APPENDIX

City Architecture

MEETING MINUTES

MAPLE HEIGHTS TLCI (#19024)
KICKOFF MEETING

May 21, 2019

Location: Maple Heights - Cuyahoga County Public Library Time: 1:00pm – 2:30pm

Attendance:	Affiliation:	E-Mail Address:
Mayor Annette Blackwell	City of Maple Heights	ablackwell@mapleheightsohio.com
Ashley King	City of Maple Heights	aking@mapleheightsohio.com
Stan Kosilesky	Chagrin Valley Engineering Ltd. (CVE)	kosilesky@cvelimited.com
Ed Hren	Chagrin Valley Engineering Ltd. (CVE)	hren@cvelimited.com
Mike Kubek	Northeast Ohio Areawide Coordinating Agency (NOACA)	mkubek@mpo.noaca.org
Jim Thompson	Northeast Ohio Areawide Coordinating Agency (NOACA)	jthompson@mpo.noaca.org
Melissa Thompson	Northeast Ohio Areawide Coordinating Agency (NOACA)	mthompson@mpo.noaca.org
Alex Pesta	City Architecture (CA)	alex@cityarch.com
Krysta Pesarchick	City Architecture (CA)	krysta@cityarch.com
Juleian Curtis	City Architecture (CA)	juleian@cityarch.com
Nancy Lyon-Stadler	WSP	nancy.lyon-stadler@wsp.com
Deja Jackson	WSP	deja.jackson@wsp.com

Summary of Meeting

Tuesday's (May 21st, 2019) Kickoff Meeting served as the official start of the Transportation for Livable Communities Initiative (TLCI) Connectivity Study for the City of Maple Heights. NOACA staff and the consultant team, comprised of City Architecture and WSP, discussed project goals, scope, benchmarks, required documentation, invoicing processes, and additional project considerations with the Mayor and staff of the City of Maple Heights.

Welcome/Introductions

1. All in attendance introduced themselves upon their arrival. The attached agenda was distributed at this time as well.

Meeting Purpose

2. Mike Kubek (NOACA) then led off the discussion with background on the selection criteria for TCLI grants, stating that this project fits well into this initiative, as Maple Heights Southgate has great potential to be reimagined and thoughtfully connected to the adjacent assets in the surrounding area.

3. NOACA placed an emphasis on the approach being collaborative among the partners and community as well as expressed a desire to be used as a resource, not just for 'grant management'.

    a. Melissa Thompson (NOACA) was also identified as the primary point of contact for NOACA on this project going forward.

4. Mayor Annette Blackwell (City of Maple Heights) then gave some background on what led the City of Maple Heights to apply for this opportunity.

    a. With some of the negative news coverage the City has received in the recent past, there is a strong desire within the Maple Heights Community to tell their own story, one that reflects the vibrancy of the community today and the opportunities that are realizable in the future.

    b. This project is viewed as a win for the City, among other wins that the community continues to stack. The strong location, adjacency, and connectivity of the site make it a great opportunity to begin to envision what the future of Southgate (study area) could be.

5. Alex Pesta (CA) briefly discussed CA's approach to this work.

    a. Storytelling is a key element in CA's approach and appears to align well with the Mayor's thoughts on retelling the story of Maple Heights.

    b. Holding too tightly to thoughts and memories of the past can be problematic when engaged in a process like this. 'Nostalgia can be dangerous'.

6. Nancy Lyon-Stadler (WSP) also gave her thoughts on how to most effectively work through this process and leverage the abilities of WSP.

    a. WSP has access to data and resources that can serve as tools to aid in this process.

    b. This plan is not CA and WSP's, it is the City of Maple Heights; therefore, the approach is to be collaborative and the final deliverable reflective of the City's vision.

NOACA TLCI Overview

7. Alex (CA) provided an outline of the three core components that will address the scope of this work: Planning, Traffic, and Market/Economic Study.
    a. Each of these items were then discussed in more detail throughout the remainder of the meeting.

8. Alex (CA) also described CA's extensive experience in working on TLCI's across the region, and how that experience can support this work.

Project Goals

9. Discussion began with conversation around the need for a Market Study, and the value it would add to this project.

    a. Mayor Blackwell and Ashley's (City of Maple Heights) stance was that the market study could be used as a tool to best determine viability of investment over the next 20 years. Mayor Blackwell raised the point that there are currently no mixed-use developments or 'sit down' restaurants within the City of Maple Heights. The aim is that the market analysis could be used to guide decision making related to attracting investment.

    b. It was ultimately determined that a Market Study was indeed desired by the City of Maple Heights, and this would be coordinated by Nancy (WPS) who will work with Todd Poole (4ward Planning Inc.) to do a high-level identification of highest and best uses.

    c. The example of Ohio City's market analysis was used as a reference for scope.

    d. The study/project area being located within an opportunity zone was also raised as a strength of this location, and something to intentionally leverage and maximize.

10. As identified in the consultant team's proposal, a traffic study is to be performed.

    a. While the study may not be needed to determine that a road diet is needed, it was mutually agreed upon that the supporting documentation this study will generate will be valuable to this process as well as implementation.

    b. The City also stated they were open to a road diet within the project area.

11. Conversation then shifted toward the component of Planning.

    a. Mayor Blackwell gave the example of Northbrook, IL, as a place she suggested as a model for mixed-use development.

    b. In the past, there were plans to convert the Old Ford Plant into an amusement park. The idea for a theme park, located between both JACK and MGM casinos, helping to draw visitors to the community was raised as a possible contemporary spin on this past idea.

    c. Housing immerged as an important topic, as Mayor Blackwell stated that the city has seen a 2% growth in the millennial population, particularly white males under 35 years old. In addition to realizing continued growth among this demographic, the City has a strong desire to provide affordable housing.

12. A New Downtown/City Center

    a. Representatives from the City of Maple Heights identified the intersection of Broadway Ave and Libby Rd as being the historical location for the city's downtown.

    b. Due to the addition of the Amazon Distribution Center (large employment center) to the north and the high amount of traffic the Bedford Auto Mile generates to the south of the study area, there is a willingness to consider Warrensville Center Rd and Libby Rd as being reimagined as the new downtown.

c. Mike (NOACA) raised the point that NOACA guidelines stress not developing transportation facilities in a vacuum, but to look at them in conjunction with land use and what the transportation needs to support.

13. WSP initial thoughts on analyzing and improving traffic flow through the study area.

    a. Nancy (WSP) and her team intend to not only look at how vehicles move through the space, but all forms of transportation. Data shows there has been a decrease in car ownership/access to a vehicle in the community.

    b. WSP proposes to collect traffic data at all 4 major intersections of the site, but a detailed synchronization analysis in not believed to be needed. WSP has experience in pedestrian and bike transportation planning, and they will be looking to incorporate these elements in their approach, as balance in transportation types is important.

    c. RTA's plans for their #41 bus, which is believed to be a 24-hour line, to be researched. Important element to be considered in the study, as understanding what the City's needs are can help influence decisions that RTA makes about this line.

    d. Issues have been raised by nearby hospital systems where patients are failing to arrive for their appointments.

    e. Currently Warrensville Center Road is 2 lanes due to construction, which allows for this to be leveraged as an indicator for PM peak travel time.

    f. Nancy (WSP) also pointed out that a portion of the Cuyahoga Greenways plan falls within proximity and should be included in the overall analysis.

14. No areas within the study area are considered to be off limits for being reimagined or proposed for alteration.

Community Engagement

15. Public input is a critical component of any TLCI study.

    a. A minimum of 3 public meetings where people have an equal opportunity to attend are required. Meetings/public engagement cannot solely happen online, nor can it be a booth placed in the corner of an event with no interaction taking place.

16. Public engagement can happen in conjunction with another event, if TLCI is a featured element of the event.

    a. These 3 types of meeting themes were recommended: presentation of initial analysis, presentation of some proposed ideas, and a presentation of recommendations with short to long term solutions.

    b. Mayor Blackwell provided great insight into the following locations where the TLCI plan could intersect: Local Church (Pastor Walker, who is a person of influence in the community) – *morning*, Senior Center (where City Council meetings are held) – *mid-*

afternoon, and a Maple Heights City School (new facilities with quality space for meetings, also allow for homeowners on City's westside to attend) – *evenings*.

17. Other options were also discussed as possible locations or events to engage with the community.

    a. Music in the park provides a good cross section of residents at an event that occurs regularly. Residents also seem to anticipate having resources or information shared with them while they attend.

    b. Bus terminal and the grocery store were also identified as options, but due to the primary objective of the user in these spaces, it was determined that the other options would be more effective.

18. The importance of meeting people where they are was stressed, rather than tacking on yet another meeting outside of their day to day schedule.

    a. Mayor Blackwell also proposed her Mayor's Breakfast Club, which is held every third Thurs.

    b. The Mayor's Breakfast Club includes a continental breakfast and a monthly guest speaker. For the month of June, the City of Maple Heights new Police Chief will be the featured speaker.

    c. These meetings are typically attended by 30 to 40 residents and allow for more resident interaction with Mayor Blackwell than a council meeting where the time provided for public comment and the mayor's response is limited.

Reimbursement and Agreement

19. The City of Maple Heights will be reimbursed for eligible costs incurred for this project.

20. The Consultant will invoice the City for work performed. Once the City pays the consultant, they will fill out the yellow portions of the reimbursement form and return to NOACA with a copy of canceled check, made out to the consultant, and the consultant's invoice.

21. NOACA will process this request for reimbursement in 2 weeks, however the request is then submitted to ODOT, who will ultimately provide the reimbursement funds to the city. ODOT has a roughly 30-day turnaround once they receive documentation from NOACA.

22. The Consultant should copy NOACA, the City, and Ed Hren (CVE) when sending invoices & section E of NOACA form.

23. The contract type is lump sum, and City is to be invoiced based on the percentage of the project completed. Reimbursables due to the consultant will be shown as a separate line item, with all costs not to exceed contract amount.

Outreach and Messaging

24. Consistent messaging that demonstrates one voice is important in this process. The City is willing to use their website and social media platforms (Facebook, Twitter) for outreach to the community. Consultant team is willing to provide sample language/template to use as a guide.

Steering vs Stakeholder Committee

22. The group in attendance for the Kickoff Meeting will serve as the steering committee, serving to drive the direction of the project, and will be referred to as the "CORE TEAM".

23. Required stakeholder meetings with local businesses, professionals, Chamber of Commerce, ODOT, RTA, or others identified by the City/Mayor.

Next Steps

1. Finalize project schedule and milestones (CA)

2. Collect, review and organize existing conditions materials, ongoing programs and plans (CA, WSP)

3. City of Maple Heights to provide a list of stakeholders to be engaged in this process (City of Maple Heights)

4. Finalize community engagement plan that incorporates the existing events and meetings hosted by the City of Maple Heights and/or its community members (All)

5. Establish a date for 2nd CORE TEAM meeting to review existing conditions analysis and determine date for first formal interaction with the community (All)

6. The client (City of Maple Heights and NOACA) can expect to receive bi-weekly project summary reports to keep them apprised of progress and project schedule.

If any of the items herein are in conflict with your recollection of what was discussed or if any important elements have been omitted, it would be appreciated if you would contact us immediately. Otherwise we will assume the above items are correct.

CITY ARCHITECTURE, INC

Juleian Curtis
Assistant City Planner

Enclosure: City of Maple Heights Southgate Connectivity Study – Kickoff Meeting Agenda

Copies to: All Attendees
File

City Architecture

MEETING MINUTES

MAPLE HEIGHTS TLCI (#19024)
STAKEHOLDER MEETING

October 22, 2019

Location: Maple Heights - Cuyahoga County Public Library Time: 10:30am – 12:00pm

Attendance:	Affiliation:	E-Mail Address:
Mayor Annette Blackwell	City of Maple Heights	ablackwell@mapleheightsohio.com
Ashley King	City of Maple Heights	aking@mapleheightsohio.com
Melissa Thompson	NOACA	mthompson@mpo.noaca.org
Melinda Bartizal	ODOT – District 12	melinda.bartizal@dot.ohio.gov
Charlie Keenan	Maple Heights City School District	charlie.keenan@mapleschools.com
Georgette Vidmar	Resident	ggvidmar@hotmail.com
Linda Sekura	Resident/Energy & Ecology Chair, NEO Sierra Club	lsekura@aol.com
Amy Snell	GCRTA	asnell@gcrta.org
Nora Anderson	WSP	nora.anderson@wsp.com
Deja Jackson	WSP	deja.jackson@wsp.com
Alex Pesta	City Architecture (CA)	alex@cityarch.com
Juleian Curtis	City Architecture (CA)	juleian@cityarch.com

Summary of Meeting

This meeting was the first occasion that community stakeholders have been brought together to discuss the Maple Heights TLCI: Southgate Connectivity Study with the Project Team. Stakeholders were not only able to learn in more detail about the project goals and approach but share their lived experiences and react to conceptual images that reimagined important locations within the study area.

Project Overview & Existing Conditions Analysis

1. After brief introductions, City Architecture reviewed NOACA's Transportation for Livable Communities Initiative (TLCI) goals, objectives, and impact. CA also discussed its extensive experience working with this this grant program and the importance of building plans that drive action to occur.

2. CA then reviewed the project timeline, and briefly discussed the market analysis performed by 4ward Planning Inc. which focused on the impact of the recently developed Amazon fulfillment center in North Randall, and the increasing demand for a diversity of housing types for a diversity of household incomes.

3. The existing conditions analysis of the Southgate study area performed by CA was then presented, which focused on the impact of isolated land uses and the Southgate footprint's influence on the surrounding circulation and overall connection to the community. The lack of connection to Stafford Park was another example that was pointed to, as well as the lack of clear recognition of the RTA Transit Center.

4. The existing condition analysis closed with the identification of important gateway points, assets, priority corridors, and potential development sites and connections in need of enhancement.

'Your Experience'

5. Discussion then shifted to the stakeholders in the room who shared their personal experiences moving through the study area, while responding to the question of whether the quality of the spaces occupied by Giant Eagle and Stafford Park could feel equal.

6. Some of the initial thoughts that were shared:
    a. The incorporation of decorative tree lawn along Warrensville Center Rd, that incorporated native species and helped create a natural buffer between the busy roadway and the shopping center.
    b. Cycling within the neighborhood, and specifically along Warrensville Center Rd was described as a challenge both from a safety and access perspective. The design of the road has several points where conflict is introduced between bike and car, specifically related to where driveways are placed.
    c. Stafford Park was described as isolated, with wayfinding signage being encouraged to elevate its presence.
    d. The placement of tastefully designed Kiosks for voting information and other useful community resources was encouraged to be incorporated as well.

Focus Areas & Concept Imagery

7. Layering the analysis performed by the consultant team with the group's collective experiences, CA presented its initial take on prioritizing recommendations (focus areas) of where enhance should occur, understanding that resources are limited.

8. Six Focus Areas were identified within the study area: (1) Warrensville Center Rd & Libby Rd Intersection (2) Stafford Park (3) Warrensville Center Rd North Gateway (4) Northfield Rd North Gateway (5) Warrensville Center Rd South Gateway (6) Southgate Shopping District & Transit Center.

9. Each location was presented individually, while providing the opportunity for stakeholders to share their perspective on how the location currently functions, and what improvements they felt were needed. A summary of the thoughts that were shared is shown below:

    a. *Southgate Shopping District & Transit Center* – Southgate was described as isolated/remote from the rest of the Maple Heights community; vehicularly dominated with a lack of clear and safe paths for pedestrians to navigate the center; the transit center was viewed as an asset to capitalize on; creating a sidewalk plan that identifies intentional linkages and paths through the site was described as a beneficial next step.
    b. *Warrensville Center Rd South Gateway* – Pedestrian crossing was described as a challenge due to road width; this southern half of Warrensville Ctr Rd continues to increase in activity with the addition of new restaurants and is therefore in need of a

dramatic entry that announces arrival into the community; a planted median was suggested to help control egress, and perhaps even assist with pedestrian crossing; a roundabout was also raised as a suggestion to aid in calming traffic, of which the feasibility would be studied; an intersection treatment was agreed to be a need in this location.

c. *Warrensville Center Rd & Northfield Rd North Gateways* – The Amazon employment center has already begun to have a significant impact on the amount of activity along Warrensville Center Rd with over 3,000 employees working in the facility; opportunity to make an impression on those entering and exiting community; incorporation of bike paths along Warrensville Center Rd was encouraged, as the sidewalks can be challenging to ride on and the roadway does not feel safe; the feasibility of a protected lane will be incorporated in the traffic analysis; becoming a bike friendly community was expressed as something that was desired.
d. *Stafford Park* – this great resource simply needs to have its location more effectively identified; wayfinding/signage that aligns with the City of Maple Heights current branding materials is to be incorporated; new signage for Stafford Park is recommended to be included in a longer term marketing and branding project.

10. The Warrensville Center Rd & Libby Rd Intersection focus area was presented in its existing state, followed by the introduction of 3 conceptual images of what this critical node within the commercial district could become.

    a. *The Warrensville Center Rd & Libby Rd Intersection* (existing) – currently this intersection feels like a place you merely pass through, rather than stop and enjoy; the possibility of bike lanes in this location was also introduced; the large crosswalk and proximity to the middle school was described as a current safety concern for students, with two crossing guards and an auxiliary officer needed to assist on a daily basis.
    b. *The Warrensville Center Rd & Libby Rd Intersection* (concept images) – overall reactions to these preliminary concepts was positive; naming the trail that leads from Stockton Ave to the middle school was encouraged; Stockton Ave becoming a trail/pedestrian connection to Stafford Park was suggested; converting Stockton Ave to a one-way was also raised as an item to be explored; this potential redevelopment was also seen as an opportunity to prepare for a sustainable future, through the planting native species, accommodation of electric vehicles, and incorporation of solar panels in the design; funding for pocket parks was also expressed as something that is obtainable and a mechanism the City has experience benefiting from.

Next Steps

1. Community Meeting #1 to be scheduled after November 5th (City of Maple Heights)
2. Continue development of conceptual imagery for all focus areas (6 total) that have been identified (CA)
3. Completion of Traffic Analysis (WSP)

4. Remain engaged with the stakeholder group as the project progresses (CA + City of Maple Heights)

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CITY ARCHITECTURE, INC

Juleian Curtis
Assistant City Planner

Enclosure:

Copies to: All Attendees
File

Focus efforts on the perimeter with small in scale but impactful recommendations for the Southgate center.

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

STAKEHOLDER MEETING #1 – OCTOBER 22, 2019

Transportation for Livable Communities Initiative (TLCI)

Transportation --- *moving **people** safely via all modes of transit*

Livable --- *providing a quality environment for **people** to enjoy*

Communities --- *enhancing **people's** experience within a place*

Initiative --- *causing <u>action</u> to occur*

<u>Primary Objectives</u>:

Developing transportation projects that provide **more travel options**

Promoting reinvestment in underutilized or vacant/abandoned properties

Supporting economic development

Ensuring that the **benefits of growth and change are available to all** members of a community

Enhancing regional cohesion

Providing people with **safe and reliable transportation** choices

<u>Program Impact</u>:

127 planning grants have been awarded since **2006**

Over **$6 million dollars** in total investment in TLCI planning projects

Over **30 implementation grants** awarded since **2016**

Between 2006-2011, 86% of transportation projects in NOACA's service area were recommended through TLCI plans, totaling over **$152 million dollars** in investment

Public input continues to shape the planning and implementation process

City Architecture

A Balanced Planning Process

City Architecture – WSP– 4ward Planning Inc.

City Architecture

	MAY - JULY	AUGUST - SEPTEMBER	SEPTEMBER - OCTOBER	NOVEMBER - JANUARY	JANUARY - FEBRUARY	MARCH
ENGAGEMENT	Kickoff Meeting T	Stakeholder Outreach Community Meeting C		Community Meeting T C	Community Meeting T	Presentation of Report for Adoption C
PLANNING PROCESS	Existing Conditions Analysis	Preliminary Studies & Scenarios Economic/Market Study Traffic Study and Analysis		Preferred Alternatives	Drafing of Report Document	Final Recommendations & Report

T Core Team Meeting (3 to 4 total)

C Community Meeting / Presentation (3 total sessions)

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

PROJECT TIMELINE

City Architecture

What's next for Cleveland's Eastern Suburbs…?

The Age of Amazon… and the fate of the traditional mall

Anticipating change… future-proofing your community

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY
PROJECT CONTEXT

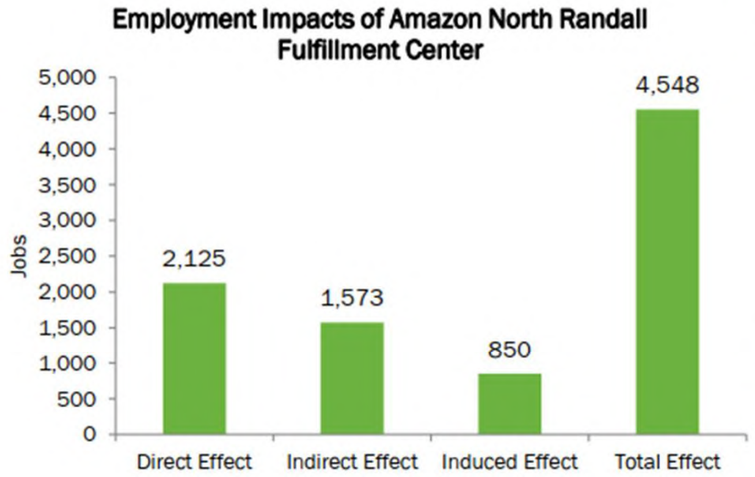
Market Study Summary

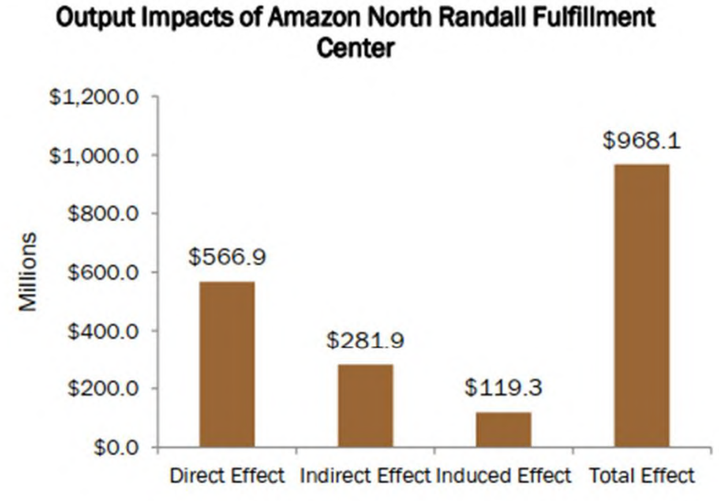
When Amazon jumps in your pool who gets wet?

