment is expected due to the industrial uses situated on its south side, however, the heavy use of commercial vehicles is concerning residents because of the exposure to noise, dust, and exhaust. The recommended improvements for this roadway segment are as follows:

- Install commercial time restriction signage. (Note: requires city’s assessment)
- Rehabilitate pavement.
- Provide street sweeping services to control dust and gravel.

Junction Street & Vernor Highway Intersection



The intersection of Junction Street and Vernor Highway and the surrounding area consist of commercial and mixed-use parcels, which requires commercial vehicle access and non-motorized facilities. The pavement rating is poor for Junction Street from Vernor Highway to Lafayette Boulevard, based on PASER ratings. Issues highlighted in this area included safety concerns, excessive speed, large trucks, and idling of trucks. The recommended improvements for this intersection are as follows:

- Post loading/unloading restrictions signs on Vernor Highway.
- Post signs to prohibit idling and parking of trucks.
- Install speed limit warning devices.
- Install pedestrian mid-block crossing warning devices.
- Rehabilitate Junction Street pavement.

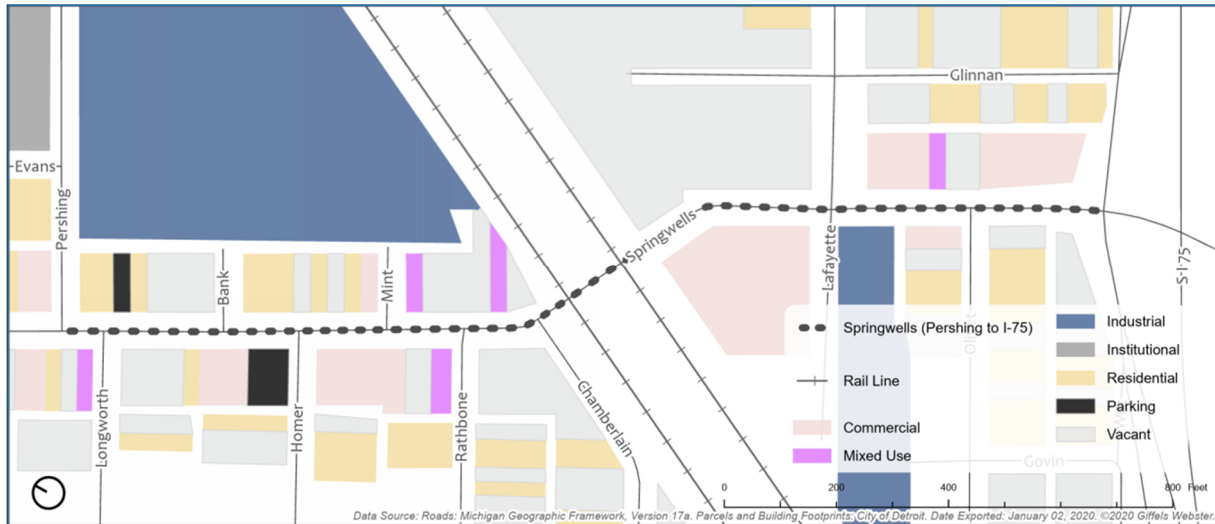
Springwells Street & Vernor Highway Intersection



The intersection of Springwells Street and Vernor Highway is surrounded by areas predominantly commercial. Issues highlighted in this area focused on large trucks traveling on narrow streets and inadequate turning geometry. The recommended improvements for this intersection are as follows:

- Post size restrictions signs on Vernor Highway (refer to **Section 6.4** for restrictions).
- Post signs to prohibit idling and parking of trucks.
- Conduct a study to evaluate potential intersection geometry modifications. It is recommended that the City's Department of Public Works (DPW) conduct this specific modification evaluation.