Opportunities for employment tied to services Amazon needs for its operations – ex. Delivery Drivers and Machinery Repair

Accommodating for a continued increase in demand for housing for a variety of incomes

Analysis: Annual Operations (2019)





Direct, Indirect, and Induced Effects of Amazon North Randall Fulfillment Center

	Employment	Labor Income (Millions)	Output (Millions)
Direct Effect	2,125	$100.6	$566.9
Indirect Effect	1,573	$90.7	$281.9
Induced Effect	850	$41.5	$119.3
Total Effect	4,548	$232.8	$968.1

Top Five Industries by Indirect and Induced Employment

Retail - Nonstore retailers	2,138
Real estate	309
Warehousing and storage	124
Employment services	116
Wholesale trade	78

Top Five Industries by Indirect and Induced Output

Retail - Nonstore retailers	$568,908,296
Real estate	$81,205,210
Wholesale trade	$18,491,889
Management of companies and enterprises	$16,927,081
Monetary authorities and depository credit intermediation	$13,333,347

Source: IMPLAN, 4ward Planning, 2019

CORE COMMERICAL DISTRICT

May 2019 to March 2020

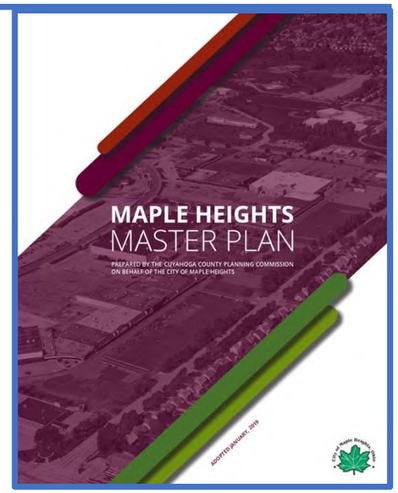
MAPLE HEIGHTS MASTER PLAN

TRANSPORTATION FOR LIVABLE COMMUNITIES: SOUTHGATE CONNECTIVITY STUDY

PRIORITY ACTIONS / IMPLENTABLE EFFORTS FOR THE CITY OF MAPLE HEIGHTS

Mid 2017 to Early 2019

CITYWIDE



March 2020 to March 2025

TARGETED INVESTMENT

OVERLAYING & COORDINATING PLANNING

Various scales & initiatives

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY
CITY MASTER PLAN

Vision Principles

Citywide Implementation Goals

- GOAL 1 — FOSTER COMMUNITY PRIDE AND NEIGHBORHOOD NETWORKS
- GOAL 2 — STABILIZE THE HOUSING MARKET AND ENCOURAGE REINVESTMENT IN NEIGHBORHOODS
- GOAL 3 — IMPROVE THE VIBRANCY OF THE CITY'S BUSINESS DISTRICTS
- GOAL 4 — ENCOURAGE WALKING AND BICYCLING
- GOAL 5 — PROTECT THE CITY'S CRITICAL ENVIRONMENTAL FEATURES
- GOAL 6 — REVITALIZE EXISTING PARKS AND STRATEGICALLY ENHANCE THE CITY'S RECREATION SYSTEM
- GOAL 7 — COORDINATE INFRASTRUCTURE IMPROVEMENTS
- GOAL 8 — DEVELOP A COMPREHENSIVE SYSTEM OF YOUTH ENGAGEMENT
- GOAL 9 — GROW MANUFACTURING JOBS

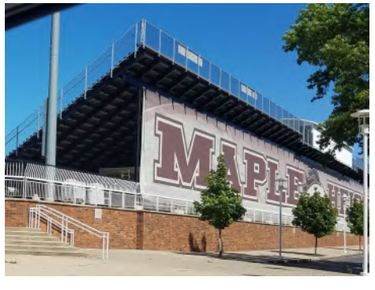
City Architecture

Beginning to stich things together

Historical Influences
- Land Use
- Transportation System

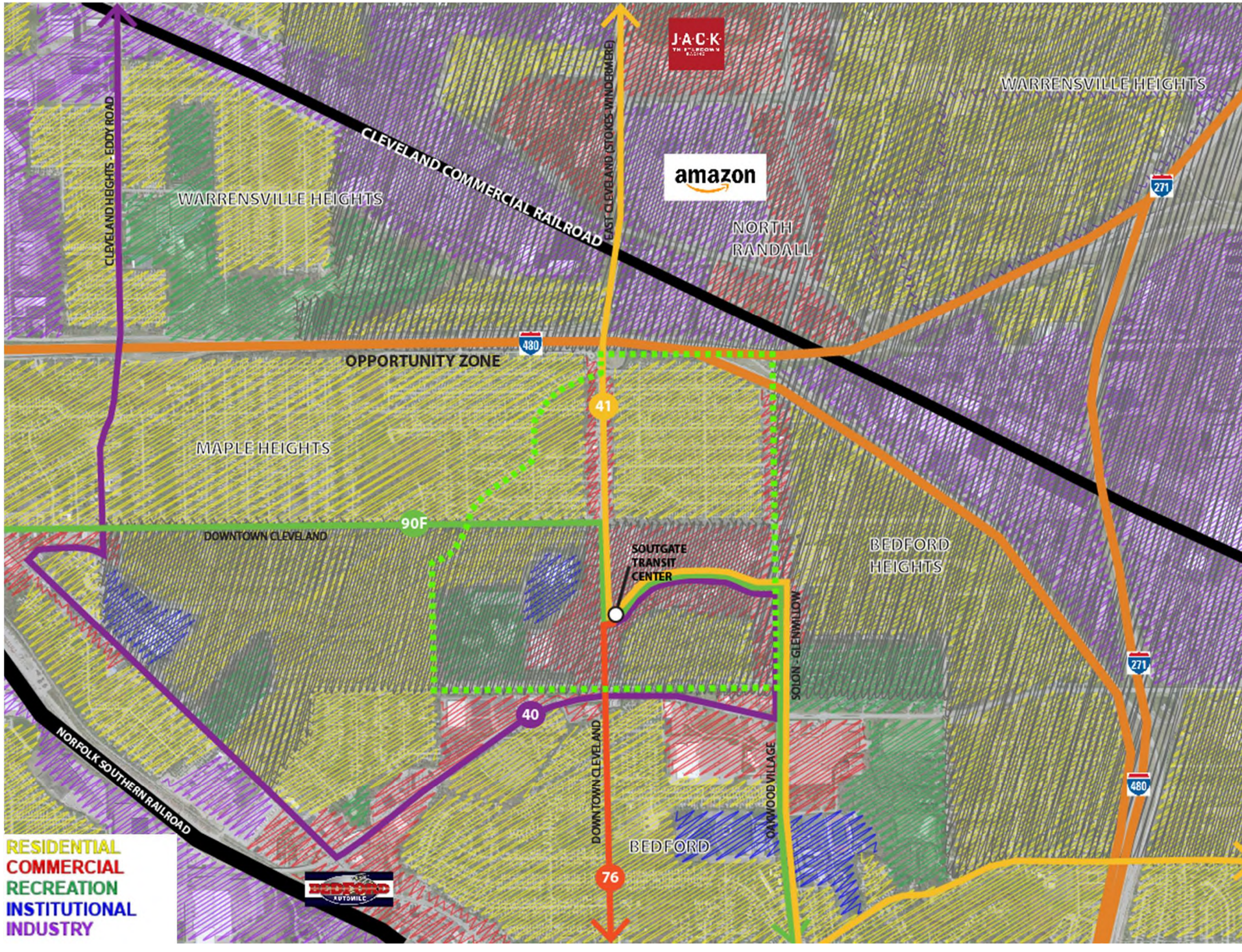
Intersection of Several Municipalities

Opportunity Zone

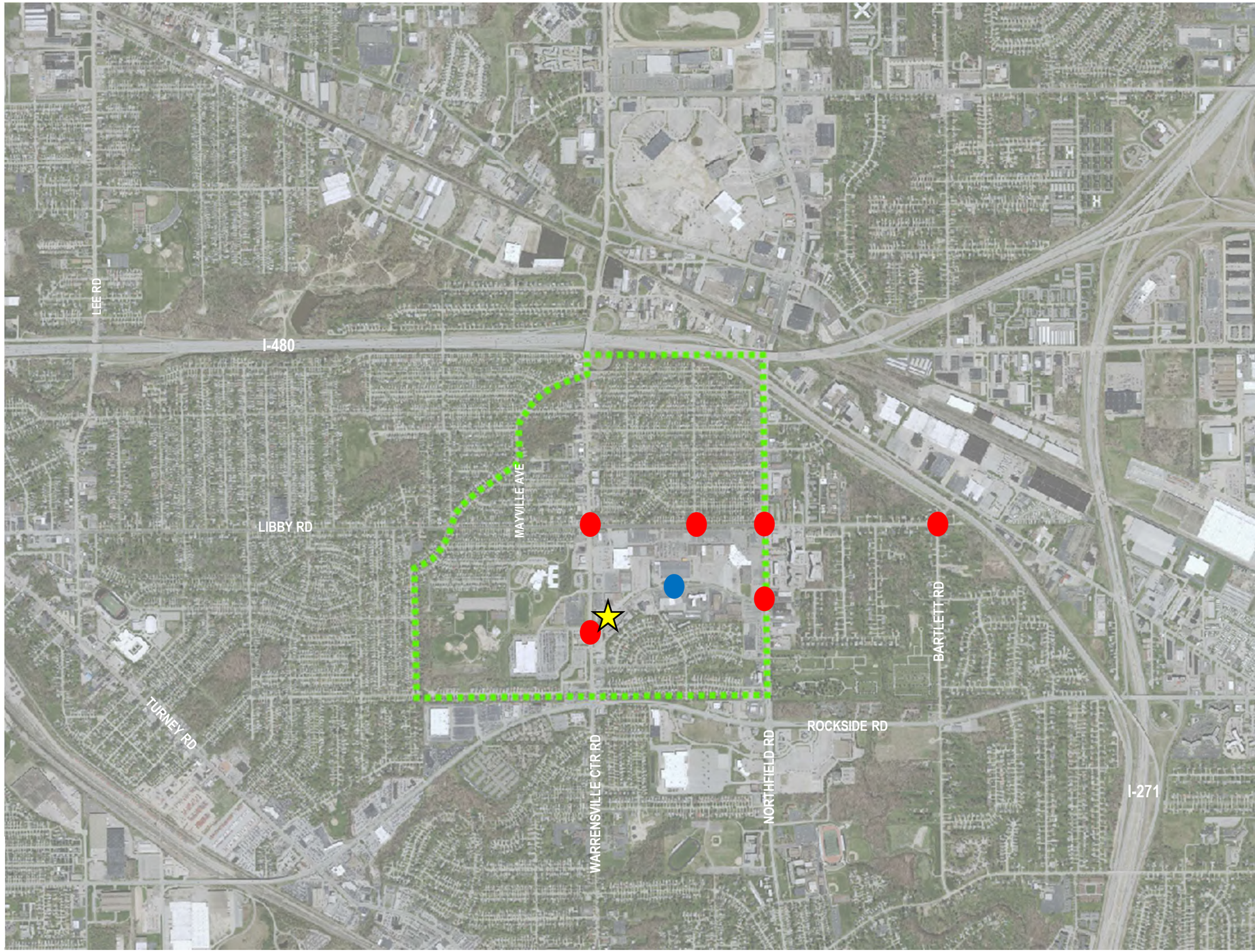


Uncovering Development Patterns

MAPLE HEIGHTS TLCI:
SOUTHGATE CONNECTIVITY STUDY
CONTEXT



City Architecture



Traffic Counts

Excess Pavement Analysis

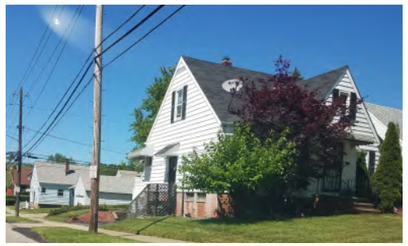
Southgate Transit Center (GCRTA)

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

TRAFFIC STUDY

OBSERVATIONS:

Separation of Uses



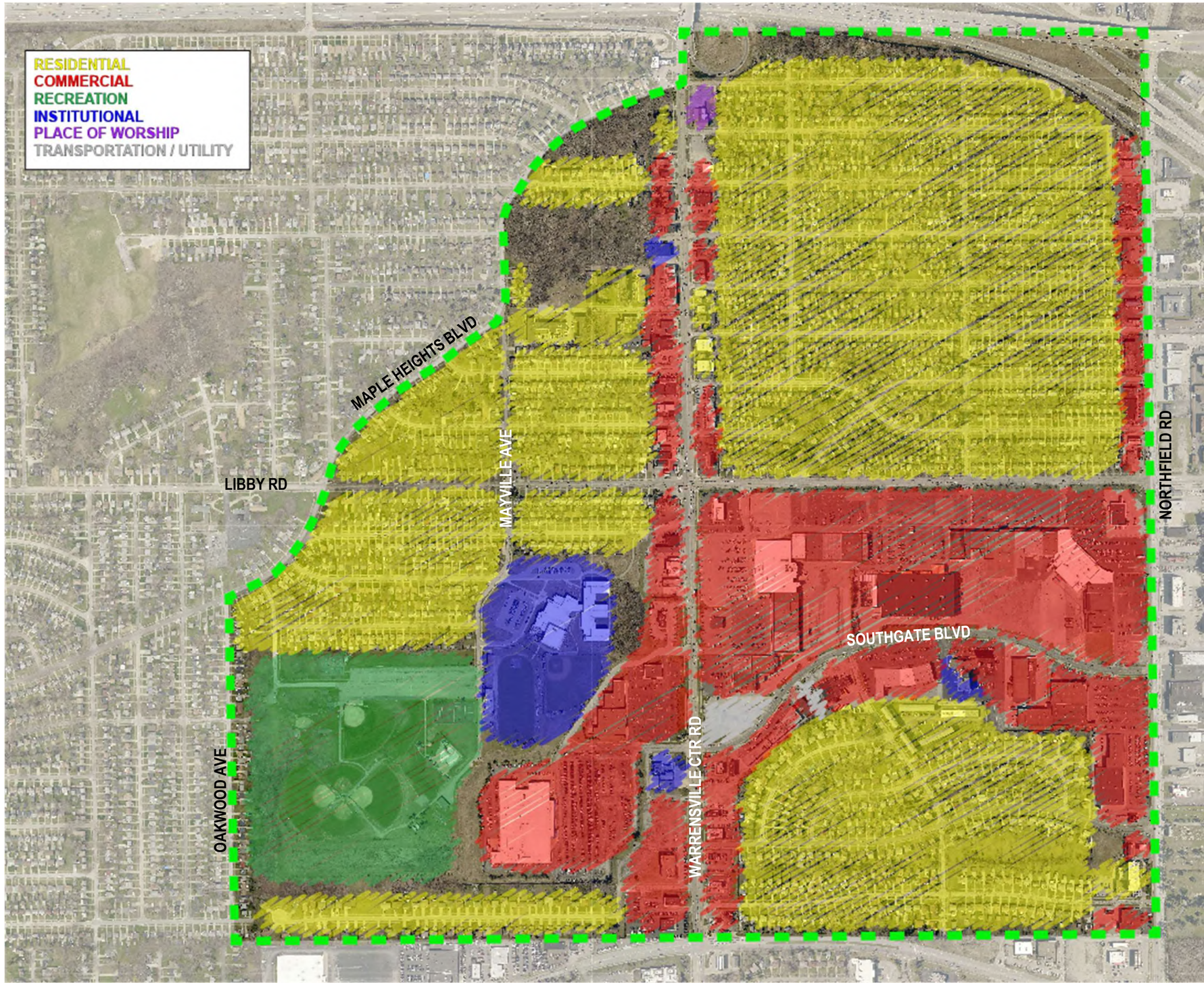
Prevalence of Housing

Commercial Corridor

Green/Park Space

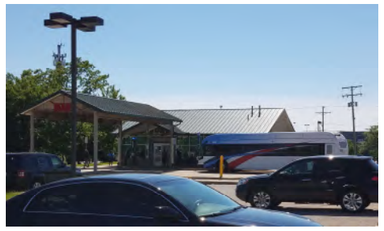
MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

LAND USE



City Architecture

OBSERVATIONS:

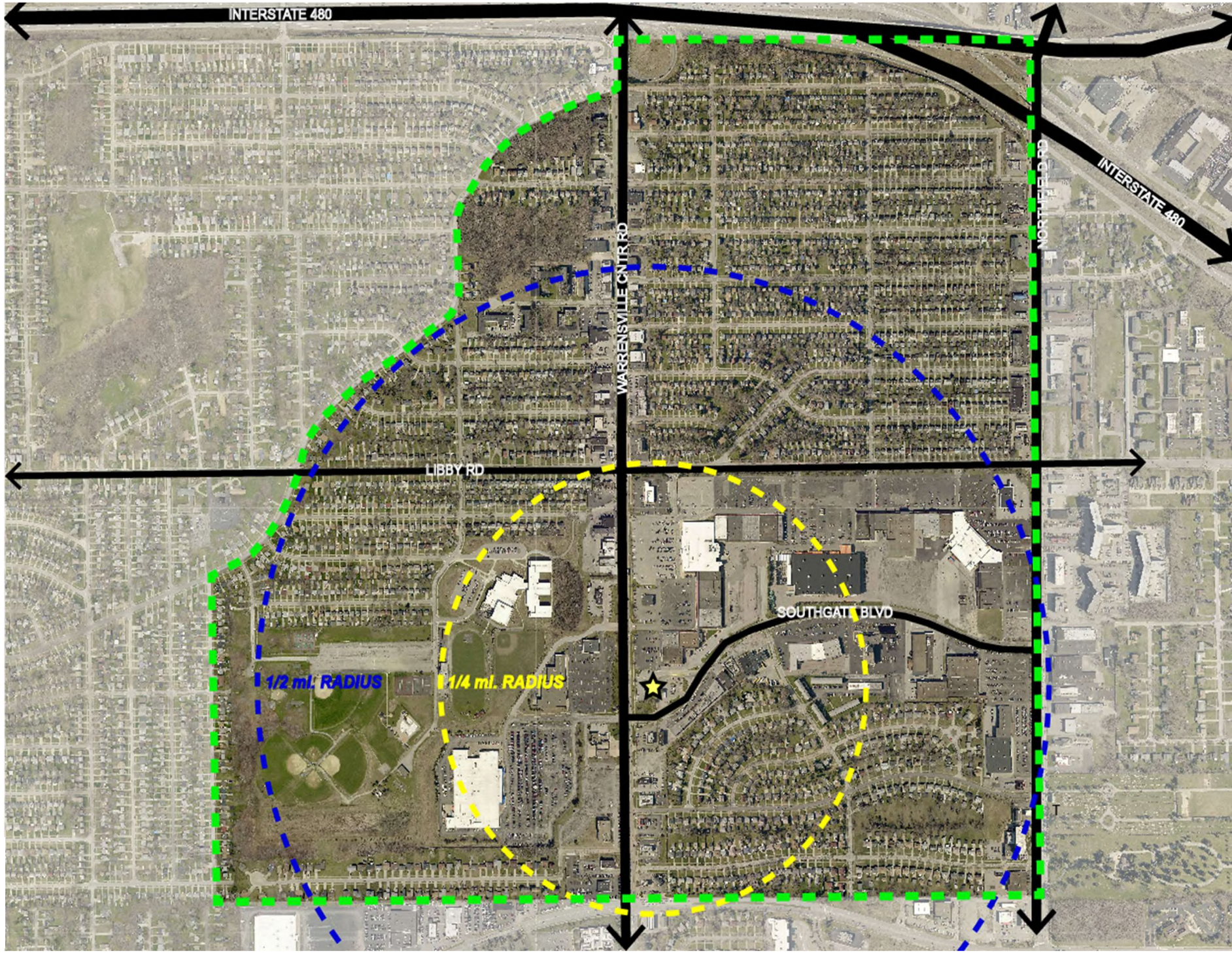


Southgate Transit Center

Major Corridors
- Warrensville Ctr Rd
- Northfield Rd
- Libby Rd

Southgate Connection to Housing

Walkability



MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY
TRANSPORTATION

City Architecture

Lack of Connection at Gateways

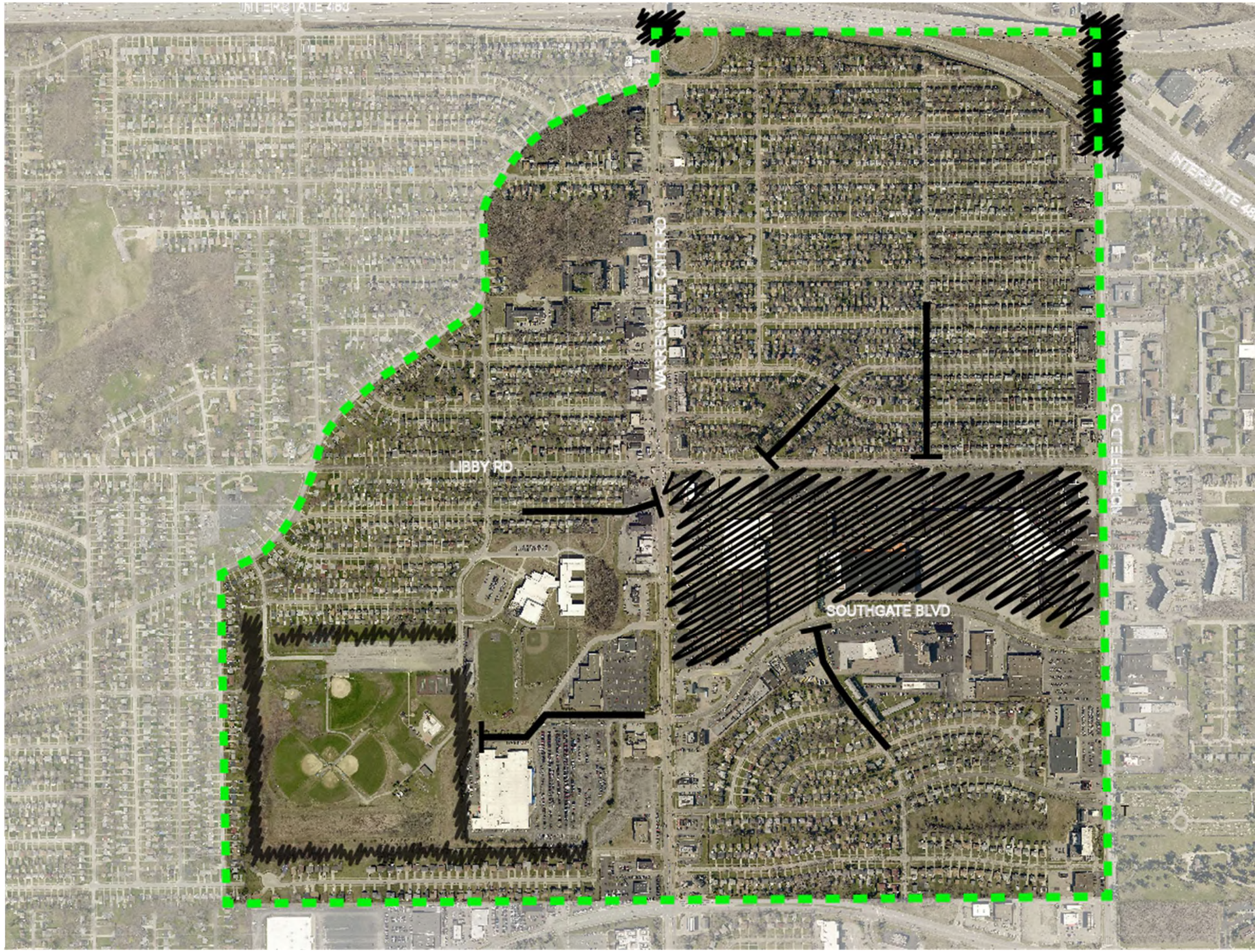
Southgate the Super Block

Path Obstructions

Visual, but not Physical Connections

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

BARRIERS

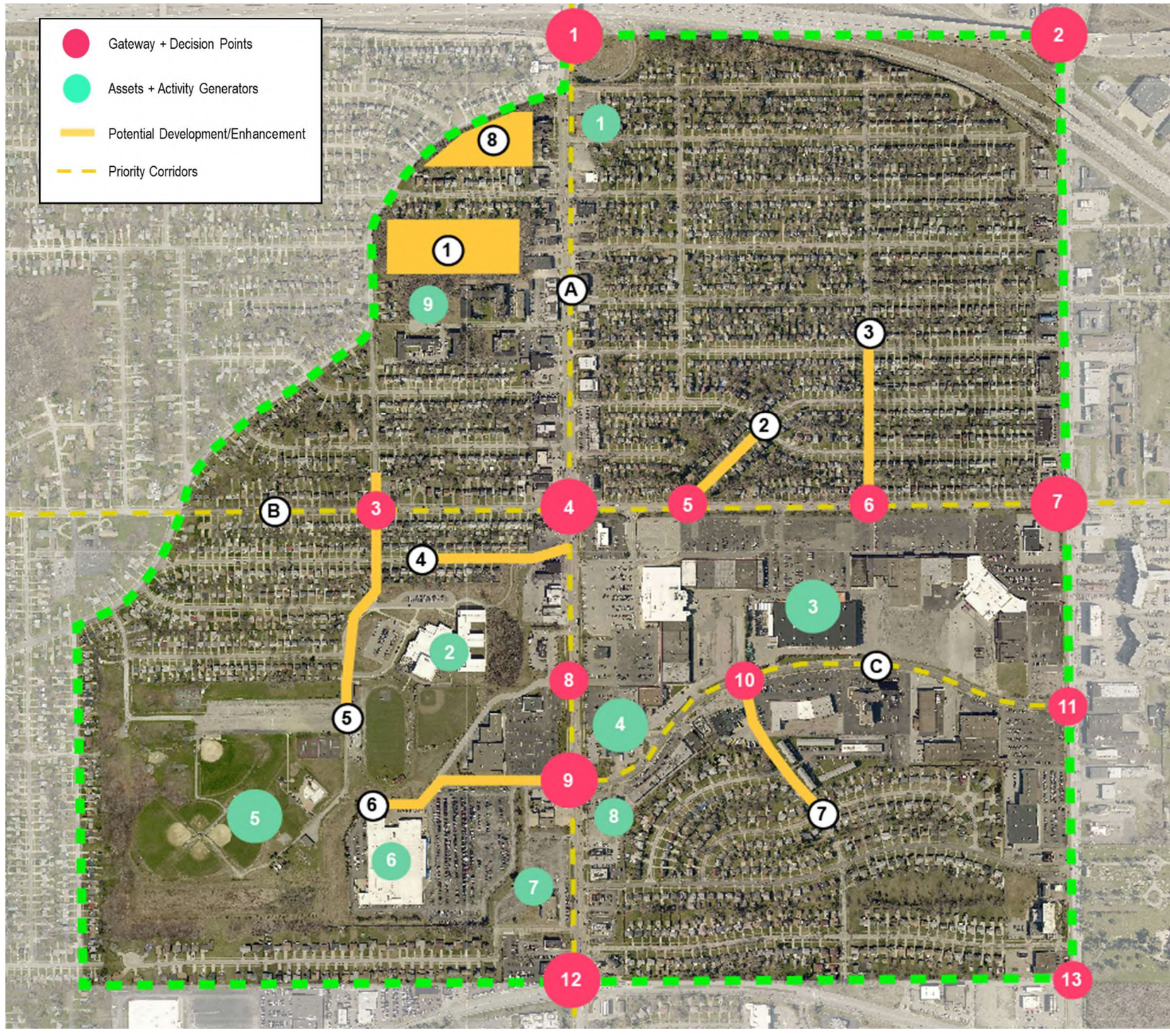


1. Warrensville Ctr Rd & I-480
2. Northfield Rd & I-480
3. Libby Rd & Mayville Ave
4. Warrensville Ctr Rd & Libby Rd
5. Kenyon Dr & Libby Rd
6. Prayner Rd & Libby Rd
7. Northfield Rd & Libby Rd
8. Warrensville Ctr Rd & Wendy's Intersection
9. Warrensville Ctr Rd & Southgate Blvd
10. Sunnyslope Rd & Southgate Blvd
11. Northfield Rd & Southgate Blvd
12. Warrensville Ctr Rd & Rockside Rd
13. Northfield Rd & Rockside Rd

A. Warrensville Ctr Rd
B. Libby Rd
C. Southgate Blvd

1. Warrensville Rd Community Baptist Church
2. Milkovich Middle School
3. Southgate USA
4. Southgate Transit Center
5. Stafford Park
6. Ford Dealership
7. 'New' KFC
8. 'New' Checkers/Rally's
9. Rid-All Green Partnership

1. Clare Ave
2. Kenyon Dr
3. Prayner Rd
4. Stockton Ave
5. Mayville Ave
6. Southgate Blvd to Ford
7. Sunnyslope Rd
8. Maple Heights Blvd



MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

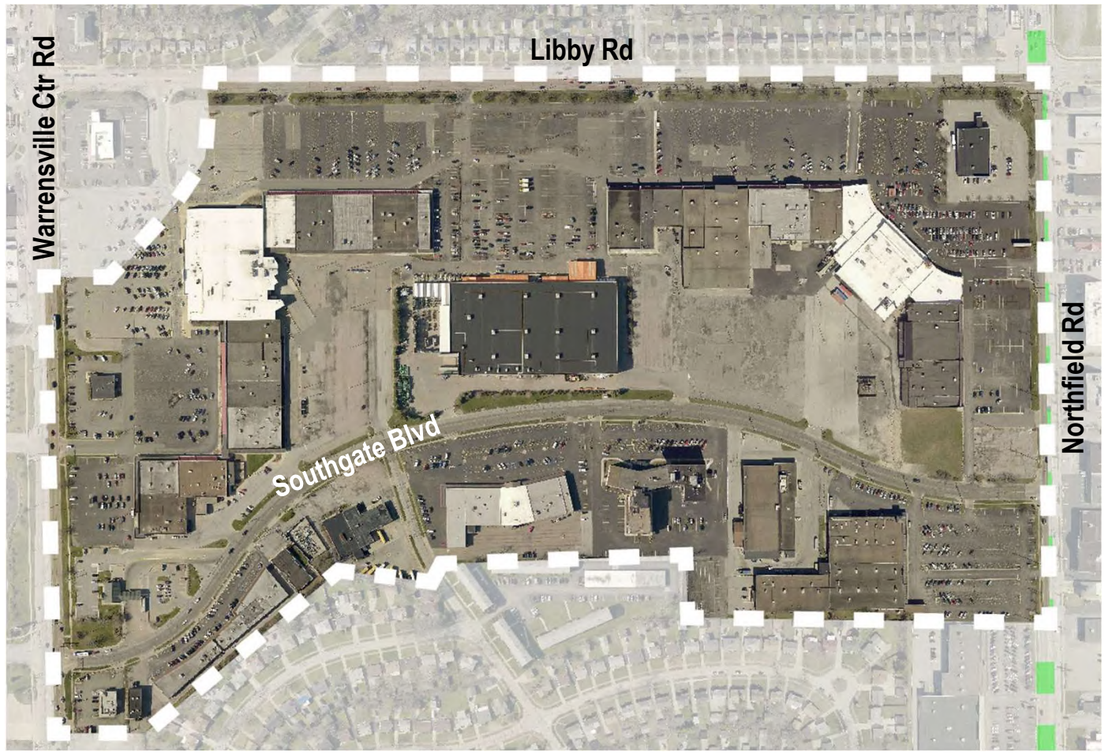
WHAT WE'VE LEARNED

City Architecture

Your Experience…


Focus Area #3
Warrensville Ctr Rd
Gateway (North)
Focus Area #4
Northfield Rd
Gateway (North)
Focus Area #1
Warrensville Ctr Rd
& Libby Rd
Focus Area #6
Southgate Shopping District
+
Southgate Transit Center
Focus Area #2
Stafford Park
Focus Area #5
Warrensville Ctr Rd
Gateway (South)

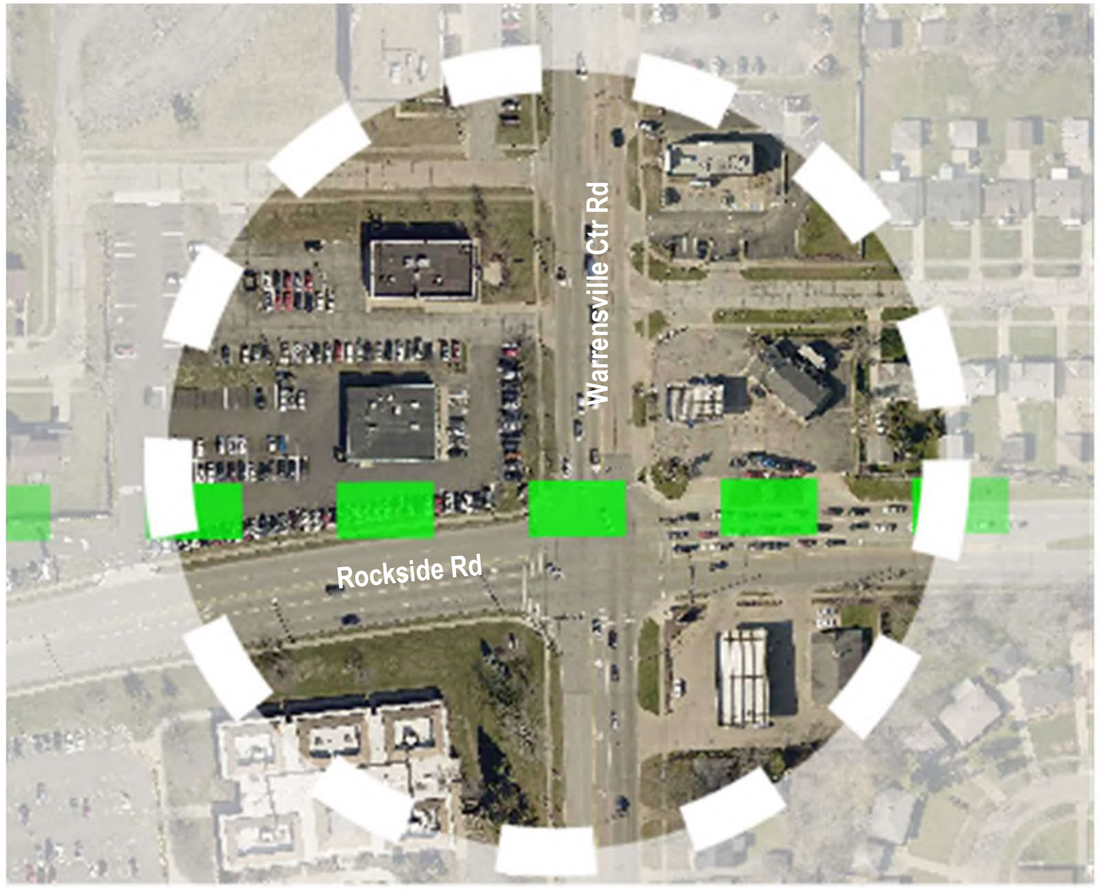
City Architecture

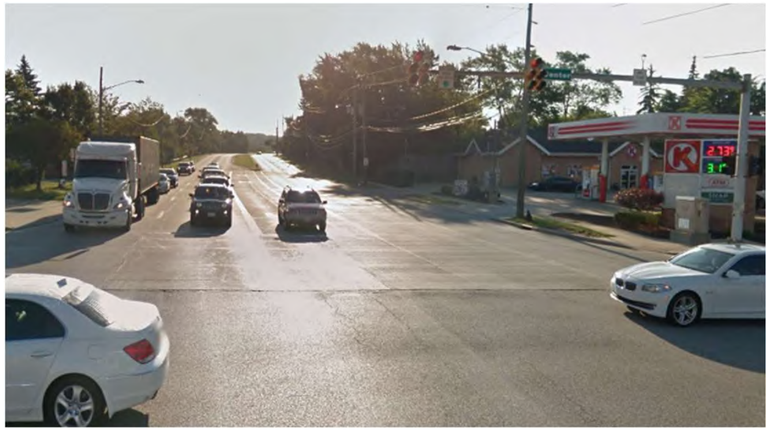


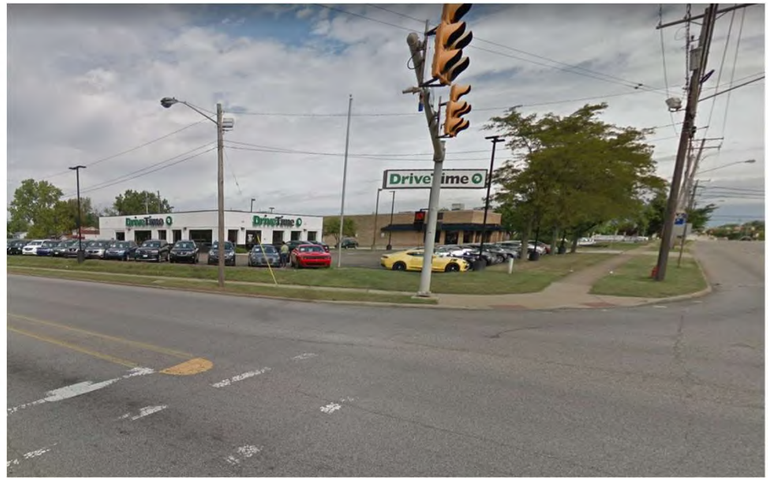
SOUTHGATE SHOPPING DISTRICT & TRANSIT CENTER

FOCUS AREA #6

City Architecture

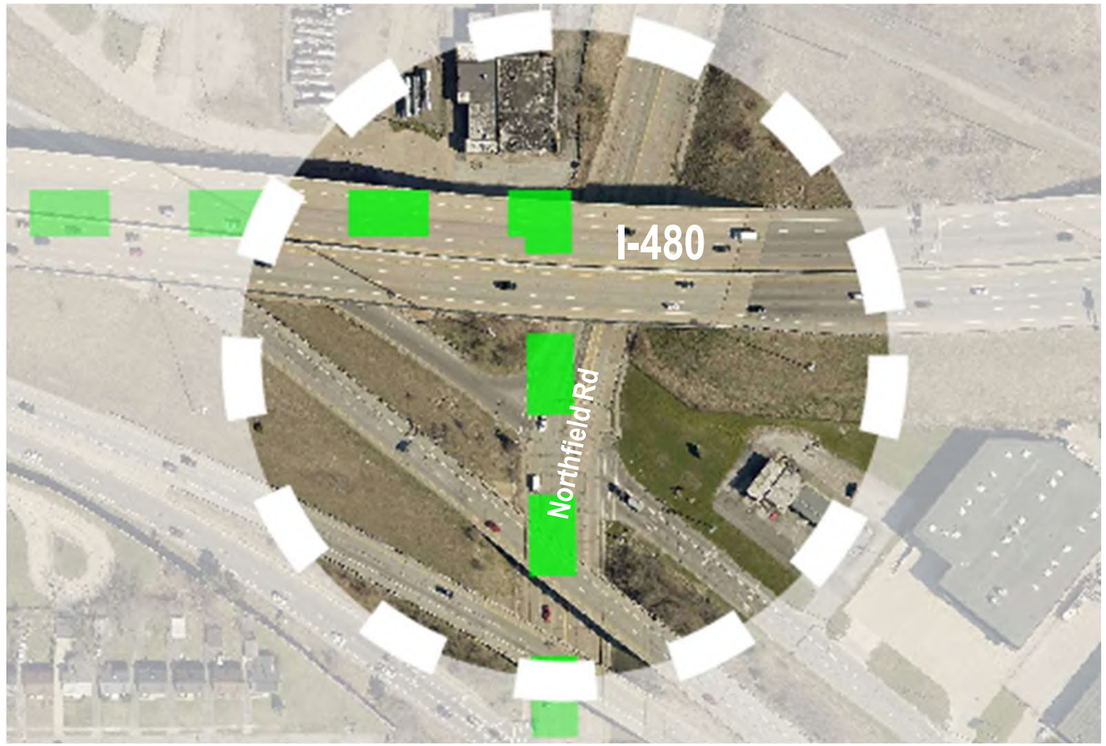






WARRENSVILLE CENTER RD
SOUTH GATEWAY
FOCUS AREA #5

City Architecture



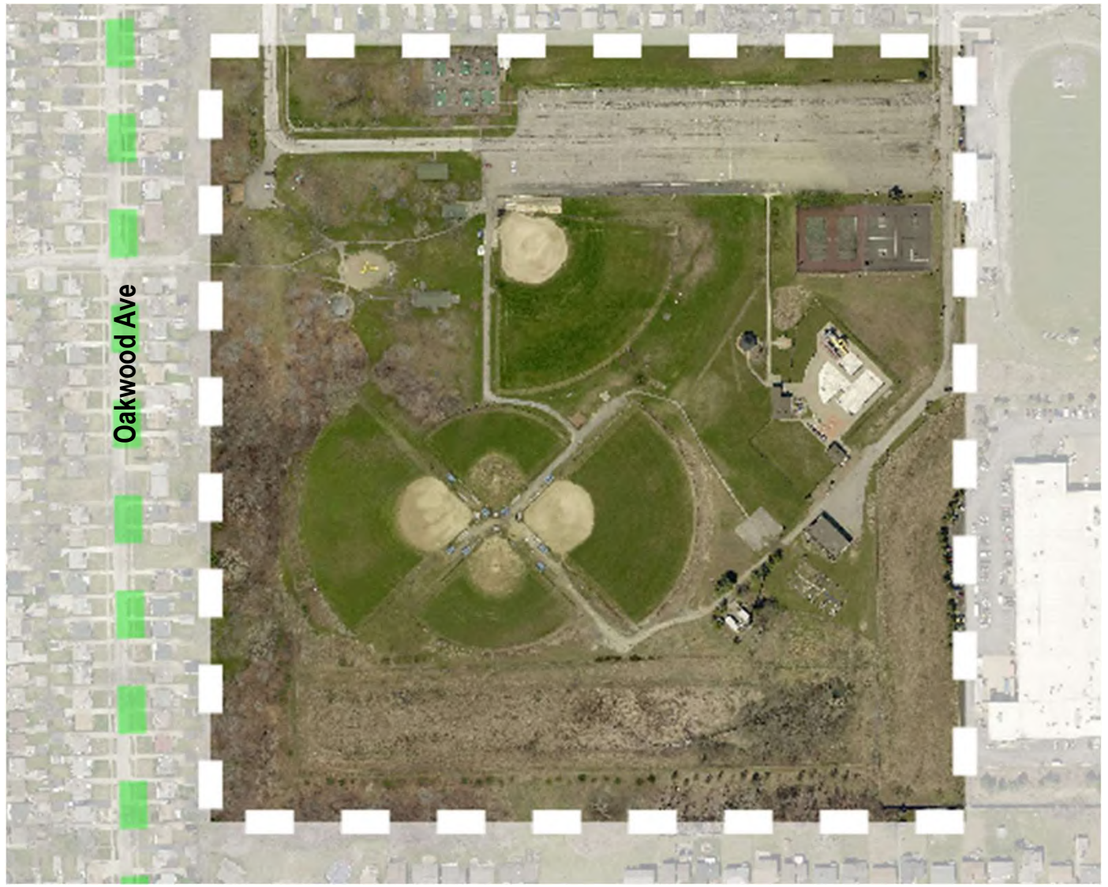
NORTHFIELD RD NORTH GATEWAY

FOCUS AREA #4

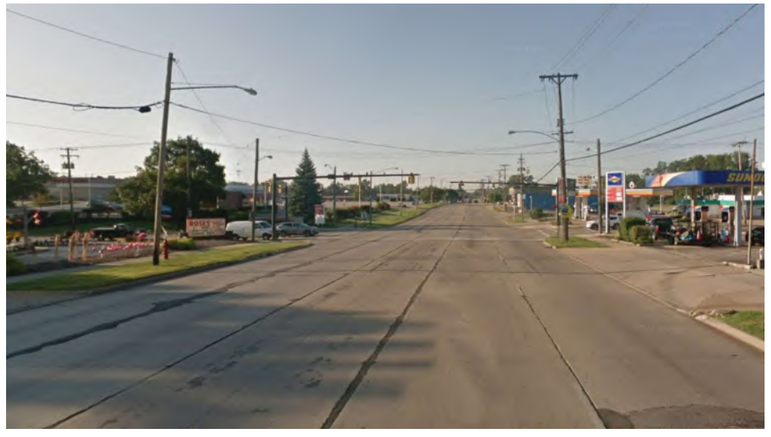
City Architecture

WARRENSVILLE CENTER RD
NORTH GATEWAY
FOCUS AREA #3

City Architecture



STAFFORD PARK
FOCUS AREA #2



WARRENSVILLE CENTER RD & LIBBY RD

FOCUS AREA #1

City Architecture

WHAT DO YOU SEE HERE…?