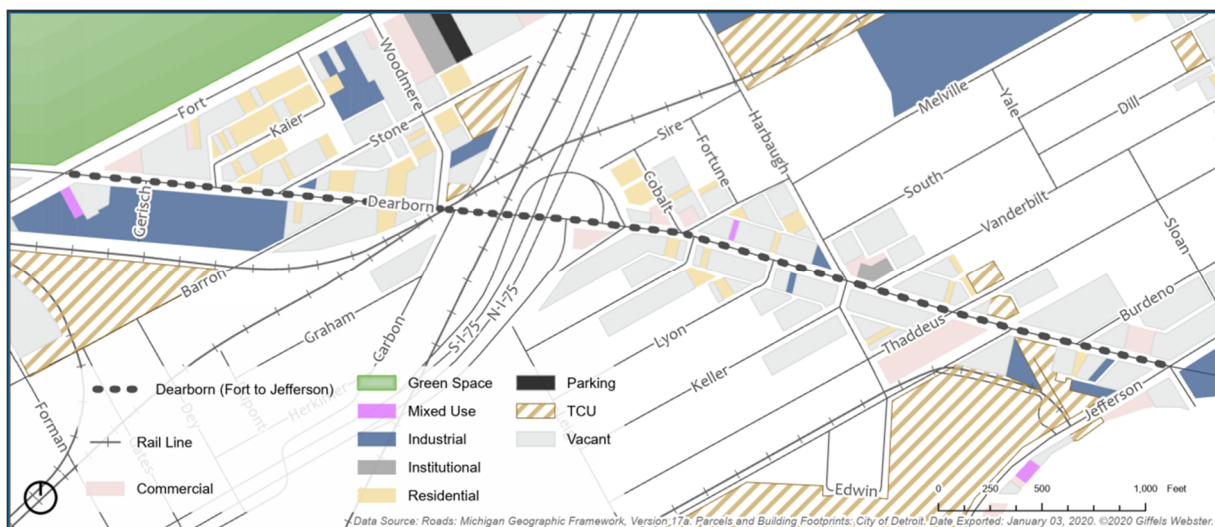
Springwells Street (from Pershing Street to N. I-75 Service Drive)



The segment of Springwells Street from Lafayette Boulevard to N. I-75 Service Drive is surrounded by areas predominantly commercial. The pavement rating is poor for Springwells Street from Pershing Street to N. I-75 Service Drive and for Lafayette Boulevard from Springwells Street to east of Green Street, based on PASER ratings. The issues highlighted in this area focused on trucks parking, truck driving schools, inefficient signal operations, and trucks idling. The recommended improvements for this roadway segment are as follows:

- Post signs to prohibit idling and parking of trucks.
- Rehabilitate Springwells Street and Lafayette Boulevard pavements.
- Conduct a left-turn signal warrant study at Springwells St and N. I-75 service drive.

Dearborn Street (Fort Street to Jefferson Avenue)



The segment of Dearborn Street from Fort Street to Jefferson Avenue is surrounded by areas predominantly vacant with some commercial and residential abutting the street. The pavement

rating is poor for this segment of Dearborn Street, based on PASER ratings. The Issues highlighted in this area focused on trucks idling, speeding, and emissions. The recommended improvements for this roadway segment are as follows:

- Post signs to restrict idling.
- Conduct a spot speed study to determine appropriate speed.
- Resurface segment.

Rosa Parks Boulevard (Michigan Avenue to Fort Street)



The segment of Rosa Parks Boulevard from Michigan Avenue to Fort Street is surrounded by areas predominantly commercial with some residential abutting the street. The pavement rating is fair for most of this segment with a poor rated section at Bagley Street, based on PASER ratings. The Issues highlighted in this area focused on trucks idling, noise, and the presence of schools and childcare centers. The recommended improvements for this roadway segment are as follows:

- Post signs to restrict idling hours.
- Rehabilitate poor rated pavement sections.
- Enforce suitable time restrictions around schools and childcare centers. (Note: requires city's assessment)

Fort Street and Schaefer Highway Intersection



The intersection of Fort Street and Schaefer Highway is surrounded by areas predominantly commercial and industrial. The pavement rating is poor for Schaefer Highway and fair for Fort Street, based on PASER ratings. The Issues highlighted in this area focused on the damaged road conditions due to truck usage. The recommended improvements for this intersection are as follows:

- Rehabilitate Fort Street and Schaefer (MDOT) pavements.

As discussed in the previous sections, roadways and intersections with apparent issues and concerns highlighted by stakeholders were investigated for improvements that could potentially decrease and eventually eliminate these issues and concerns. Other roadway segments in the study area requiring pavement rehabilitation, based of PASER ratings of 4 or lower, were included in **Appendix G**.