WARRENSVILLE CENTER RD looking South to LIBBY RD

STREET TREES
Continue rhythm of trees to create a fullness within corridor

PLACE-MAKING
Enhance arrival to district with unique signage and street furniture

WAYFINDING
Build off current banners and features to distinguish commercial district

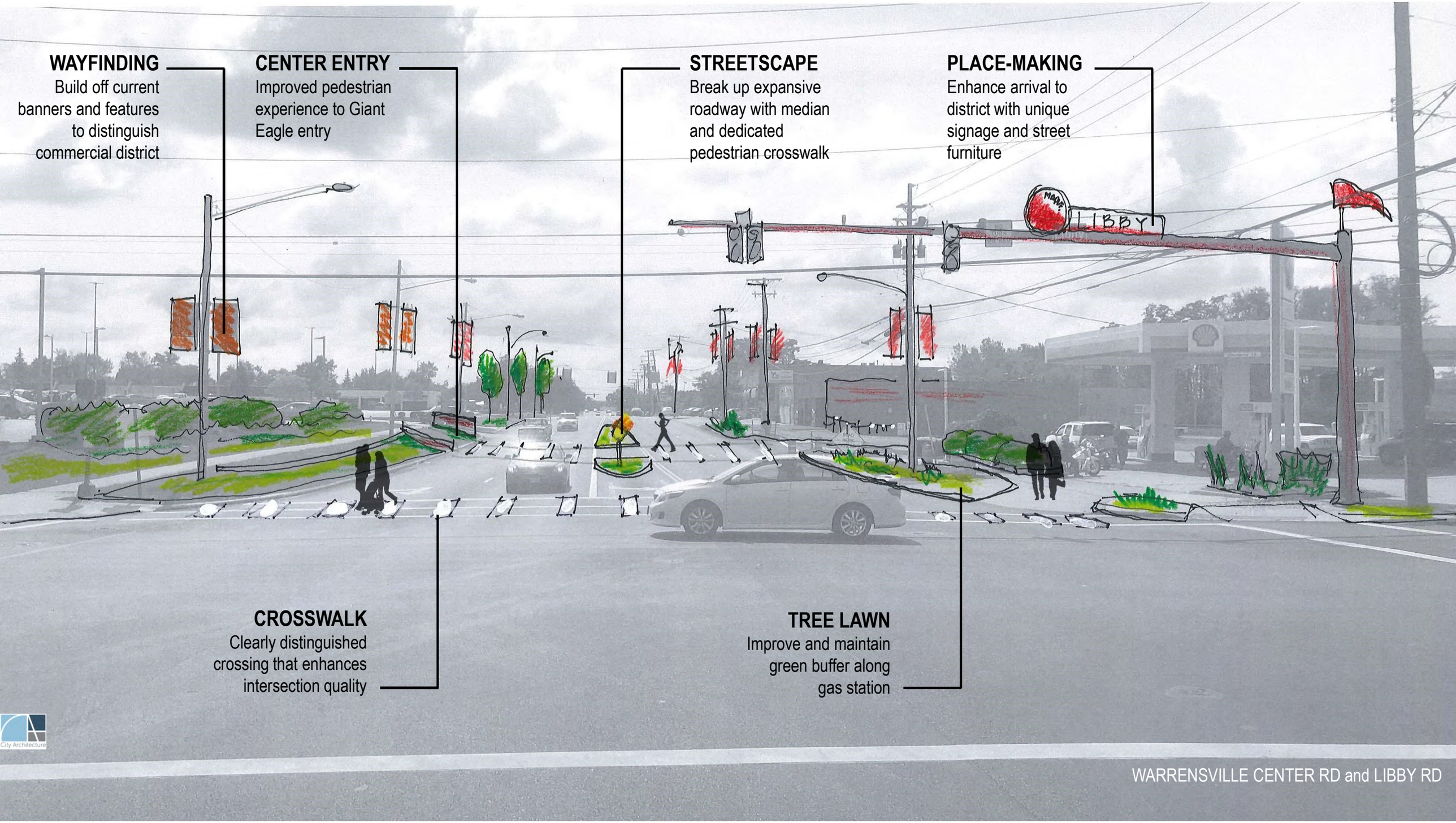
TREE LAWN
Potential to leverage florist to enhance tree lawn aesthetic

STREET TREES
Continue rhythm of trees to create a fullness within corridor

ORNAMENTAL FENCE
Allow for more of a protective path for pedestrians

WARRENSVILLE CENTER RD looking South to LIBBY RD

WARRENSVILLE CENTER RD and LIBBY RD



WAYFINDING
Build off current banners and features to distinguish commercial district

CENTER ENTRY
Improved pedestrian experience to Giant Eagle entry

STREETSCAPE
Break up expansive roadway with median and dedicated pedestrian crosswalk

PLACE-MAKING
Enhance arrival to district with unique signage and street furniture

CROSSWALK
Clearly distinguished crossing that enhances intersection quality

TREE LAWN
Improve and maintain green buffer along gas station

City Architecture

WARRENSVILLE CENTER RD and LIBBY RD

WARRENSVILLE CENTER RD and STOCKTON AVE

MURAL
Place-making feature

DECORATIVE FENCE
Creation of a nice buffer for parking

WAYFINDING
Enhance connection with school

CROSSWALK
Enhance intersection experience decorative crossing pattern

TRAILHEAD
Accessible path connecting to school and neighborhood, reflective of community

City Architecture

WARRENSVILLE CENTER RD and STOCKTON AVE

City Architecture

NEXT STEPS

- **Community Meeting #1**

- Development of Focus Area Concepts

- Categorizing Proposed Enhancements:
  - Immediate < 1 year
  - Near term 1-3 years
  - Long term 3+ years

- Traffic Analysis

City Architecture

MEETING SUMMARY

MAPLE HEIGHTS TLCI (#19024)
COMMUNITY MEETING #1

December 2, 2019

Location: Maple Heights High School - Cafeteria Time: 6:00pm – 7:30pm

Attendance:	Affiliation:	E-Mail Address:
Mayor Annette Blackwell	City of Maple Heights	ablackwell@mapleheightsohio.com
Linda Vopat	City of Maple Heights	lvopat@mapleheightsohio.com
Ron Jackson	Maple Heights City Council	ronjacksonmaplehts@att.net
Toni Jones	Maple Heights City Council	tjonesd2@hotmail.com
Georgette Vidmar	Maple Heights Resident	ggvidmar@hotmail.com
Trey Williams	Maple Heights Boys League	ronnie.williams517@gmail.com
Melissa Thompson	NOACA	mthompson@mpo.noaca.org
Nancy Lyon-Stadler	WSP	nancy.lyonstadler@wsp.com
Deja Jackson	WSP	deja.jackson@wsp.com
Alex Pesta	City Architecture (CA)	alex@cityarch.com
Juleian Curtis	City Architecture (CA)	juleian@cityarch.com

Summary of Meeting

December 2nd marked the first official time a public presentation has been given in the community. While many factors may have contributed to the meeting being not as heavily attended as the group would have preferred, those that were in attendance were fully engaged, and enthusiastic about the conversation around enhancing their community. Mayor Blackwell made a critical point about carrying this message throughout the attendee's networks, with the goal of demonstrating the City's commitment to creating change that is for the greater community's benefit.

Introductions, Project Overview & Project Team Experience

1. Apart from the consultant and client teams, and community stakeholder, Georgette Vidmar, community members were being introduced to this project for the first time. City staff, city council, and local non-profit's that serve the City's residents comprised the audience, each with a passion for the City they serve or represent.

2. During introductions the members of the audience expressed an interest in exploring the idea of a Transportation Oriented Development (TOD) at Southgate that would include new housing types.

3. City Architecture & WSP briefly described the history of their organization and their collective experience working with the NOACA Transportation for Livable Communities Initiative (TLCI), while Melissa Thompson of NOACA assisted with describing the goals, objectives, and impact of the TLCI program.

4. With the consultant team's existing conditions analysis wrapped up, a review of the project timeline showed we are at about the midpoint and have reached the important first meeting with the community to discuss the project.

5. CA then reviewed the project timeline and described the layered approach this process will follow. Guided by the master plan recently adopted by the City of Maple Heights this TLCI will start to focus in on a specific area with the community that can be elevated and enhanced.

6. To demonstrate its experience working in this space, CA provided several examples of previous TLCI projects (Center Ridge Road, Downton Euclid, & Barberton's Magic Mile) it has coordinated that demonstrated successful recommendations in similarly designed environments, as well as how this work done well can lead to actionable next steps that result in immediate change.

What We've Done So Far

7. Project context was provided before a more focused conversation on the study area began, as Maple Heights like many other east side Cleveland suburban communities are faced with the challenges of aging housing stock, outdated retail shopping centers, in addition to socioeconomic constraints. However, it is uniquely positioned due to its adjacency to one if the region's Amazon Fulfillment Centers.

8. The market study performed by 4ward Planning Inc., as a key part of this project focused on the impact of the recently developed Amazon fulfillment center in North Randall, and the influx of economic activity into the region. A share of this activity, due to proximity, can realistically be captured by Maple Heights in the form of added wages from employment from Amazon directly, services that support Amazon's employees or operations, and other related investment influenced by this international economic engine.

9. Isolated land uses and the Southgate footprint's influence on the surrounding circulation and overall connection to the community was then discussed. Significant community assets, such as Stafford Park, exist in the study area, however connections to these resources can be strengthened.

Traffic Analysis

10. The TLCI program's focus on transportation of all types places significant importance on the traffic analysis performed by consultant team member WSP. The presentation of their analysis focused on vehicular movement and roadway capacity along Libby Rd between Warrensville Center Rd and Northfield Rd.

11. WSP's analysis revealed that traffic on the roadway flows at an above optimal level, leaving room for features to be incorporated. WSP confirmed that converting Libby Road from 4 lanes to 3 lanes, with one travel lane in each direction, bike lanes in each direction, and a two way left

turn lane or median with left turn bays would still allow the roadway to function at an optimal level based on ODOT's standards.

12. Community members gave personal testimony about the danger they feel currently biking on the major corridors in the community such as Warrensville Center & Libby, and how the bike lane would need to be protected to encourage its usage and truly protect riders.

13. Concern was also raised about where a bike lane on Libby between Warrensville Center & Northfield Roads ultimately connects to when traveling west on Libby, as the roadway width is reduced once Libby crosses Warrensville Center. This could present an opportunity for a bike and pedestrian connection to be enhanced to Stafford Park via the currently restricted Stockton Ave.

14. Collectively the group was very receptive of the integration of bike lanes into the street network, with Mayor Blackwell stating that the community needs to adapt to include these component as it evolves.

15. WSP stressed the importance of the transit center within the community, and stated that the 41 bus line is one of RTAs most heavily used routes. Southgate Transit center is a significant asset for the community to harness.

Parking Analysis

16. Pedestrian experience throughout the study area is challenged. This is largely because this area is built around the use of the vehicle, with many obstructed paths, disconnected site lines and pathways, and large parking lots between the major corridors and businesses' front doors.

17. With over 5,500 parking spaces located in the southern half of the study area, between Libby & Rockside, there is enough impervious surface occupied by parking to fit about 58 football fields within it. A shocking statistic for most in the room, and while it represents a challenge, it also reveals an opportunity to repurpose this excess land for a higher and more beneficial use.

Early Takeaways

18. In summary, the consultant team has identified the presence of significant assets to be leveraged, such as Stafford Park, key anchors in the shopping district, Giant Eagle & Home Depot, as well as the Southgate Transit Center. Traffic Analysis supports the roadway enhancements that the community prefers, however identity and feeling of arrival are currently missing from the district and should be considered as well. Investment continues to occur along the central corridor of the district, while the Mayor continues to support efforts to enhance elements that elevate community pride.

'Your Experience'

19. While the experience at Stafford Park and the Southgate Shopping Center will be different, there is no reason why they should not be equal in quality. This notion was used to lead into the

closing group exercise, where images of Warrensville Center Road at the Libby Rd & Stockton Ave intersections were shown in their current state. At each image the group was asked to state what they saw or felt when looking at these 3 images:

a. Image 1 – Warrensville Center Rd looking South to Libby Rd
   Reactions:
   i. Desire to drive fast
   ii. Lots of pavement
   iii. Large curb cuts
   iv. Nothing eye catching
b. Image 2 – Warrensville Center Rd and Libby Rd
   Reactions:
   i. Long crosswalks
   ii. Unsafe curb cut at the corner of the block
   iii. Well landscaped Key Bank site
c. Image 3 – Warrensville Center Rd and Stockton Ave
   Reactions:
   i. Noticeable barrier at Stockton Ave
   ii. Unorganized parking at Auto Parts store
   iii. Back of house feeling, with noticeable debris

20. Immediately following each of these images a hand sketched rendering over the existing image was shown, demonstrating the possibilities at this critical node in the community. Attendees seemed open to the concepts presented and looked forward to there continued development.
    a. Image 1 – Warrensville Center Rd looking South to Libby Rd
       Reactions/Comments:
       i. Enhanced tree lawn and continued wayfinding, starts to help a establish a sense of arrival
       ii. Defined edges (ornamental fencing) between parking and pedestrian path, as well as narrower driveways allow for a safer pedestrian experience
    b. Image 2 – Warrensville Center Rd and Libby Rd
       Reactions/Comments:
       i. Vertical striping at the crosswalk has been found to be more noticeable for motorists, creating a safer crossing experience
       ii. A signaled mid-block crossing helps create safer movement across Warrensville at a location where crossing is already naturally occurring
    c. Image 3 – Warrensville Center Rd and Stockton Ave
       Reactions/Comments:
       i. Potential to function as a trailhead-like connection to the existing path adjacent to the middle school, breaking down the existing barrier place
       ii. Both the auto parts and middle school building edges allow for wayfinding/mural elements to be placed, enhancing the prominence and connection here, and ultimately to Stafford Park.

Gift to your Community

21. At the outset of our conversation a piece of a paper was shared with attendees that asked them to think of a gift they would like to give to their community. As the meeting culminated, attendees were asked to write their thoughts on this paper and turn in their gift(s) to the community. Here are the gifts that were received:

    a. Greenspace & Recreation
        i. Functional Stafford Park
        ii. Pool
        iii. Rec Center
        iv. Outdoor Theater
        v. Amphitheater in park
    b. Improved Connections/Corridors
        i. Extension of Blue line to Southgate
        ii. Wayfinding Signage
        iii. Safer Driveways in Commercial Districts
        iv. Trailheads
        v. Safer Crosswalks
    c. Economic Development
        i. New Businesses – not food or clothing
        ii. Funding
    d. Housing
        i. Apartments, Senior, on Southgate Blvd

Next Steps

1. Incorporate input and perspective from the community in the continued development of conceptual imagery/recommendations, which will ultimately to be reviewed by the city and stakeholders (CA)

2. Schedule next public discussion to present further developed concepts & recommendations, and collect feedback from the community (CA + City of Maple Heights)

3. Remain engaged with the stakeholder group & overall community as the project progresses (CA + City of Maple Heights)

If any of the items herein are in conflict with your recollection of what was discussed or if any important elements have been omitted, it would be appreciated if you would contact us immediately. Otherwise we will assume the above items are correct.

CITY ARCHITECTURE, INC

Juleian Curtis
Assistant City Planner

Enclosure: Maple Heights TLCI Community #1 Presentation – 2019-12-02 email.pdf

Copies to: All Attendees
File

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

COMMUNITY MEETING #1 – DECEMBER 2, 2019

Welcome / Sign-In

Project Team Introductions

Project Overview

Case Studies

What We've Done So Far

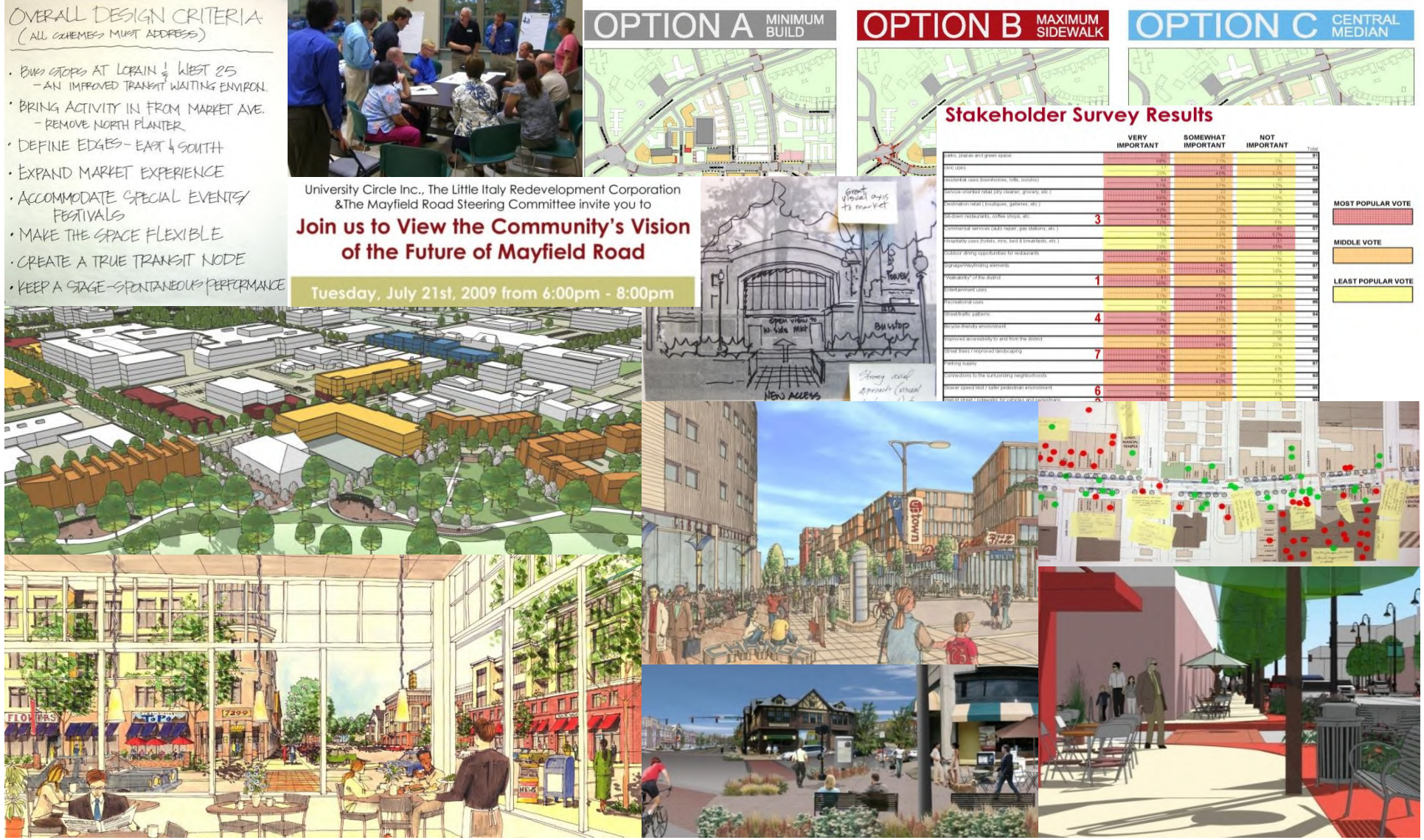
Group Activities

Early Takeaways & Ideas

A Gift From You!

AGENDA


If you could give anything to your community, what would it be?



A Balanced Planning Process

City Architecture – WSP– 4ward Planning Inc.

Transportation for Livable Communities Initiative (TLCI)

Transportation --- *moving **people** safely via all modes of transit*

Livable --- *providing a quality environment for **people** to enjoy*

Communities --- *enhancing **people's** experience within a place*

Initiative --- *causing action to occur*

Primary Objectives:

Developing transportation projects that provide **more travel options**

Promoting reinvestment in underutilized or vacant/abandoned properties

Supporting economic development

Ensuring that the **benefits of growth and change are available to all** members of a community

Enhancing regional cohesion

Providing people with **safe and reliable transportation** choices

Program Impact:

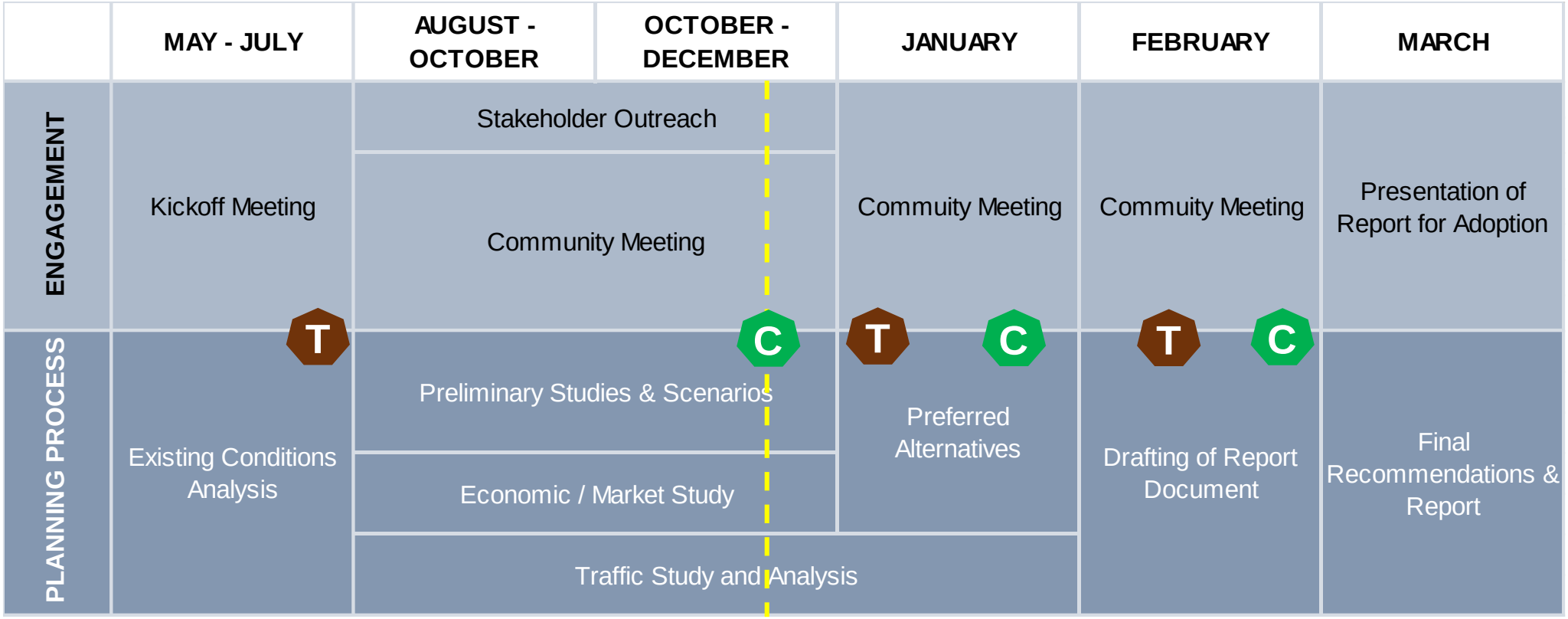
127 planning grants have been awarded since **2006**

Over **$6 million dollars** in total investment in TLCI planning projects

Over **30 implementation grants** awarded since **2016**

Between 2006-2011, 86% of transportation projects in NOACA's service area were recommended through TLCI plans, totaling over **$152 million dollars** in investment

Public input continues to shape the planning and implementation process



T Core Team Meeting (3 to 4 total)

C Community Meeting / Presentation (3 total sessions)

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

PROJECT TIMELINE

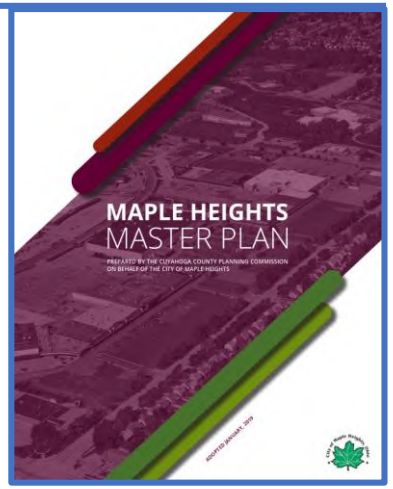
OVERLAYING & COORDINATING PLANNING

Various scales & initiatives

MAPLE HEIGHTS MASTER PLAN

Mid 2017 to Early 2019

CITYWIDE



TRANSPORTATION FOR LIVABLE COMMUNITIES: SOUTHGATE CONNECTIVITY STUDY

CORE COMMERICAL DISTRICT

May 2019 to March 2020

PRIORITY ACTIONS / IMPLEMENTABLE EFFORTS FOR THE CITY OF MAPLE HEIGHTS

March 2020 to March 2025

TARGETED INVESTMENT

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

OUR APPROACH

TRANSPORTATION PLANNING IMPACT

Center Ridge Road

COMPLETE STREETS & CORRIDOR ENHANCEMENT PLAN

ISSUED: APRIL 12, 2017

City Architecture · WSP · PARSONS BRINCKERHOFF · NORTHEAST OHIO · AISLINN Consulting LLC

A COLLABORATION BETWEEN THE CITIES OF FAIRVIEW PARK & ROCKY RIVER

Signage & enhancements can convey the district's brand & identity

Gateway Signage - $$

- LOCATE IN MEDIAN (LONG TERM)
- INSTALL ALONG RIGHT-OF-WAY (NEAR TERM) AND LANDSCAPE TO DEMONSTRATE & ESTABLISH DISTRICT ENTRANCE

Effective parking lot buffers can refocus the streetscape away from vehicular traffic

Parking Lot Frontage - $$$$

- BLOCK OFF PARKING SPACES AS A TEMPORARY MEASURE TO TEST IDEAS AND REDUCTION
- INCORPORATE PUBLIC ART AS SCREENING ELEMENTS - HOLD COMPETITION TO PROVIDE OPPORTUNITIES FOR RESIDENTS

Landscaped medians can reduce pavement, slow traffic and serve as a gateway element

Median Element - $$$

- REDUCE PAVEMENT
- ENGINEER TO MINIMALLY IMPACT SURFACE DRAINAGE
- COORDINATE WITH DRIVEWAYS
- CAN BE USED TO LIMIT LEFT TURN MOVEMENTS