6.3 CRASH COUNTERMEASURES

According to reports from the Michigan Traffic Crash Facts in 2018, the percent of crashes involving trucks/buses in Wayne County is 6.4% and the percent of truck/bus-involved fatalities is 9.1%. Based on the number of commercial crashes obtained from SEMCOG for the last five years, see **Appendix G**, the most predominant truck-related crashes in the study area are sideswipe, rear-end, and angle crashes. The improvements discussed in the previous section could potentially reduce the number of crashes and increase roadway safety in the city, furthermore, a more in-depth approach for evaluating crashes was performed to recommend specific countermeasures.

A list of commonly adopted crash countermeasures was developed for potential implementation by the city, as shown in **Table 7**. According to the feedback received from the public involvement program, locations associated with high risk or frequency of crashes were identified for further investigation in this study. In the next paragraphs, crash countermeasures are discussed by location.

Table 7: Crash Countermeasures

Crash Type	Reason	Countermeasure
Sideswipe or Head-on	Inadequate road design	-Widen travel lanes
	Inadequate shoulder	-Widen shoulder
	Inadequate pavement marking	-Improve lane lines -Install reflectorized markers
	Inadequate signing	-Provide advance warning signs
Fixed Object	Inadequate lighting	-Improve roadway lighting
	Inadequate pavement markings	-Install reflectorized pavement markings
	Obstruction	-Install crash cushions -Remove obstacles
Angle	Restricted sight distance	-Install warning signs -Restrict parking
	Inadequate signal timing	-Retime signals
	Poor visibility of signals	-Install advanced warning devices
Rear-end	Pedestrian crossing	-Install signing or marking of crosswalk
	High volume of turning vehicles	-Prohibit turns (or right-turn on red) -Increase curb radius
Pedestrian/Bicycle	Limited sight distance	-Install ped crossing signs and markings -Install adequate street lighting
	Inadequate crossing protection	-Install ped refuge island
	Inadequate signal phasing	-Add ped "Walk" phase
	Lack of crossing opportunity	-Install ped signal -Install ped crosswalk
	Excessive vehicle speed	-Reduce speed -Install warning signs
	Ped/bicycle on roadway	-Install sidewalks and bike lanes
	School crossing area	-Use school crossing guards -Install warning devices

Livernois Avenue (from Vernor Highway to Jefferson Avenue)

This segment of Livernois Avenue has experienced 34 truck-related crashes in the last five years. The predominant crash types on this segment, from most to least frequency, are sideswipe, rear-end, and angle crashes. Located on the east side of the DIFT and connecting strategic roadways, the crashes on this segment were associated with trucks cutting through predominantly residential areas.

Crash countermeasures that could potentially reduce the frequency of crashes on this segment include reducing commercial vehicle presence, installing reflectorized pavement markings, and providing advance warning signs of residential neighborhoods.

Dragoon Street (from Vernor Highway to Jefferson Avenue)

This segment of Dragoon Street has experienced 30 truck-related crashes in the last five years. The predominant crash types on this segment, from most to least frequency, are sideswipe, angle, rear-end, and head-on crashes. Located on the east side of the DIFT and connecting strategic roadways, the crashes on this segment were associated with trucks cutting through predominantly

residential areas. Due to the narrow width of Dragoon Street, wide commercial vehicles using it as a cut-through leads to sideswipe crashes.

Crash countermeasures that could potentially reduce the frequency of crashes on this segment include reducing commercial vehicle presence, installing reflectorized pavement markings, widening of travel lanes, and providing advance warning signs of narrow lanes.

Central Street (from Michigan Avenue to Lafayette Boulevard)

This segment of Central Street has experienced 24 truck-related crashes in the last five years. The predominant crash types on this segment, from most to least frequency, are sideswipe, angle, rear-end, and head-on crashes. Located on the west side of the DIFT and connecting strategic roadways, the crashes on this segment were associated with trucks cutting through predominantly residential areas with a two-lane two-way street. Due to the narrow width of Central Street and the presence of illegally parked vehicles, traffic tends to use opposing travel lane to avoid obstructions, leading to sideswipe crashes.