Downtown Euclid TLCI

Transportation and Redevelopment Plan

Euclid, Ohio
December, 2007

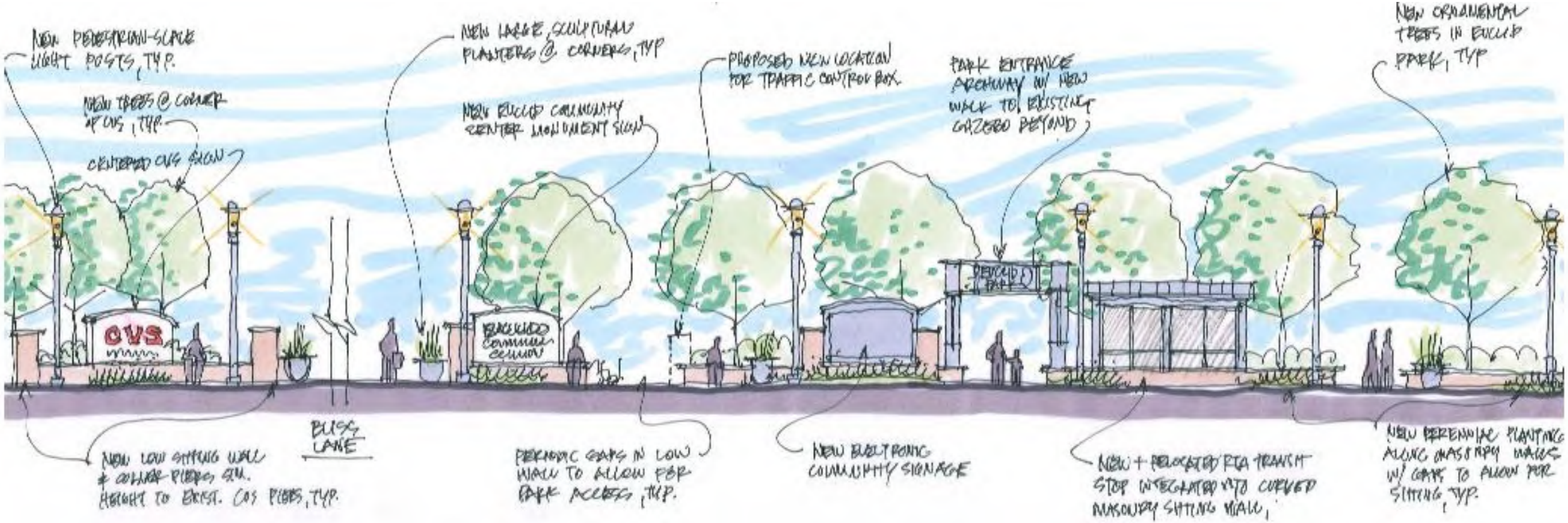
EUCLID

NOACA

Baker

city architecture

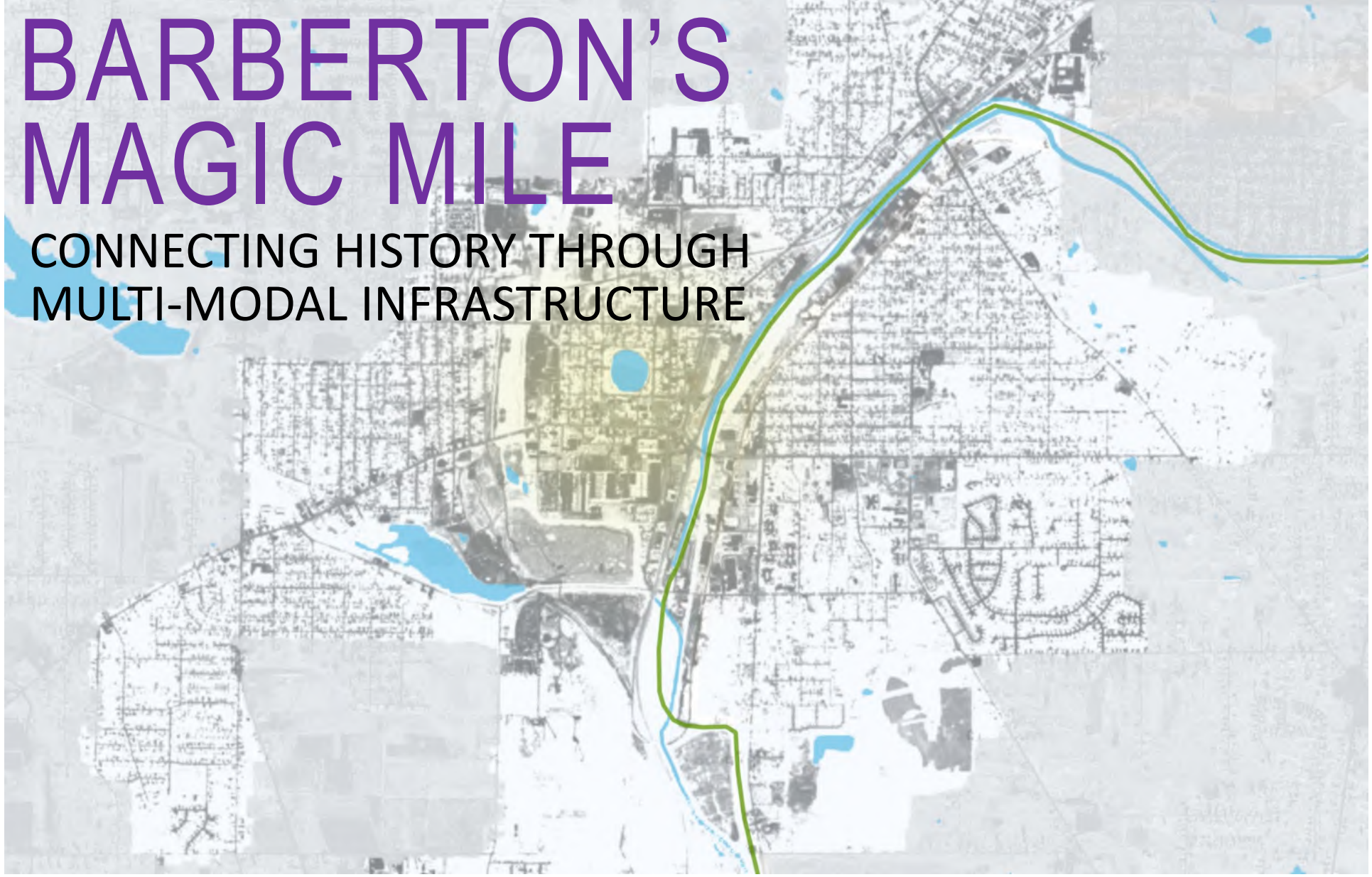
LAKESHORE BABBITT STREETSCAPE



COMPLETED APRIL 2009

BARBERTON'S MAGIC MILE

CONNECTING HISTORY THROUGH MULTI-MODAL INFRASTRUCTURE



City Architecture

amats

BARBERTON COMMUNITY FOUNDATION

NOVEMBER 2014

COMPLETED JUNE 2015

PROPOSED

COMPLETED JUNE 2015

WHAT WE'VE DONE SO FAR

- What's next for Cleveland's Eastern Suburbs…?
- The Age of Amazon… and the fate of the traditional mall
- Anticipating change… future-proofing your community

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

PROJECT CONTEXT

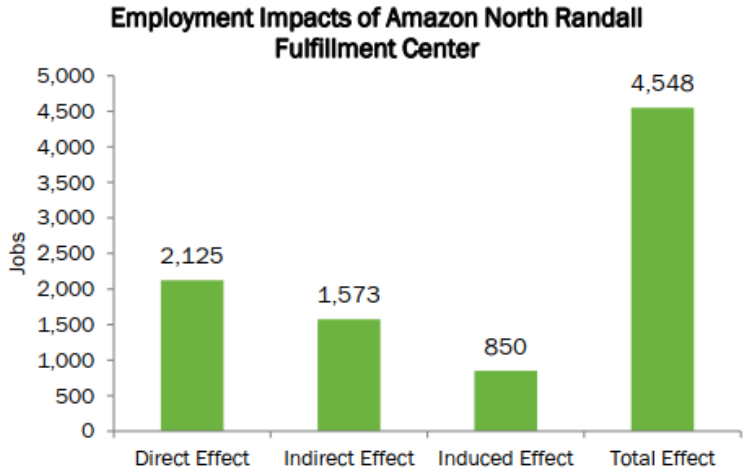
Market Study Summary

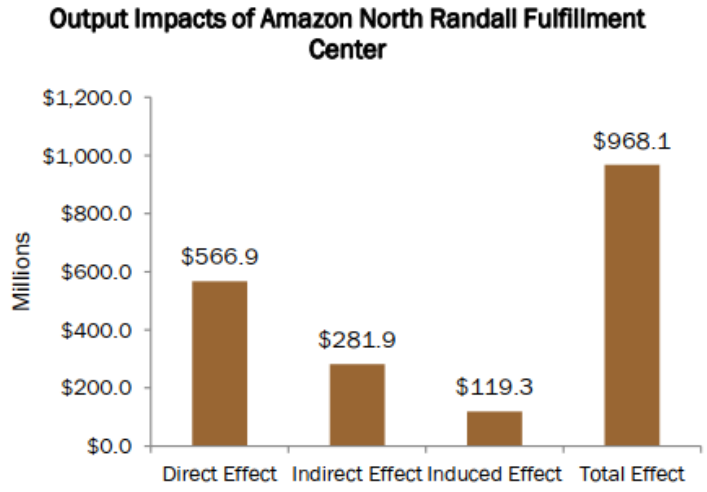
- *When Amazon jumps in your pool who gets wet?*

- *Opportunities for employment tied to services Amazon needs for its operations – ex. Delivery Drivers and Machinery Repair*

- *Accommodating for a continued increase in demand for housing for a variety of incomes*

Analysis: Annual Operations (2019)





Direct, Indirect, and Induced Effects of Amazon North Randall Fulfillment Center

	Employment	Labor Income (Millions)	Output (Millions)
Direct Effect	2,125	$100.6	$566.9
Indirect Effect	1,573	$90.7	$281.9
Induced Effect	850	$41.5	$119.3
Total Effect	4,548	$232.8	$968.1

Top Five Industries by Indirect and Induced Employment

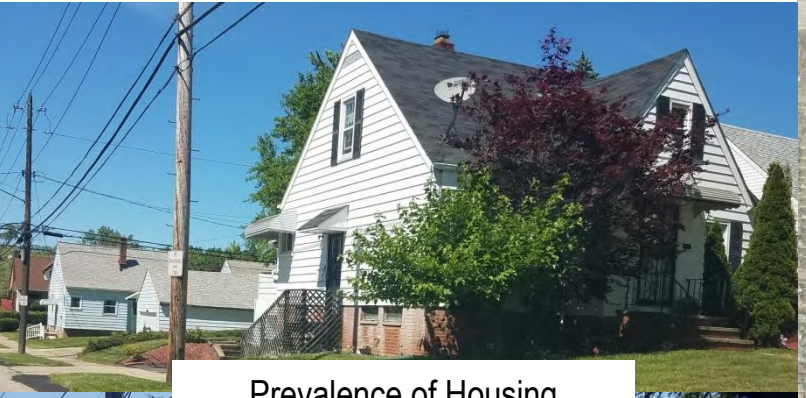
Retail - Nonstore retailers	2,138
Real estate	309
Warehousing and storage	124
Employment services	116
Wholesale trade	78

Top Five Industries by Indirect and Induced Output

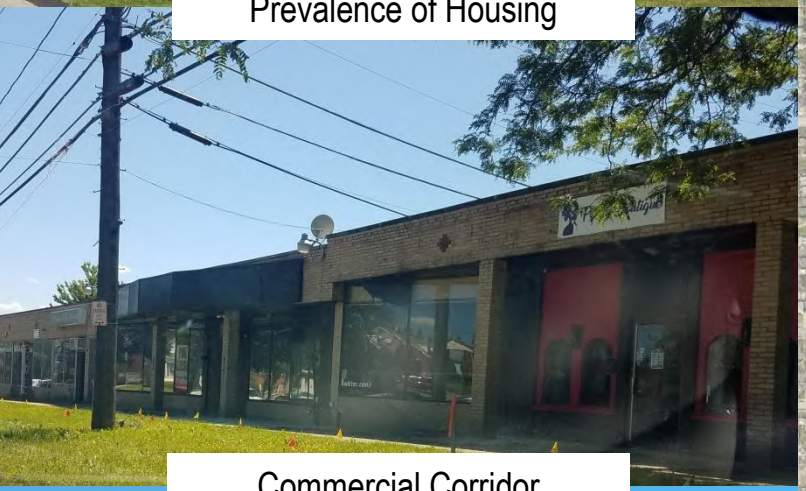
Retail - Nonstore retailers	$568,908,296
Real estate	$81,205,210
Wholesale trade	$18,491,889
Management of companies and enterprises	$16,927,081
Monetary authorities and depository credit intermediation	$13,333,347

Source: IMPLAN, 4ward Planning, 2019

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY
MARKET STUDY



Prevalence of Housing

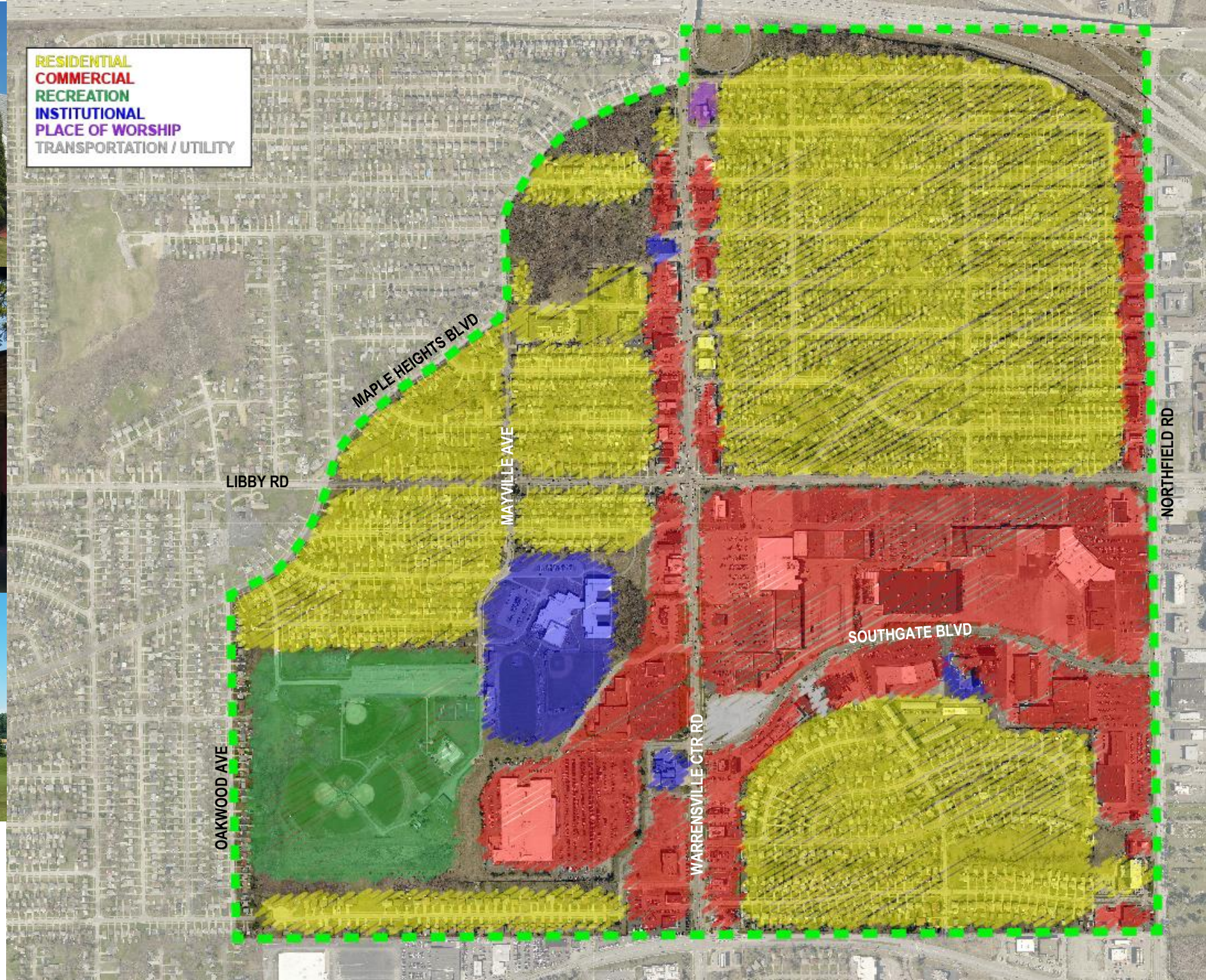


Commercial Corridor

Green/Park Space

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

LAND USE



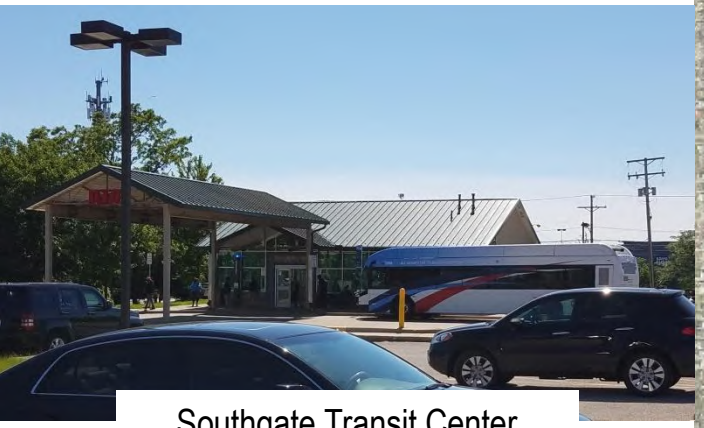
Traffic Counts

Excess Pavement Analysis

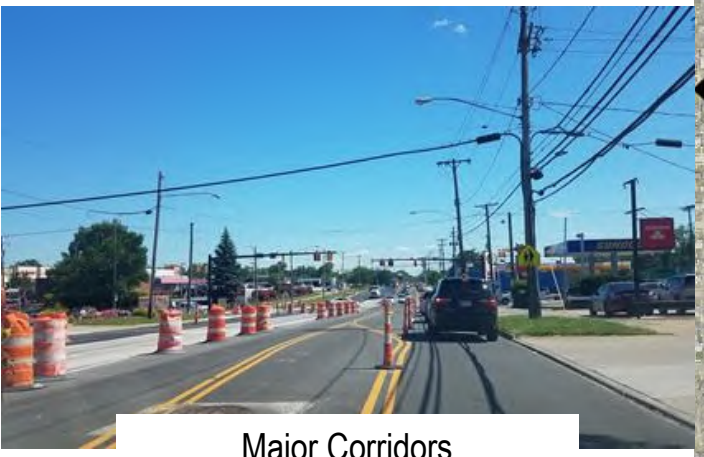
Southgate Transit Center (GCRTA)