Crash countermeasures that could potentially reduce the frequency of crashes on this segment include reducing commercial vehicle presence, installing reflectorized pavement markings, providing advance warning signs of narrow lanes, widening of travel lanes, and restricting on-street parking.

Lonyo Avenue (from Michigan Avenue to Dix Street)

This segment of Lonyo Avenue has experienced 20 truck-related crashes in the last five years. The predominant crash types on this segment, from most to least frequency, are sideswipe, angle, and rear-end crashes. This segment is adjacent to mixed-use areas and connecting strategic roadways, providing one lane in each direction.

Crash countermeasures that could potentially reduce the frequency of crashes on this segment include reducing commercial vehicle presence, installing reflectorized pavement markings, providing advance warning signs of residential neighborhoods, and restricting on-street parking.

Schaefer Highway (from Fort Street to Jefferson Avenue)

This segment of Schaefer Highway has experienced 20 truck-related crashes in the last five years. The predominant crash types on this segment, from most to least frequency, are read-end, sideswipe, angle, and head-on crashes. This segment is adjacent to commercial parcels and connecting strategic roadways, providing two lanes in each direction.

Crash countermeasures that could potentially reduce the frequency of crashes on this segment include installing center-turn lane, increasing curb radius, installing reflectorized pavement markings, providing advance warning signs of turning trucks, providing signs for limited sight-distance, and restricting on-street parking.

6.4 ORDINANCE

A specific ordinance is necessary for the implementation of truck routes in the city, which could then be enforced by law. Established ordinances for truck routes in other cities were reviewed for potential adoption by the City of Detroit, as discussed next. In addition to the truck routes ordinance implementation, changes to current ordinance addressing commercial vehicles should be refined to accompany the truck route ordinance. A list of recommended ordinance changes was compiled from the related document review conducted for this study, as shown in **Table 8**. Best practices for truck routes ordinances and associated references are included in **Appendices A and C**. Changes to the current ordinance section 46-2-62 are included in **Appendix A**.

Table 8: Ordinance Recommendations

Topic	Ordinance Change
Cut-through sensitive areas	Add restricted commercial street designations
Trucks using non-designated routes	Establish a municipal civil violation
Inconsistent street categories	Adopt a statewide functional classification
Trucks definition	Identify truck definitions for regulations
Truck weight limit	Identify weight limit for restrictions
Truck signage	Identify specific truck signage for enforcement
Existing truck signage	Review existing truck signage for removals
Utility trucks	Provide language for exemptions
Local delivery trucks	Allow local deliveries with permissions
Truck parking	Identify designated truck parking locations
Off-peak delivery	Identify off-peak delivery hours

The following sample ordinances are recommended for the City of Detroit:

- Definitions;

“Truck means a ‘commercial vehicle.’ Truck Route mean a route which is designated in this article for the use of truck traffic. Truck traffic means the operation of any commercial vehicle including but not limited to truck, truck tractor or combination of any truck, truck tractor, trailer, or semitrailer that are considered commercial vehicles. The operations of “Recreational vehicles” are not considered to be truck traffic.”

- Truck routes;

“All trucks carrying loads more than the legal load limit under a state or county permit, traveling to, from or through the City, and all truck and trailer combinations and truck and semitrailer combinations used in intercity or interstate hauling shall operate over one (1) of the Truck Routes while in the City, and whenever practical all trucks shall take the most direct route to or from one (1) of the Truck Routes to or from their destination. Truck Routes are identified on Exhibit X (to be determined).”

- Proceeding directly to truck routes;

“If any truck traffic originating within the city shall have, as its point of origin, a point located off a designated truck route, it shall proceed to the nearest point on a designated truck route by the most direct route as possible. If such traffic shall originate outside the city and enter the city at a point which is not on a designated truck route, it shall proceed to the nearest point on a designated truck route by the most direct route possible.”

- Departing from truck routes;

“Truck traffic restricted to the streets designated as truck routes may depart from such truck routes, where it is necessary for the immediate loading or unloading of property at locations situated off designated truck routes. However, such truck traffic shall not leave any designated truck route until it has reached a point on some designated truck route which is nearest the applicable place of loading or unloading by the most direct route possible. After leaving a designated truck route to load or unload, truck traffic may continue off truck routes to as many points of destination as necessary. However, if in the course of making necessary stops for loading and unloading the truck traffic shall cross a designated truck route, the truck traffic shall not again leave any designated truck route until it has reached a point on some designated truck route which is nearest to the next place of loading and unloading by the most direct route possible.”

- Multiple destination points;

“Multiple destination points. Upon leaving its first destination point, a regulated truck shall proceed to other destination points only over truck routes in so far as possible, using that routing which minimizes the distance traveled over non-truck routes. Upon leaving its last destination point, a deviating regulated truck shall return to a truck route by the shortest possible route.”

- Restricted truck routes;

“Restricted truck routes are identified on Exhibit X (to be determined). A restricted truck route is a route used by trucks of local businesses located on it, and not intended to be used as a cut-through route by trucks. The driver of a regulated truck may travel over and along a restricted truck route only as necessary where to perform their business, if their destination lies on or within, in a manner that minimizes the distance traveled over and along the restricted truck route street, or as necessary to perform their business, in a manner that minimizes the distance traveled over and along the restricted truck route street.”

- Exceptions;

“(1) Emergency vehicles. (2) Vehicles operated by a public utility while cruising in an assigned area for the purpose of inspecting the facilities of the public utility and/or

providing maintenance service to such facilities. (3) Municipal and county vehicles performing city and county business and services, school buses and church buses.”

- Certain vehicles and trucks prohibited on city streets;

“Any vehicle or truck tractor operated in combination with any trailer or semitrailer which has either two axles with six tires or more than two axles shall be designated for the purpose of this section as a heavy truck. No such heavy truck shall be operated on any street or portion of a street where signs are posted prohibiting trucks, or on any street that is not designated as a truck route. Signs may be posted to prohibit the trucks from operation on a single street or a group of streets to form a closed area.”

6.5 ENFORCEMENT

A plan to track compliance and violation of the truck route designation should be implemented to identify locations of the most frequent violations and the times when they occur. With a violation tracking plan, the city should be able to determine the appropriate time and location for increasing the presence of enforcement officers. Also, the number of officers and required equipment could be determined using the same plan. Moving the enforcement officers between locations of high violations, as identified by the plan, would allow the city to capture violators at the time of occurrence. Repeating this plan could potentially reduce the number of violators, which is to be determined by tracking all cases. The following actions should be considered by city enforcement officers:

- Require evidence/permit for local deliveries.
- Track the most violated truck signage using temporary traffic cameras.
- Seek input from residents for new truck violations.
- Increase fines for truck size and weight violations.
- Increase fines for truck loading, parking, and idling violations.
- Post signs at locations with most violations.
- Increase the presence of police officers at locations with most violations.

The recommended ordinance for enforcing truck route designations is as follows:

- Truck route enforcement;

“Any person driving or in charge or control of any regulated truck deviating from the designated truck route system shall be prepared to present for the inspection of designated enforcement officers/agents the truck’s log book, weight slips, delivery slips, or other written evidence of the regulated truck’s origin and destination to justify the deviation from the designated truck route system.”

7 Near-term Strategies

7.1 EDUCATION AND OUTREACH

Education and outreach strategies are one of the components of this study, if implemented correctly, would shape the success of the truck route study. Reaching out to road users and educating them about the new truck route network, policy, and ordinances is a challenge to the City of Detroit, however, several recommendations are discussed next which could help the city in these tasks. Several recommendations were discussed in related truck studies, as outlined in **Section 3.2** of this report, and they were implemented in communities with similar characteristics as the City of Detroit.

User-friendly educational materials should be prepared to outline the outcomes of this study and to specifically include new truck routes maps, ordinance, and enforcements. After this educational material is approved by city officials, methods of distribution should be identified based on the budget allotted for this task. Methods of distribution should include paper and electronic newsletters, web and mobile applications, and media outlets. The educational materials along with the method of distribution should be designed to accommodate senior residents, truck drivers, and residents speaking languages other than English. Methods similar to those previously used by the study team in this study, such as posters and flyers, should be utilized to distribute and educate residents. Educational materials should be provided to all major truck generators, and industrial & commercial stakeholders. As shown in **Table 9**, a variety of recommendations for education and outreach strategies is included for potential implementation by the city.