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

TRAFFIC STUDY



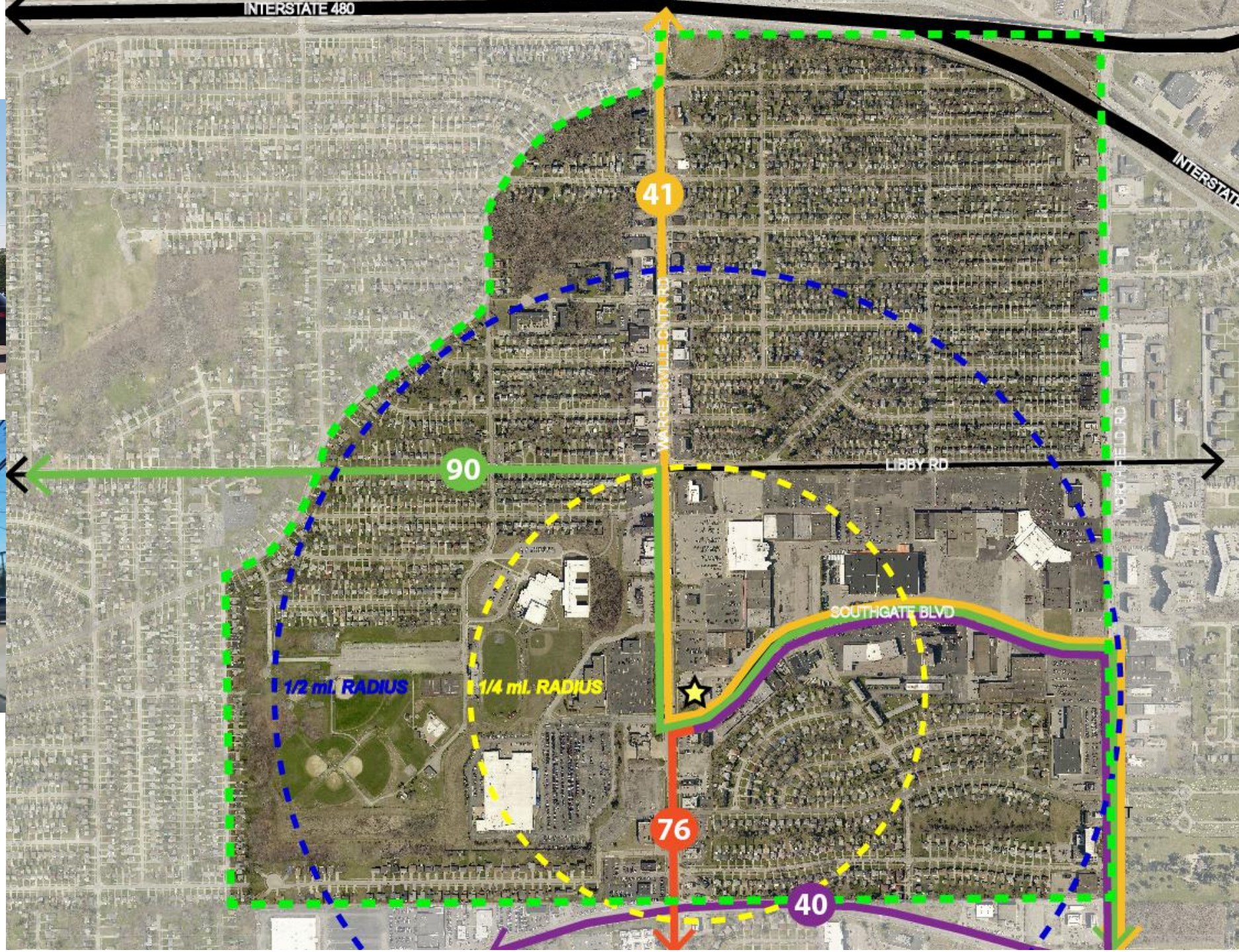
Southgate Transit Center



Major Corridors

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

TRANSPORTATION



MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

ACTIVITY #1 – Connecting to Southgate

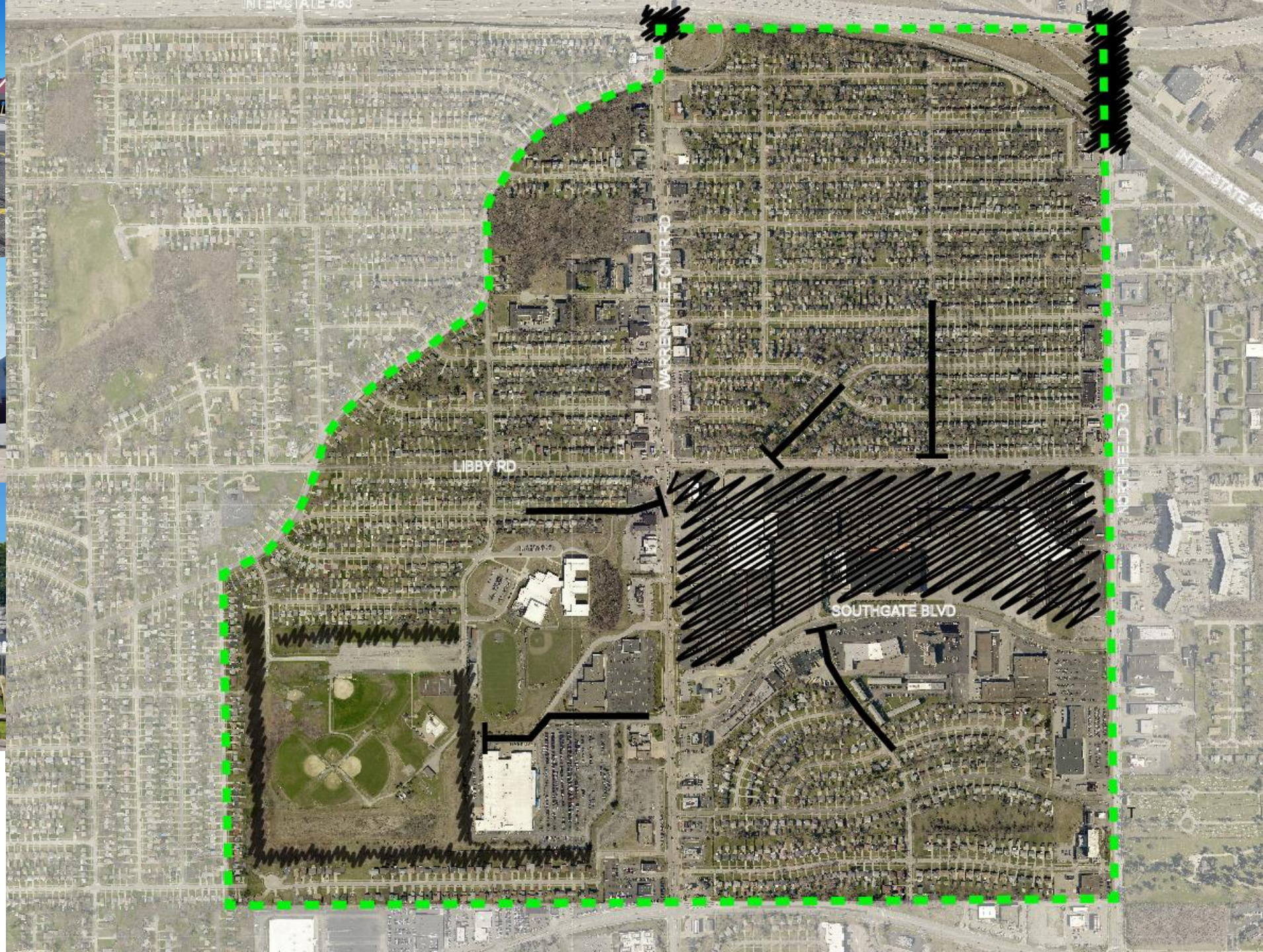
Island Effect - Southgate

Path Obstructions

Visual Disconnect

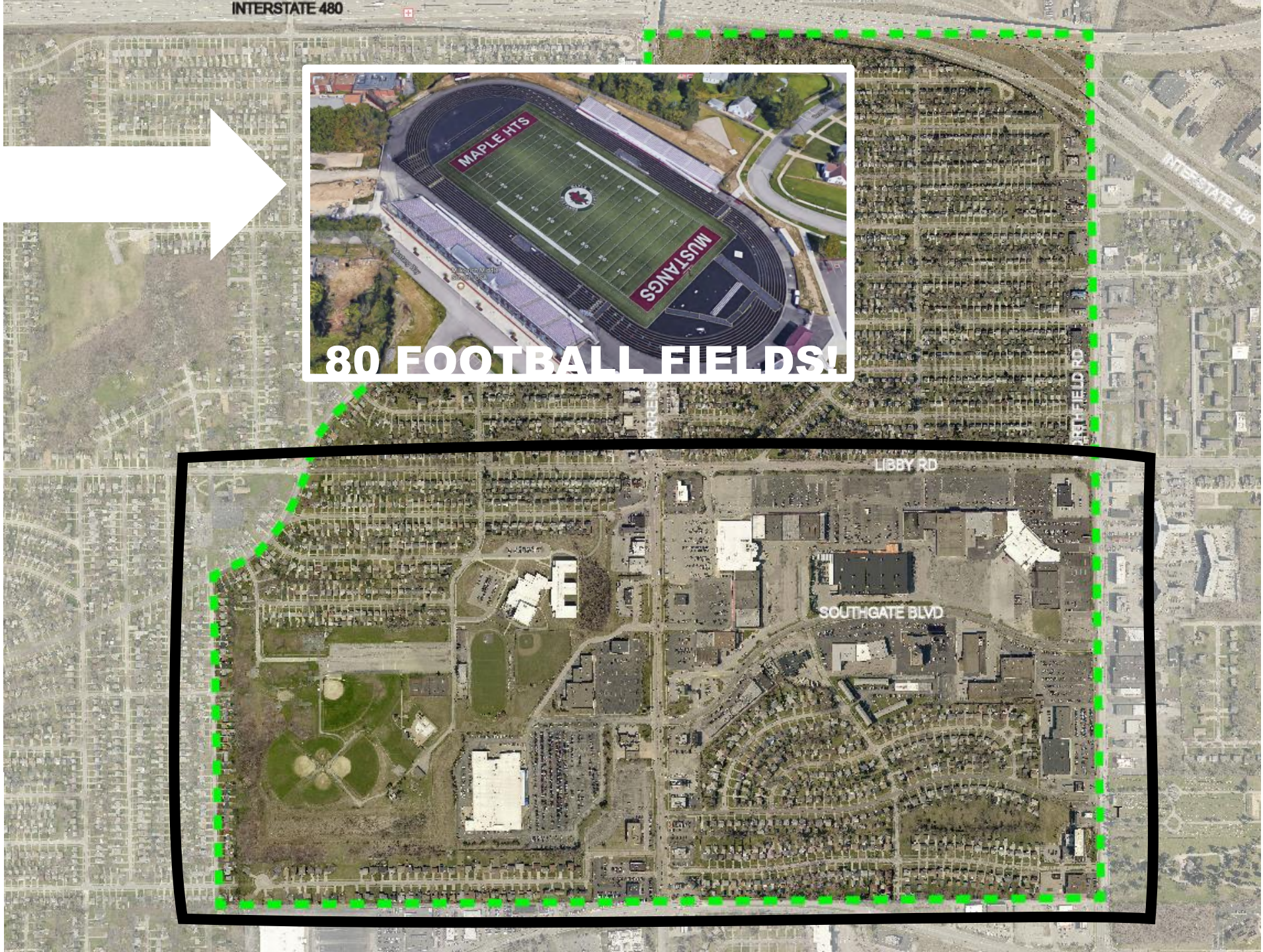
MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

BARRIERS



OVER 5,500
PARKING SPACES

ROUGHLY 110
ACRES OF PARKING BETWEEN LIBBY & ROCKSIDE



MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY
PARKING STUDY

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

ACTIVITY #2 – Prioritizing Improvements

EARLY TAKEAWAYS

Stafford Park is a tremendous **asset**, but **lacks connection** to the community

Parking is expansive and perhaps excessive for the needs of the shopping district

Pedestrian experience is unfavorable, with transportation network favoring the automobile

Presence of **key anchor institutions** in **Giant Eagle** & **Home Depot**

Southgate Transit Center provides unique public transit connection with the Greater Cleveland Area

Commercial District lacks a **sense of arrival**

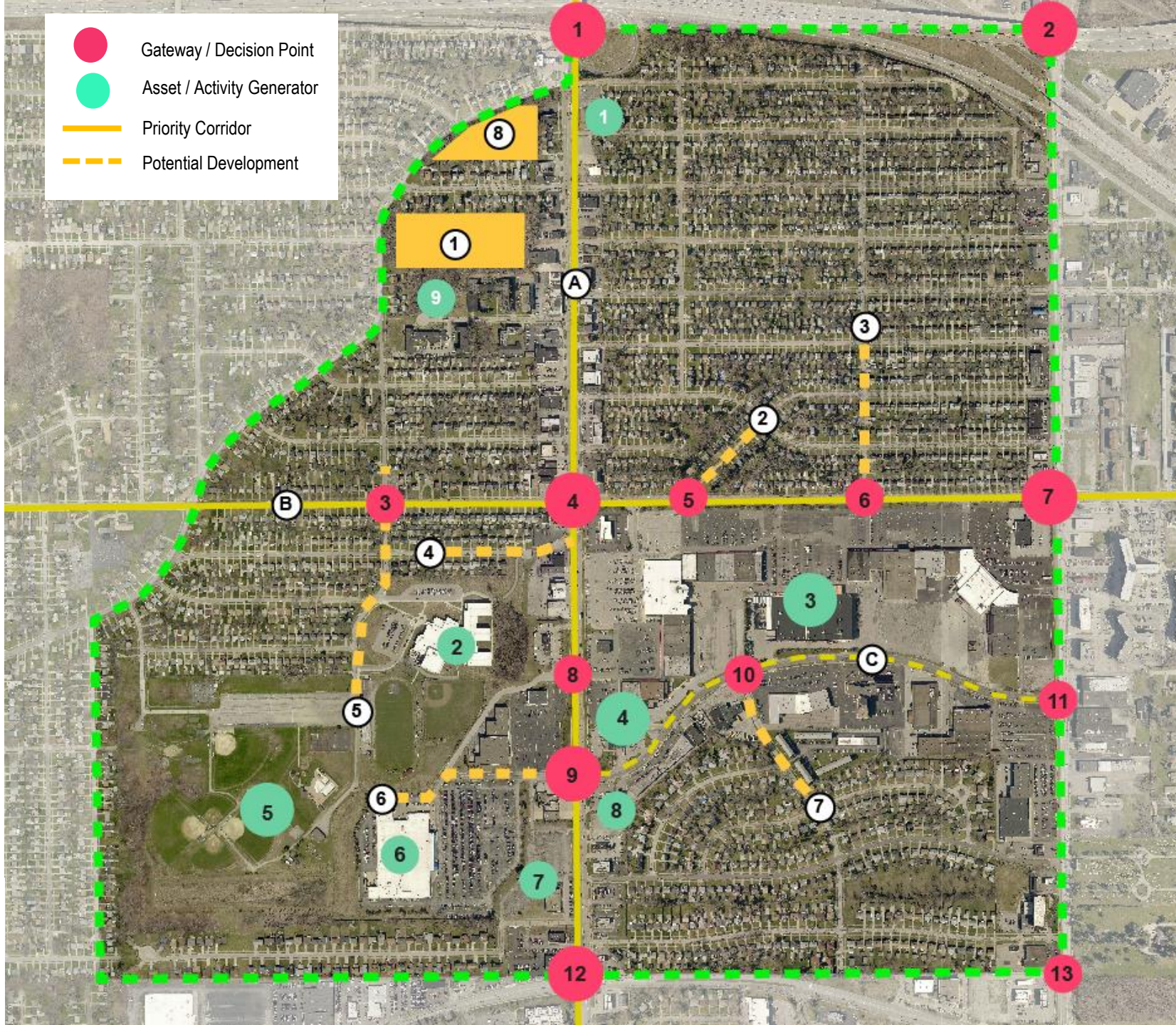
Recently repaved & restriped Warrensville Center Rd, demonstrates **infrastructure investment**

1. Warrensville Ctr Rd & I-480
2. Northfield Rd & I-480
3. Libby Rd & Mayville Ave
4. Warrensville Ctr Rd & Libby Rd
5. Kenyon Dr & Libby Rd
6. Prayner Rd & Libby Rd
7. Northfield Rd & Libby Rd
8. Warrensville Ctr Rd & Wendy's Intersection
9. Warrensville Ctr Rd & Southgate Blvd
10. Sunnyslope Rd & Southgate Blvd
11. Northfield Rd & Southgate Blvd
12. Warrensville Ctr Rd & Rockside Rd
13. Northfield Rd & Rockside Rd

A. Warrensville Ctr Rd
B. Libby Rd
C. Southgate Blvd

1. Warrensville Rd Community Baptist Church
2. Milkovich Middle School
3. Southgate USA
4. Southgate Transit Center
5. Stafford Park
6. Ford Dealership
7. 'New' KFC
8. 'New' Checkers/Rally's
9. Rid-All Green Partnership

1. Clare Ave
2. Kenyon Dr
3. Prayner Rd
4. Stockton Ave
5. Mayville Ave
6. Southgate Blvd to Ford
7. Sunnyslope Rd
8. Maple Heights Blvd



MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

WHAT WE'VE LEARNED

YOUR EXPERIENCE

WHAT DO YOU SEE HERE?

WARRENSVILLE CENTER RD looking South to LIBBY RD

STREET TREES
Continue rhythm of trees to create a fullness within corridor

PLACE-MAKING
Enhance arrival to district with unique signage and street furniture

WAYFINDING
Build off current banners and features to distinguish commercial district

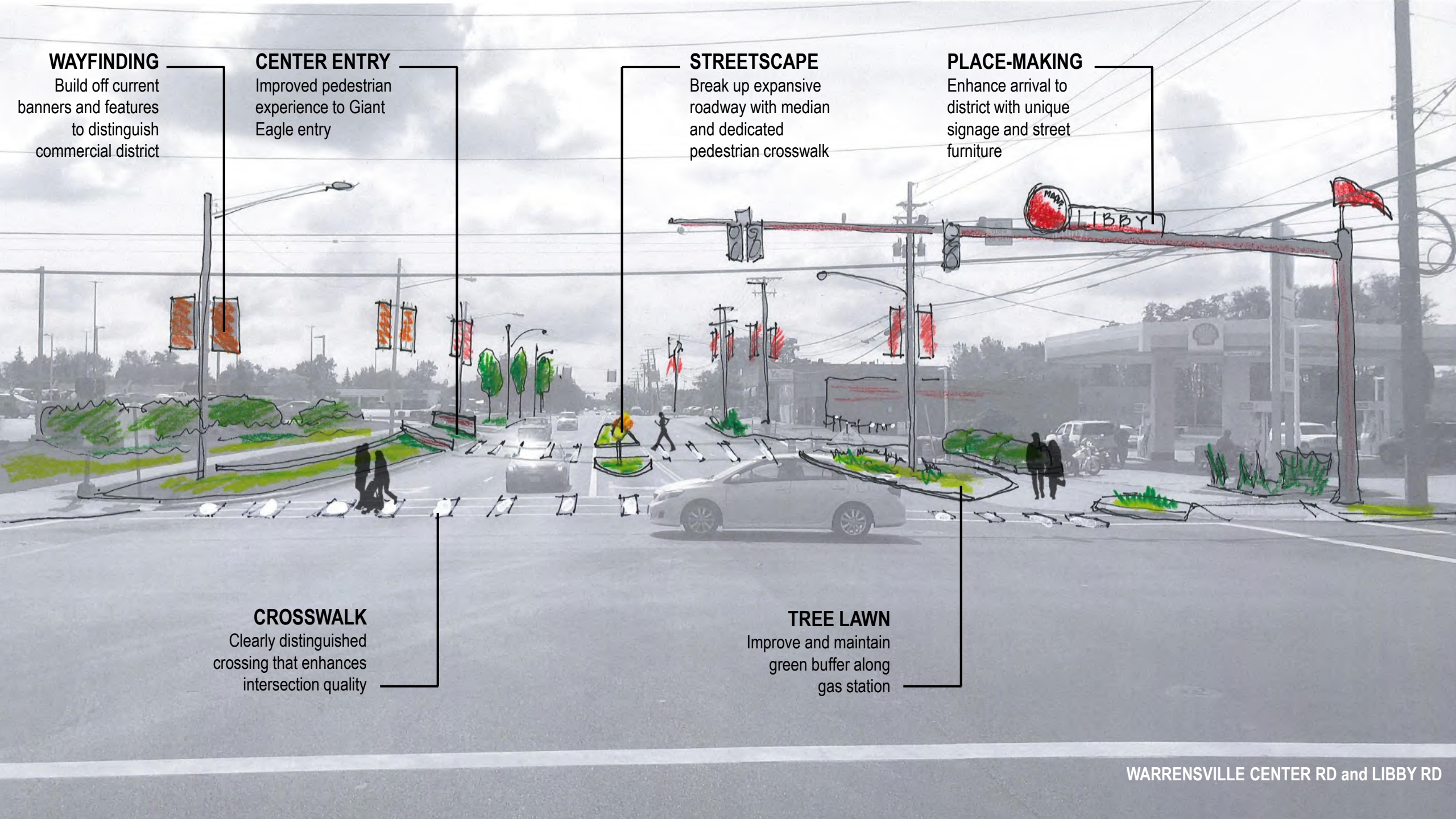
TREE LAWN
Potential to leverage florist to enhance tree lawn aesthetic

STREET TREES
Continue rhythm of trees to create a fullness within corridor

ORNAMENTAL FENCE
Allow for more of a protective path for pedestrians

WARRENSVILLE CENTER RD looking South to LIBBY RD

WARRENSVILLE CENTER RD and LIBBY RD



WAYFINDING
Build off current banners and features to distinguish commercial district

CENTER ENTRY
Improved pedestrian experience to Giant Eagle entry

STREETSCAPE
Break up expansive roadway with median and dedicated pedestrian crosswalk

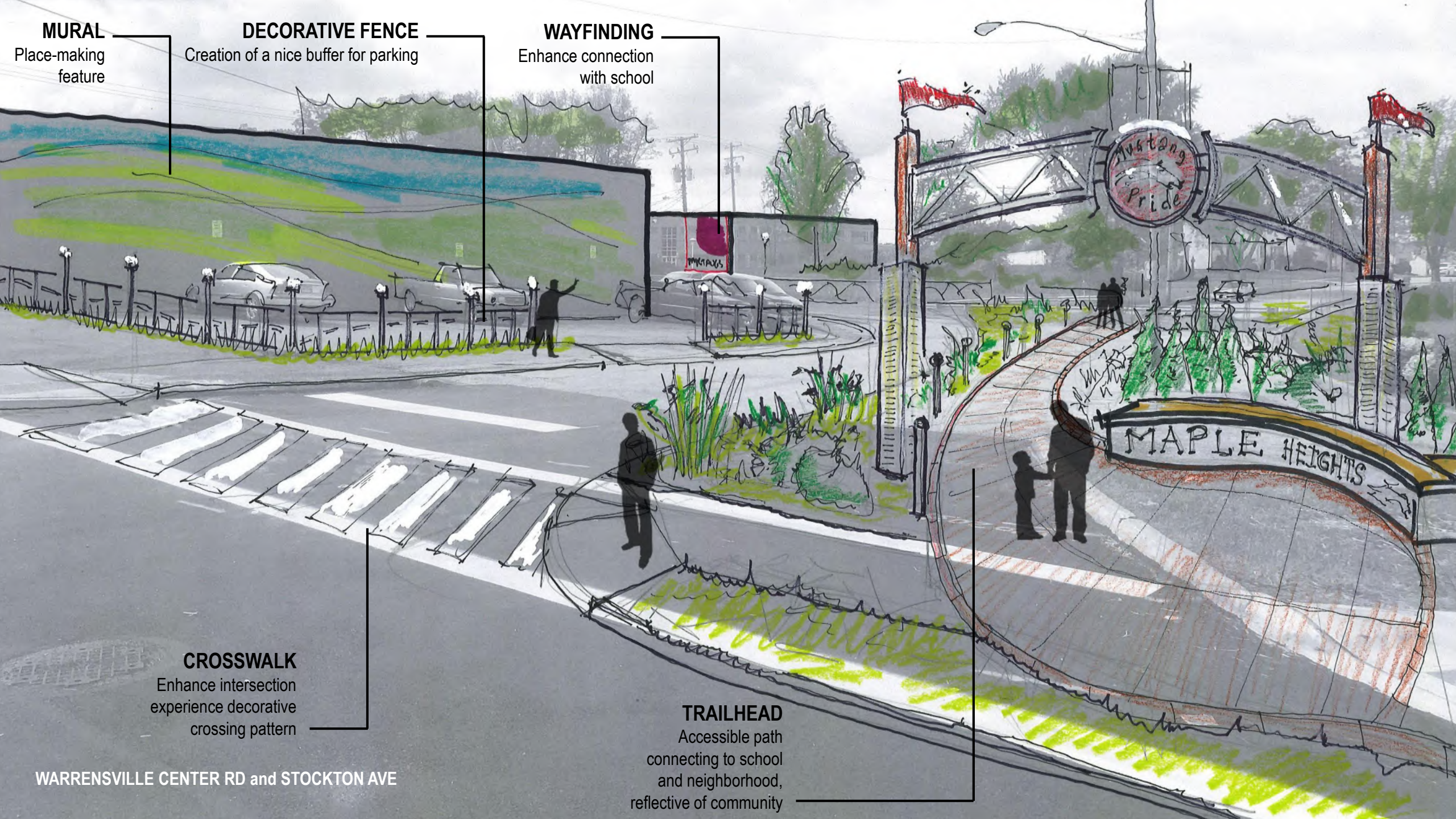
PLACE-MAKING
Enhance arrival to district with unique signage and street furniture

CROSSWALK
Clearly distinguished crossing that enhances intersection quality

TREE LAWN
Improve and maintain green buffer along gas station

WARRENSVILLE CENTER RD and LIBBY RD

WARRENSVILLE CENTER RD and STOCKTON AVE


MURAL
Place-making feature
DECORATIVE FENCE
Creation of a nice buffer for parking
WAYFINDING
Enhance connection with school
Mustang Pride
MAPLE HEIGHTS
CROSSWALK
Enhance intersection experience decorative crossing pattern
TRAILHEAD
Accessible path connecting to school and neighborhood, reflective of community
WARRENSVILLE CENTER RD and STOCKTON AVE


If you could give anything to your community, what would it be?

City Architecture

SIGN-IN SHEET

Meeting: Maple Heights TLCI: Southgate Connectivity Study – Community Meeting #1 Project No. 19024

Date: December 2, 2019 Location: Maple Heights High School - Cafeteria

Name:	Affiliation:	E-Mail Address:
Ron Jackson	Maple Council President	ronjacksonMapleHts@att.net
GEORGETTE VIDMAR	RESIDENT	GGVIDMAR@hotmail.com
TONI JONES	MH City Council	tjonesd2@hotmail.com
LINDA VOPAT	DIRECTOR OF HUMAN SERVICES	lvopat@mapleheightsohio.com
Annette Blackmon	Mayor	
Melissa Thompson	NOACA	mthompson@mpo.noaca.org
Trey Williams	Maple Heights Boys League	Tonnie.Williams517@gmail.com

City Architecture

MEETING SUMMARY

MAPLE HEIGHTS TLCI (#19024)
COMMUNITY MEETING #2

January 28, 2020

Location: Warrensville Road Community Baptist Church (WCBC) Time: 6:00pm – 7:30pm

Attendance:	Affiliation:	E-Mail Address:
Mayor Annette Blackwell	City of Maple Heights	ablackwell@mapleheightsohio.com
Linda Vopat	City of Maple Heights	lvopat@mapleheightsohio.com
Ron Jackson	Maple Heights City Council	ronjacksonmaplehts@att.net
Toni Jones	Maple Heights City Council	tjonesd2@hotmail.com
Richard Trojanski	Maple Heights City Council	trojanskid6@gmail.com
Dana D. Anderson	Maple Heights City Council	d4.councilwoman.anderson@gmail.com
Tanglyn Madden	Maple Heights City Council	
Edwina Agee	Maple Heights City Council	eawa44137@sbcglobal.net
Tina Stafford-Marbury	Maple Heights Planning & Zoning Commission	homewood44137@gmail.com
Charlie Keenan	Maple Heights City School District	
Georgette Vidmar	Maple Heights Resident	ggvidmar@hotmail.com
Regina Adams	Maple Heights Resident	adams.regina45@gmail.com
Cheryl Clemons	Maple Heights Resident	
Linda Sekura	Maple Heights Resident	lsekura@aol.com
Monique Thompson-Hale	Maple Heights Resident	monolana@sbcglobal.net
India Daniel	Maple Heights Resident	india.triplett@yahoo.com
Timothy Tatum	Maple Heights Resident	lifthimup@yahoo.com
Carol Brown	WCBC	
Maryann Freeman	WCBC	maryannfreeman@att.net
Lindia Parnell	WCBC	
Deborah Willford	WCBC	
Avis Pulley		
Joette Wade		
Tariq Shabazz	Candidate for U.S. Rep	shabazzforusrep2020@gmail.com
Gabriel Shabazz		gbrlepps@gmail.com
Laplace Sterling		laplacest@gmail.com
Lellinndia Spears	U.S. Census Bureau	lellinndia.d.spears@2020census.gov
Grace Galluci	NOACA	
Melissa Thompson	NOACA	mthompson@mpo.noaca.org
Juleian Curtis	City Architecture (CA)	juleian@cityarch.com

Summary of Meeting

Thursday, January 28th marked the second community meeting of three planned for the Maple Heights Southgate Transportation for Livable Communities Initiative (TLCI) planning study. This meeting provided the opportunity for the project team to connect with a wider body of residents, community stakeholders, and interested parties, and collect feedback on challenges, preferred improvements, and aspirations for the Southgate Commercial District.