Table 9: Education & Outreach Recommendations

Topic	Recommendation
Education	Meet truck drivers to educate about truck route and policy changes
	Provide electronic solutions to access truck route and policy
	Provide paper maps with truck route and key policies
	Establish a periodic newsletter to educate truck drivers
	Mandate trucks route education with vehicle registrations
	Educate residents about the benefits of trucks to the community
Outreach	Use City website to highlight truck route and policy changes
	Prepare a brochure with benefits of truck route
	Distribute paper maps to all stakeholders
	Post awareness banners at community events
	Provide City contact info for issues related to truck
	Provide City contact info for new truck related policies
Communication	Coordinate truck route with neighboring jurisdictions and agencies
	Establish communication with truck operators for traffic announcements

Tailoring the outreach and communication strategies to the community of southwest Detroit is essential to account for residents of different ethnicities and speaking different languages. Community events are good opportunities for the city to reach many residents at one place. In

addition, banners and posters at community events would be an effective way to inform and remind residents of the outcomes of this project. Lastly, coordinating the truck route network and associated policies with neighboring jurisdictions and agencies is important in eliminating any discrepancies for truck drivers.

It is recommended that the City cooperates with nonprofit organizations that currently provide education and outreach for trucking entities in Detroit. This cooperation or partnership would combine efforts previously initiated and future efforts into a more effective tool.

7.2 BUDGETS FOR IMPLEMENTATION

For the truck route improvements discussed in Section 6.2, a budget was estimated for potential near-term implementation. This budget includes cost estimates for signage, pavement markings, traffic studies, traffic signal upgrades, resurfacing, and geometric improvements. The estimated budget for each improvement in the near-term improvement strategies is shown per project in the table below, however, a detailed cost estimate should be performed for each roadway segment and intersection requiring improvements to account for specific project activities and market changes.

Table 10: Cost Estimate

Projects	Description	Cost Estimate*
Signage	Truck route and restrictions signs	\$ 250,000
Pavement Markings	Intersection line extensions and reflectorized markings	\$ 150,000
Traffic Studies	Signal timing optimization, signal warrant analysis, spot speed	\$ 75,000
Infrastructure Upgrade	Traffic signal upgrades	\$ 1,000,000
Infrastructure Upgrade	Resurfacing	\$ 25,000,000
Infrastructure Upgrade	Curb and geometric modifications	\$ 2,500,000

*Cost estimates are for project planning purposes only. A detailed cost estimate for each project is recommended before implementation.

7.3 FUNDING SOURCES

- 1) City of Detroit General Funding
- 2) Act 51 (state gas tax distribution to city of Detroit)
- 3) Federal Grants
 - a. Congestion Mitigation and Air Quality (CMAQ)
 - b. Surface Transportation Block Grant Program (STBG)
- 4) State Grants / Programs

- a. MDOT
 - i. Transportation Economic Development Fund (TEDF) – Category C (Urban Congestion Relief)
 - ii. Noise Abatement Program
- b. State Infrastructure Bank (SIB)
- c. Michigan Clean Diesel Program

7.4 **PRIORITIZATION**

- 1) Adoption of truck route ordinance and the recommended truck routes map
- 2) Installation of recommended truck-related signage
- 3) Expansion of truck route program through remaining City Council districts

8 Long-term Strategies

8.1 INCENTIVES

Mutual benefits should be promoted in the city in which truck drivers are incentivized for reducing the impact on the community. This impact which has been of concern to many residents as for them it is a reduction of the quality of life and roadway conditions in the city. This study is changing the truck operations and policies for the ultimate benefit of the community, including residents and businesses. Several incentives are discussed next for potential implementation along with the recommendations of this study.

Off-peak Delivery Program

Off-peak delivery is a program that could potentially benefit the community in southwest Detroit by reducing traffic congestions, reducing emissions & noise, improving safety, producing efficient truck operations, and generating more profits to businesses. Implementing an incentive program by the City to encourage truck operators and business receivers in adopting off-peak delivery could be a step forward in improving the quality of life in southwest Detroit while also benefiting commercial interests.