Maple Heights City Council President, Ron Jackson, provided a brief introduction to the project and project team, while touching on the significance of this opportunity for the City's future. City Architecture then led a discussion that began with introducing the TLCI program, followed by a summary of existing conditions analysis, and a recap of the community input that has been received thus far. The discussion was then opened to the audience, as meeting attendees were asked to share their desires for this area more broadly. As a series of culminating activities, attendees were provided slips to write gifts they would give to their community, while also given the opportunity to vote on priority focus areas and the types of improvements they preferred to see.

Community Feedback

Gift to your Community

Community members were presented with an opportunity to share what gift(s) they would share with their City, specifically to improve/enhance the Southgate Commercial District, below are the thoughts that were received:

- Help City officials communicate with residents. Find ways to connect with residents.
- Assist school board family engagement activities.
- A community of caring individuals that are willing to do what it takes to see the community grow.
- Some mentors to guide our youth into a successful future.
- A community center that will allow families to come and have multiple needs met.
- Strong school systems that offers multiple programs that will teach our children many life skills that go beyond the typical academics
- Diversified housing options
- Expanded outdoor recreation space, example – bike lanes, skating park, walking trails
- Create a destination for Maple Heights, "City Center"
- Pedestrian Friendly, 'Walkability'
- Local jobs/business within Maple Heights to take care of local needs: electric repair, energy efficiency, retro fits
- Within a "community" area in Southgate lot East of Key Bank – green/trees/shade/benches
- Ice cream shop – local Maple business for "tourists/bicyclists" along route + residents
- Be the city of the future and not be left behind: All electric homes with outlets for EVs (electric vehicles), building codes for efficiency and renewable power - ready

Dot Exercise #1 – Ranking Focus Areas

Stafford Park ranked highest among the community, followed by the commercial district's southern gateway at Warrensville Ctr Rd & Rockside Rd, and the Southgate USA shopping center.

- North Gateway – Warrensville Ctr Rd – 5
- North Gateway – Northfield Rd – 1
- Warrensville Ctr Rd – Libby Rd – 0
- Southgate USA – 6
- Stafford Park – 10
- South Gateway – Rockside Rd – 7

Dot Exercise #2 – Transportation

The community demonstrated the most interest in enhancing their crosswalks, and were predominantly drawn to the image that featured the painted crosswalk. Transit waiting environment enhancements and protected bike lanes were also prioritized by participants.

- Bike lanes – 5
- New forms of mobility – 2
- Traffic calming – 3
- Crosswalks – 10

- Transit stop – 6

Dot Exercise #3 – Streetscape, Wayfinding, & Public Art

Interest in the options provided for this exercise were nearly evenly spread, with the public art receiving the most votes. Similar to the transportation board, the community was again drawn to the painted crosswalk image.

- Landscaping enhancements – 7.5
- Wayfinding – 5
- Public art – 8.5
- Gateway elements – 6
- Creative lighting – 6

Notes Taken During Discussion

At the culmination of City Architecture's discussion, Mayor Blackwell helped to encourage attendees to share their desires for the Southgate Commercial District and offer up any topics or items that had not yet been discussed. These notes can be found below:

- Business opportunities for local residents with support
- Trees! Specifically, at gateways and Southgate
- Bike trails/walking paths, Dunham park can be used as a model (Cleveland Metroparks)
- Mixed-Use Housing at Stafford Park and Southgate
- Forest Restoration
- Enhance linkage to Cleveland Metroparks network of parks and trails/paths
- Southgate Transit Center, a connection to major job centers; creating a town center, with a variety of uses, including possibly relocating the city services here to create a campus, transit center a critical piece
- Walkability!
- Outdoor Recreation – Improved opportunities to bike; placemaking and programing spaces for outdoor activities and community gatherings

Next Steps

1. Community Meeting #3 – Warrensville Rd Community Baptist Church, Tuesday, February 25th, 2020 - *TENTATIVE*

If any of the items herein are in conflict with your recollection of what was discussed or if any important elements have been omitted, it would be appreciated if you would contact us immediately. Otherwise we will assume the above items are correct.

CITY ARCHITECTURE, INC

Juleian Curtis
Assistant City Planner

Copies to: All Attendees
File

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

COMMUNITY MEETING #2 – JANUARY 28, 2020

AGENDA

Welcome / Sign-In

Introductions

Project Overview

Our Analysis

What We've Heard So Far

Takeaways & Thoughts

Exploring the Possibilities

Group Activities

A Balanced Planning Process

City Architecture – WSP– 4ward Planning Inc.

Transportation for Livable Communities Initiative (TLCI)

Transportation --- *moving **people** safely via all modes of transit*

Livable --- *providing a quality environment for **people** to enjoy*

Communities --- *enhancing **people's** experience within a place*

Initiative --- *causing action to occur*

Primary Objectives:

Developing transportation projects that provide **more travel options**

Promoting reinvestment in underutilized or vacant/abandoned properties

Supporting economic development

Ensuring that the **benefits of growth and change are available to all** members of a community

Enhancing regional cohesion

Providing people with **safe and reliable transportation** choices

Program Impact:

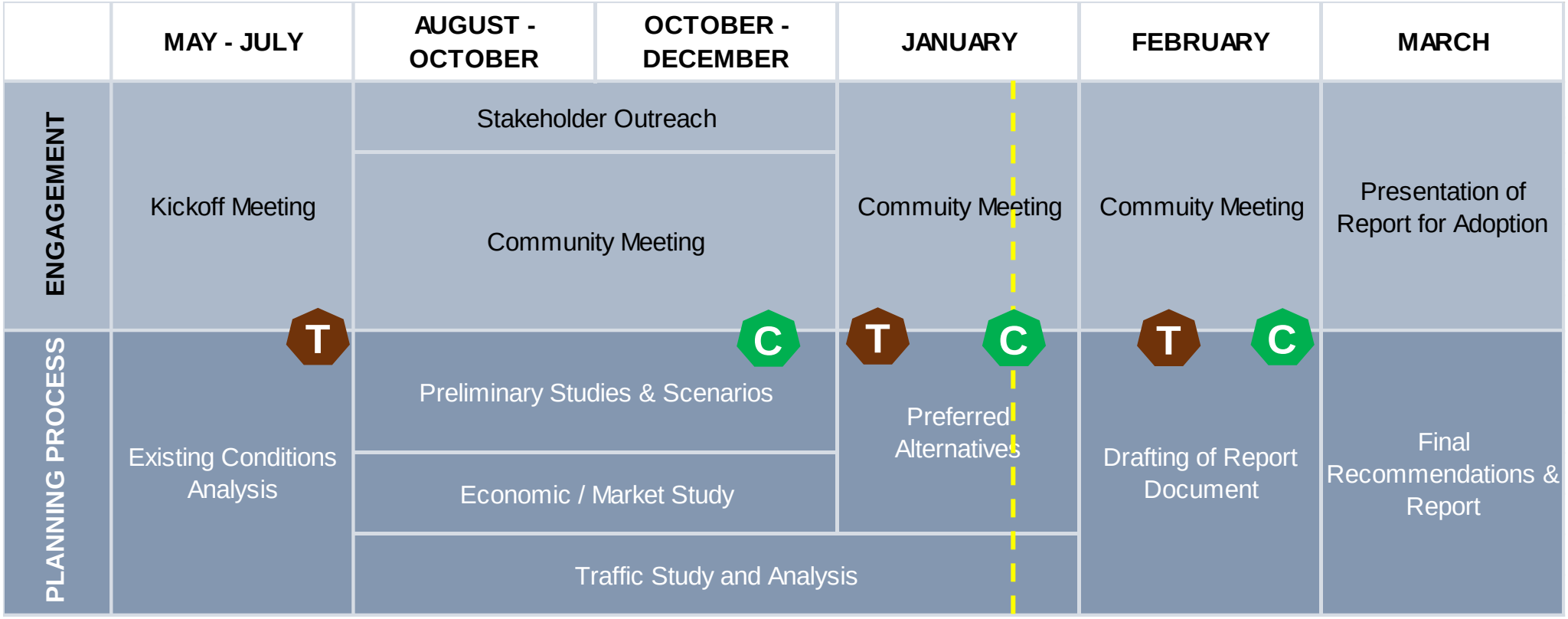
127 planning grants have been awarded since **2006**

Over **$6 million dollars** in total investment in TLCI planning projects

Over **30 implementation grants** awarded since **2016**

Between 2006-2011, 86% of transportation projects in NOACA's service area were recommended through TLCI plans, totaling over **$152 million dollars** in investment

Public input continues to shape the planning and implementation process



T Core Team Meeting (3 to 4 total)

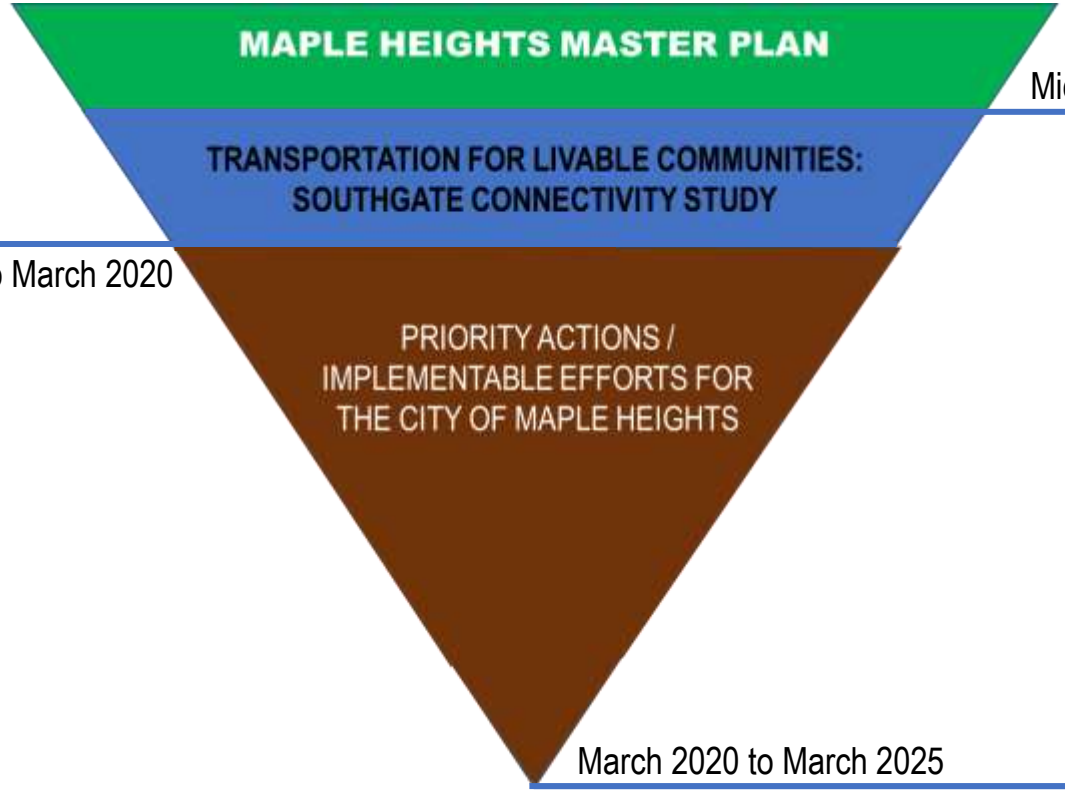
C Community Meeting / Presentation (3 total sessions)

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

PROJECT TIMELINE

OVERLAYING & COORDINATING PLANNING

Various scales & initiatives



CITYWIDE

Mid 2017 to Early 2019

CORE COMMERICAL DISTRICT

May 2019 to March 2020

NOACA
Lake
Geauga
Cuyahoga
Lorain
Medina
Planning For
GREATER CLEVELAND

TARGETED INVESTMENT

March 2020 to March 2025

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

OUR APPROACH

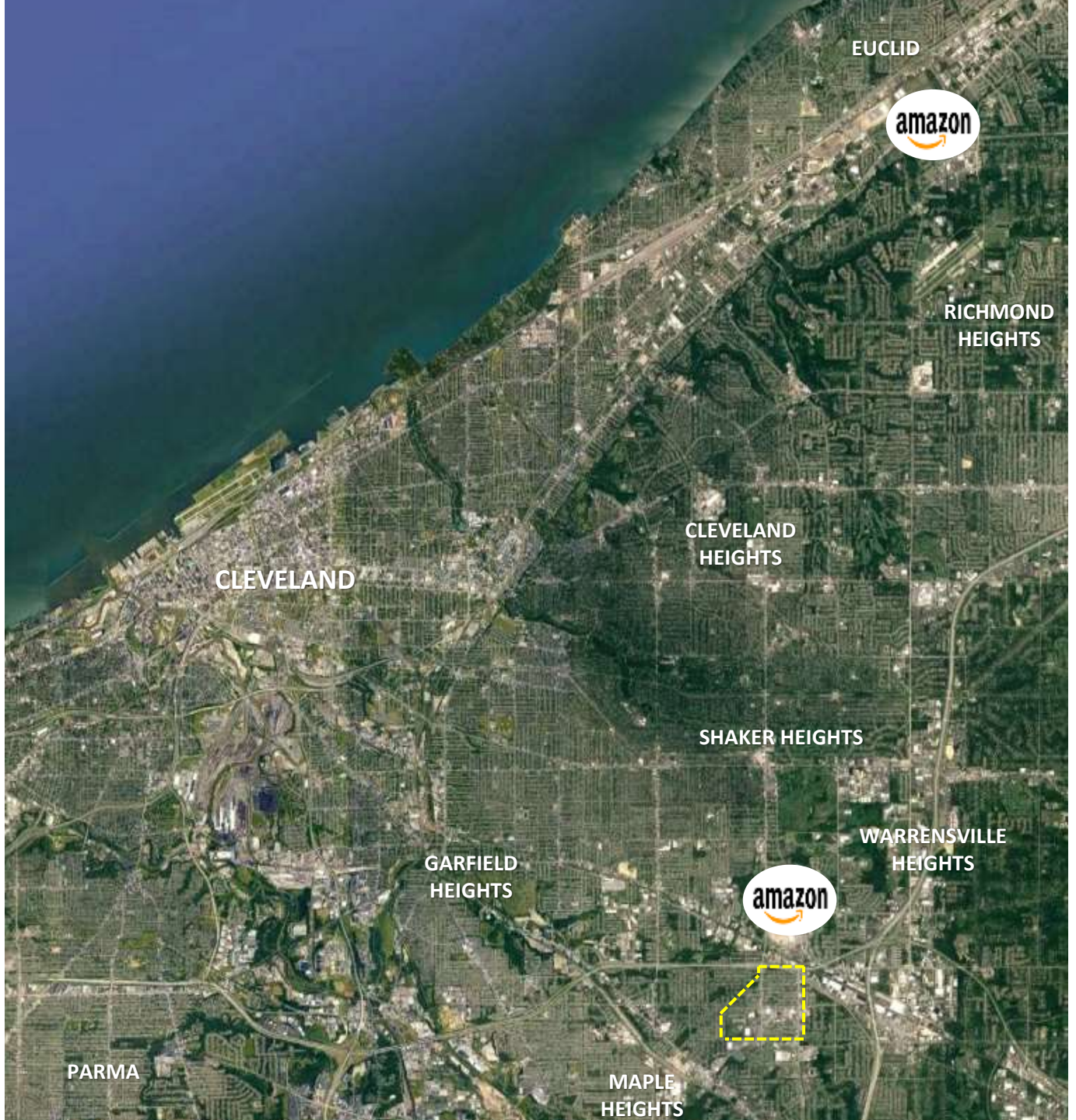
MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

GROUP ACTIVITIES


If you could give anything to your community, what would it be?

WHAT WE'VE DONE SO FAR

- What's next for Cleveland's Eastern Suburbs…?
- The Age of Amazon… and the fate of the traditional mall
- Anticipating change… future-proofing your community



MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

PROJECT CONTEXT

Market Study Summary

- When Amazon jumps in your pool who gets wet?

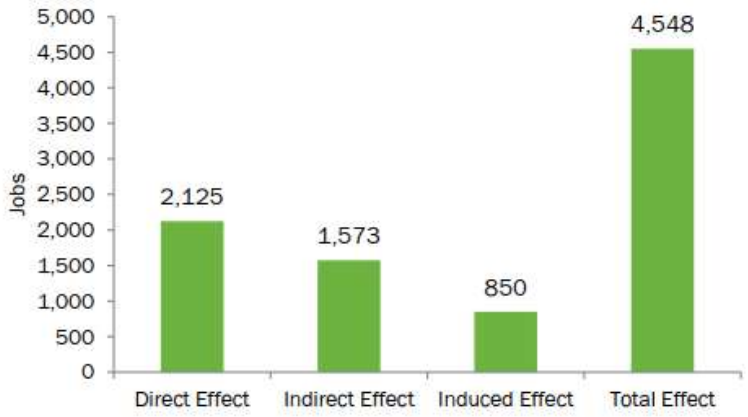
- Opportunities for employment tied to services Amazon needs for its operations – ex. Delivery Drivers and Machinery Repair

- Accommodating for a continued increase in demand for housing for a variety of incomes

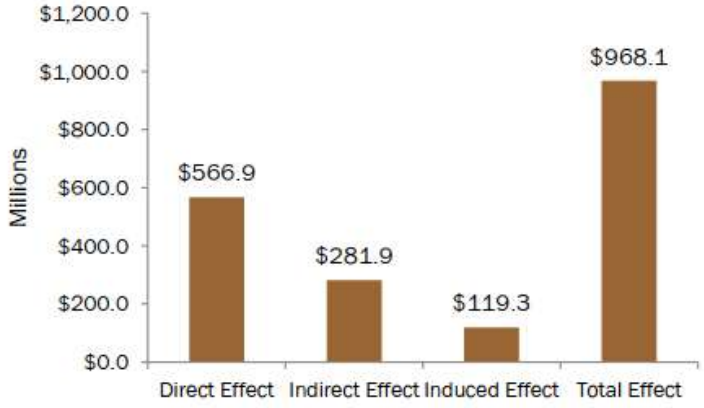
- What share of Amazon's impact can Maple Heights capture?

Analysis: Annual Operations (2019)

Employment Impacts of Amazon North Randall Fulfillment Center



Output Impacts of Amazon North Randall Fulfillment Center



Direct, Indirect, and Induced Effects of Amazon North Randall Fulfillment Center

	Employment	Labor Income (Millions)	Output (Millions)
Direct Effect	2,125	$100.6	$566.9
Indirect Effect	1,573	$90.7	$281.9
Induced Effect	850	$41.5	$119.3
Total Effect	4,548	$232.8	$968.1

Top Five Industries by Indirect and Induced Employment

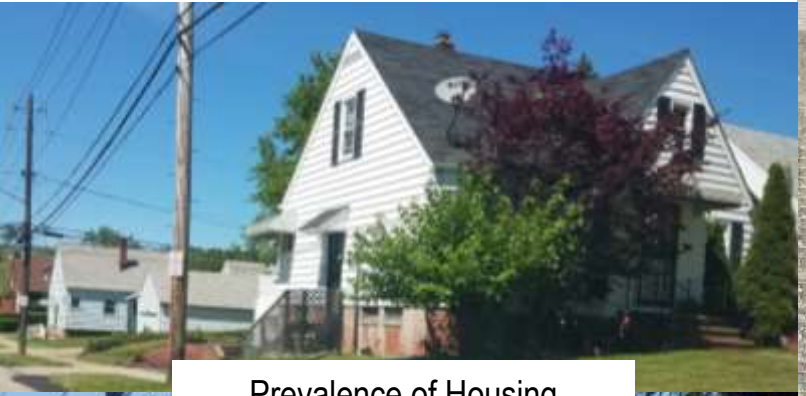
Retail - Nonstore retailers	2,138
Real estate	309
Warehousing and storage	124
Employment services	116
Wholesale trade	78

Top Five Industries by Indirect and Induced Output

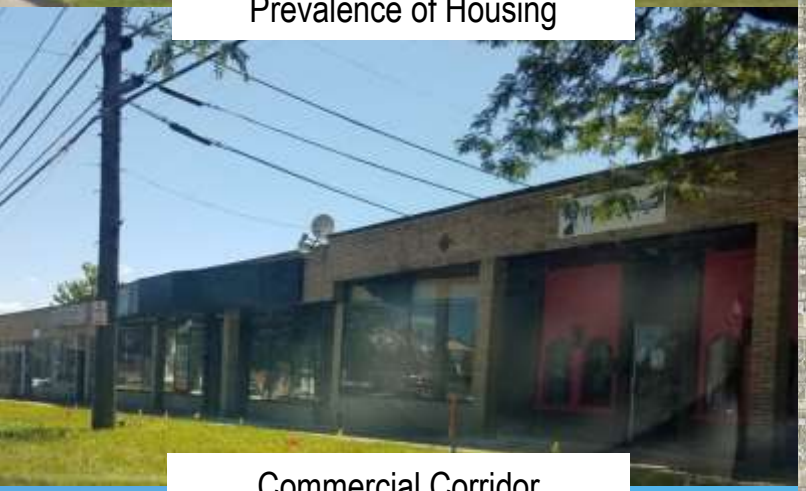
Retail - Nonstore retailers	$568,908,296
Real estate	$81,205,210
Wholesale trade	$18,491,889
Management of companies and enterprises	$16,927,081
Monetary authorities and depository credit intermediation	$13,333,347