According to a case study for OPD pilot program in New York City, the results of OPD included travel time savings to all highway users, 30%-40% reduction to carrier expenses, increased vehicle utilization, and increased reliability to deliver during off-peak hours. The OPD program comes with a challenge, for receiving businesses and carriers to extend operation hours to off-peak hours adjustments to the company's logistics might be required. The cost and benefits of OPD implementation will need to be balanced for receivers and carriers to participate. In addition, the City's ordinance would require modification to account for an incentive program.

To implement an off-peak program, the Urban Transportation Center's off-peak pilot study report has identified three models for designing an off-peak program in the Chicago area and detailed next steps for implementation. The first model, a traditional approach, advises to use grant funding as a financial incentive and seek receivers in areas where this program applies. The second model, one large receiver approach, aims to identify one large receiver to be a demonstration project. The third model, package approach, intends to combine monetary and other incentives such as discounts or public recognition in a package for receivers and carriers to participate in the program. Any of these incentive programs could be implemented with coordination efforts between the City and businesses. By adopting a pilot incentive program, the City could rotate the program depending on the need of the area or corridor and then keep track of the outcomes for further analysis.

EGLE Clean Transportation Programs

Under the Michigan Department of Environment, Great Lakes & Energy's (EGLE) goal for advancing cleaner transportation in Michigan, two programs were introduced and provide incentives for using clean form of fuel in vehicles. The community of Southwest Detroit has expressed great concerns about the quality of air, dust, noise, and vibration resulting from

commercial trucks using residential streets. Implementation of the EGLE incentive programs on a large scale may therefore help alleviate the concerns identified by community members.

Michigan Clean Diesel Program

The Michigan Clean Diesel Program is one of the programs introduced by EGLE which aims to bring together government, industry, and nonprofit organizations to reduce diesel engine pollution. The incentive is provided through an annual allocation from the US Department of Environmental Protection Agency under the Diesel Emissions Reduction Act (DERA) to support the replacement of older diesel vehicles, equipment, and engines with new electric, propane, compressed natural gas, hybrid, hydrogen fuel cell, and cleaner diesel vehicles, equipment, and engines. More information about this program could be obtained using the following url:

<http://Michigan.gov/EGLECleanDiesel>

The goals of this program are as follows:

- Reduce diesel emissions in areas with high population densities and poor air quality.
- Reduce diesel emissions in areas that receive a disproportionate quantity of air pollution from diesel fleets.
- Expand the awareness of the benefits of pollution prevention strategies that reduce diesel emissions.
- Increase the adoption of alternate fuel and zero emission vehicles and equipment.

Fuel Transformation Program

The second incentive program is the Fuel Transformation Program which is funded with Michigan's allocation of Volkswagen settlement funds. This program is designed to replace 2009 or older polluting diesel vehicles and equipment with new zero emission, alternate fuel, and cleaner diesel-powered vehicles and equipment. Projects eligible for this incentive program are funded in accordance with the Michigan Volkswagen Settlement Beneficiary Mitigation Plan and involve Eligible Mitigation Actions. More information about this program could be obtained using the following url:

<http://Michigan.gov/EGLEFTP>

The goals of this program are as follows:

- Reduce oxides of nitrogen emissions and maximize air quality benefits statewide with an emphasis on priority areas (areas designated as non-attainment and maintenance areas for the National Ambient Air Quality Standards).
- Reduce diesel emissions from school buses statewide.
- Increase the adoption of zero emission vehicles and alternate fuel vehicles and equipment.

8.2 IDEAS FOR REMAINDER OF DETROIT

As this truck study progresses for the pilot study area, the processes and procedures outlined in it could be implemented in other areas in Detroit. It is expected that the truck study would be more effective after adopting it in multiple study areas and tracking the success rate of each recommendation. Ideas for remainder of Detroit

- Use this truck study as a guide to conduct truck studies for the remainder of Detroit.
- Track and assess the success rate of truck study recommendations.
- Adopt truck route ordinance for the entire city.
- Create an electronic platform to obtain feedback from stakeholders on truck route network.