Source: IMPLAN, 4ward Planning, 2019

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY
MARKET STUDY



Prevalence of Housing

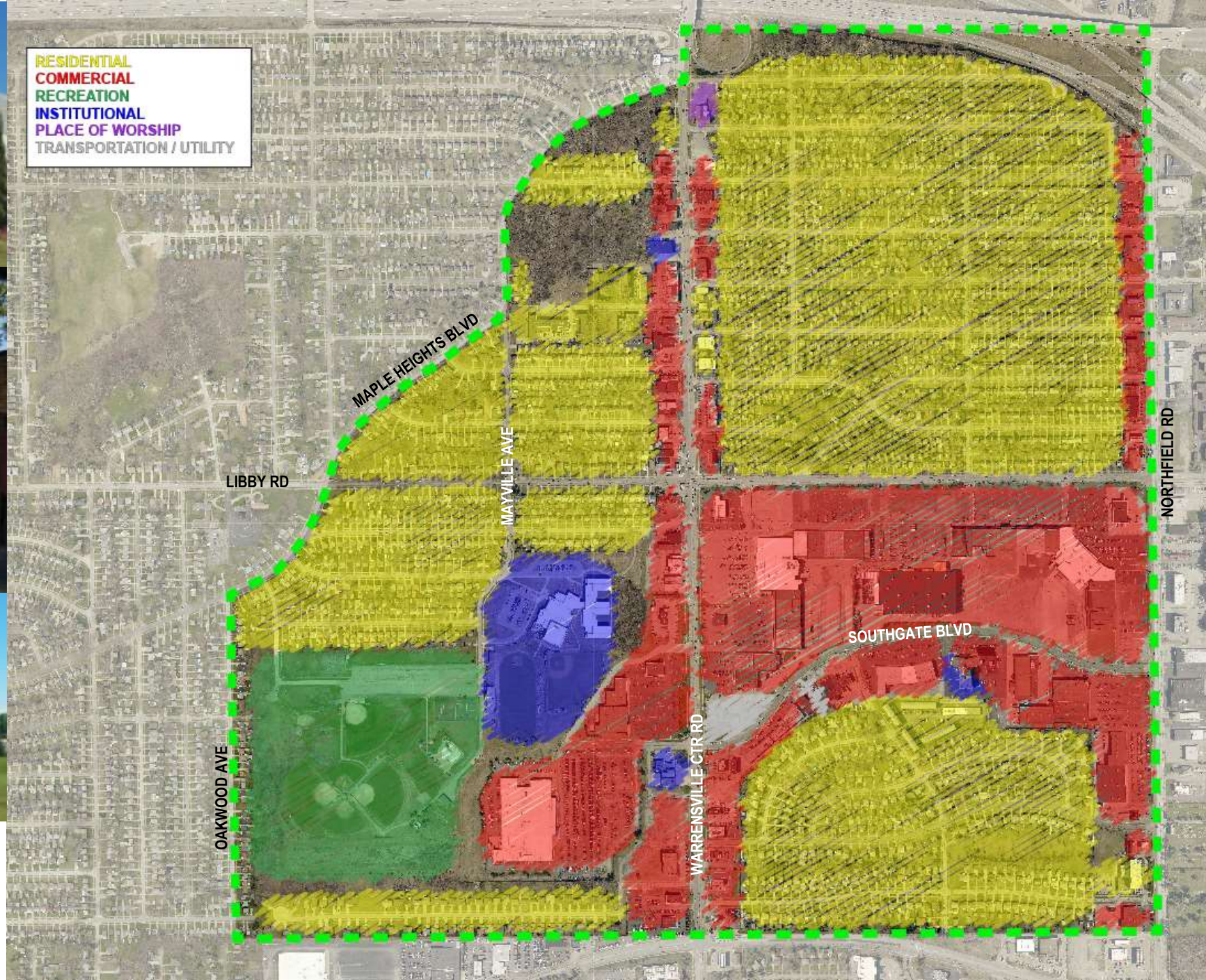


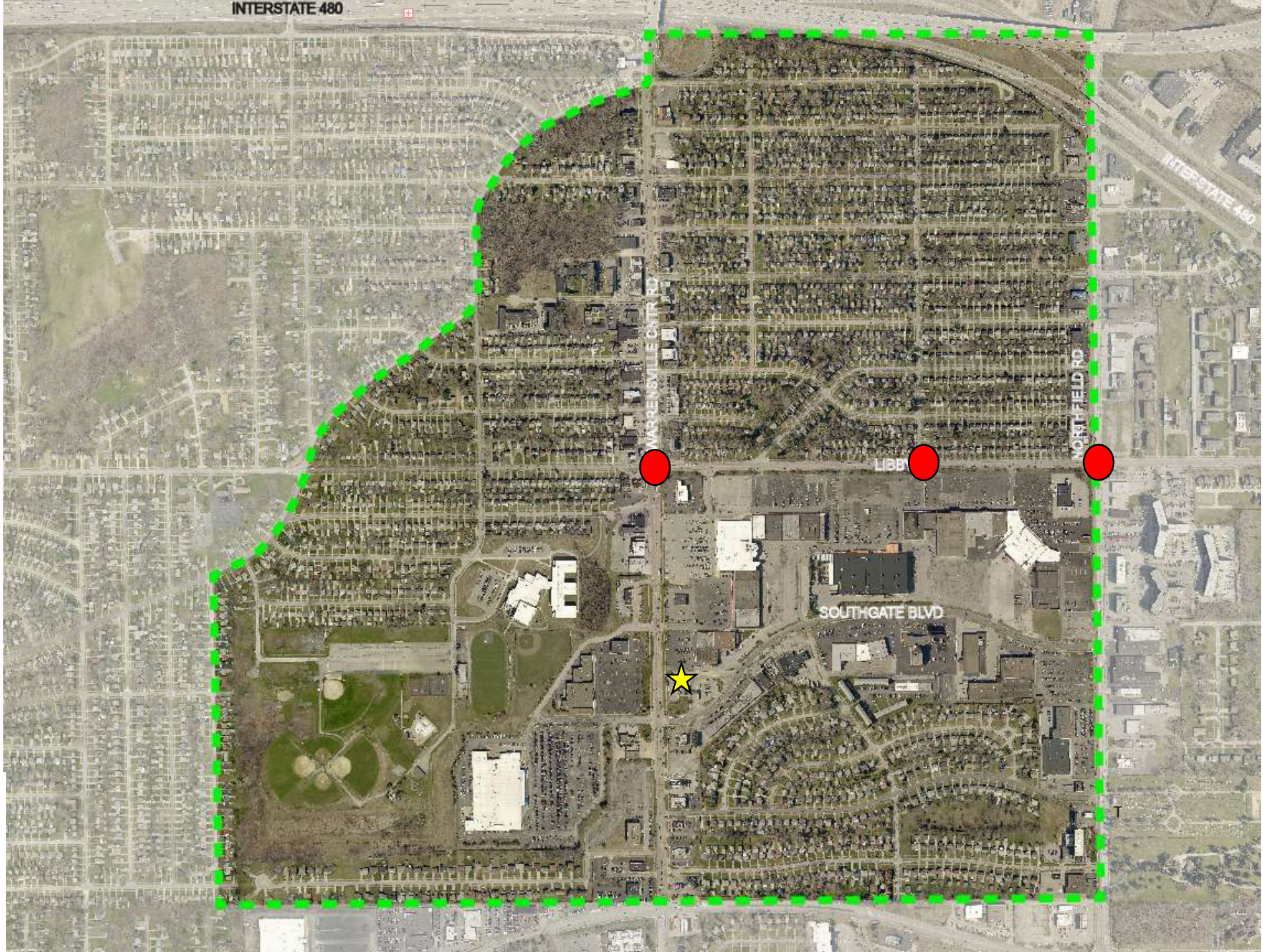
Commercial Corridor

Green/Park Space

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

LAND USE





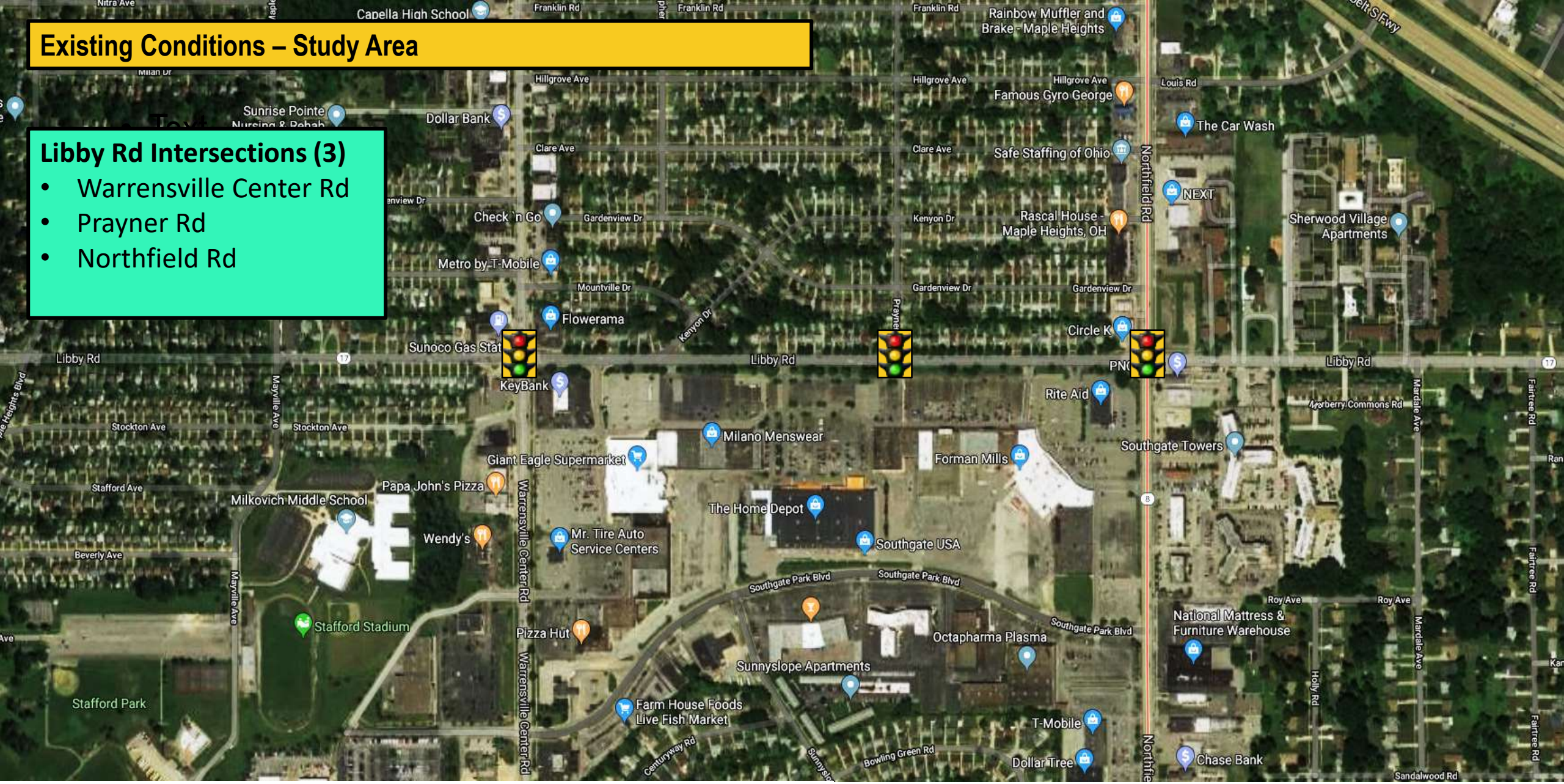
Traffic Counts

Southgate Transit Center (GCRTA)

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

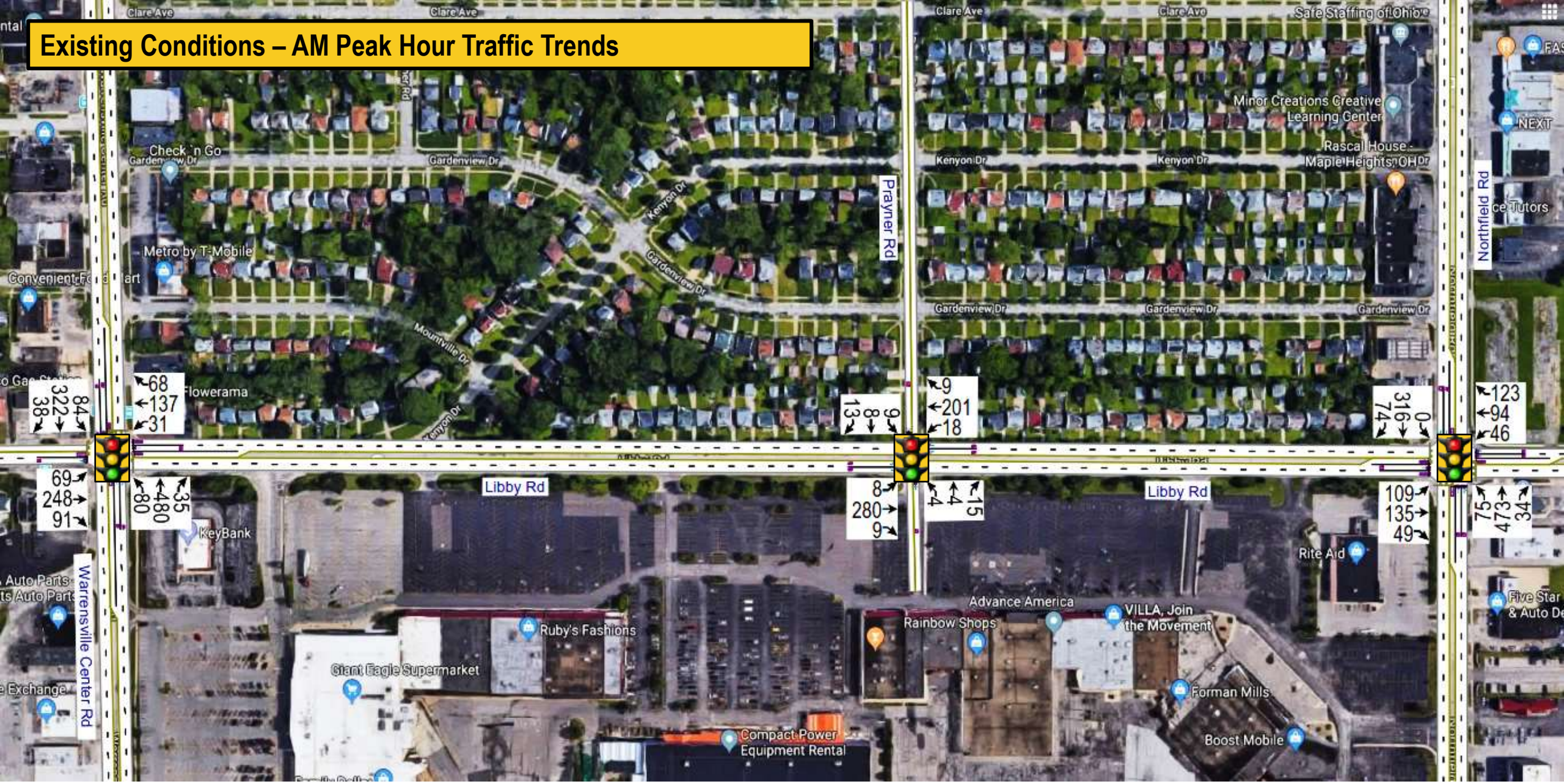
TRAFFIC ANALYSIS

Existing Conditions – Study Area



MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

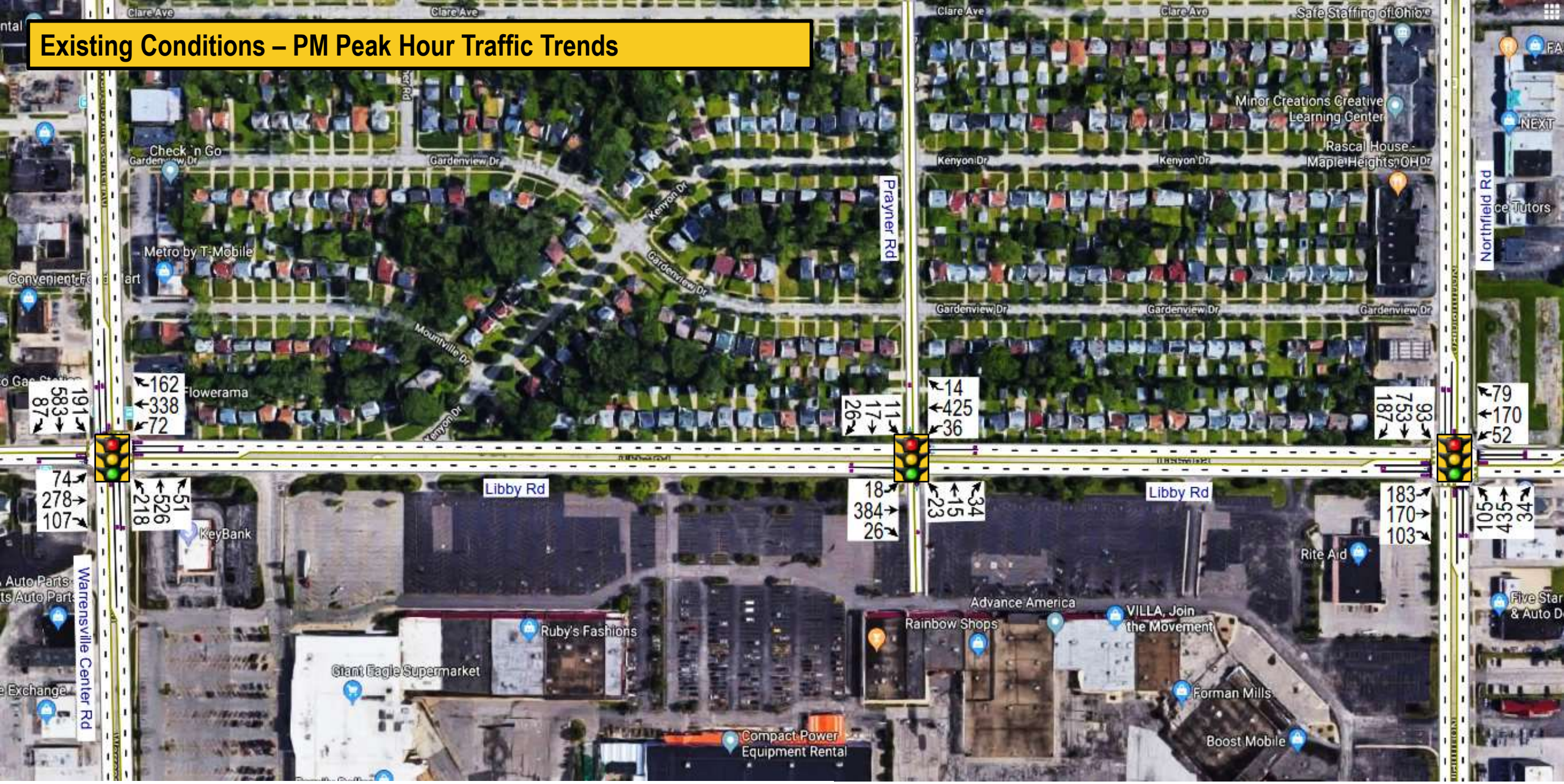
TRAFFIC ANALYSIS



MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

TRAFFIC ANALYSIS

Existing Conditions – PM Peak Hour Traffic Trends

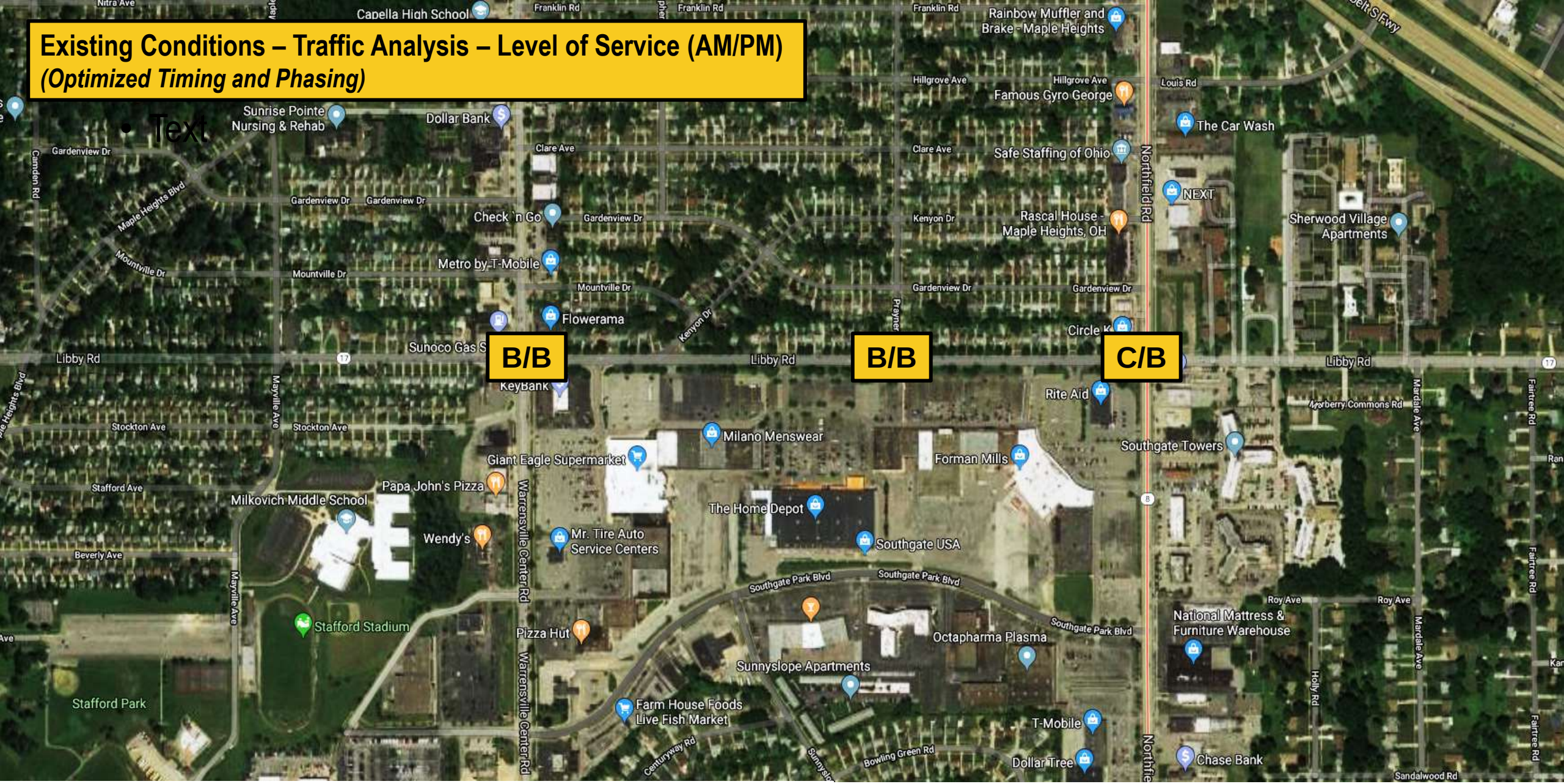


MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

TRAFFIC ANALYSIS

Existing Conditions – Traffic Analysis – Level of Service (AM/PM)
(Optimized Timing and Phasing)

- Text



MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY
TRAFFIC ANALYSIS

Future Conditions – Traffic Analysis
(Optimized Timing and Phasing)

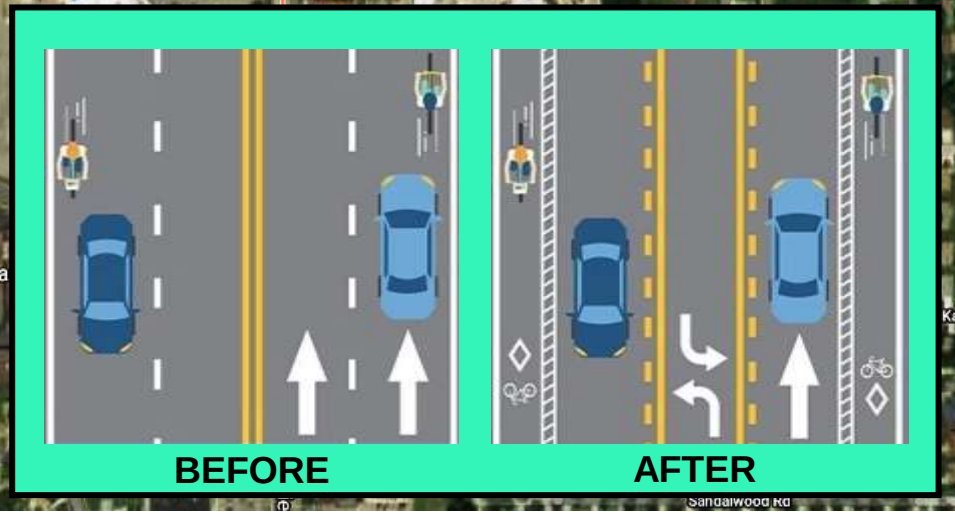
Convert Libby Road from 4 lanes ---> 3 lanes

- One travel lane in each direction
- Bike lanes in each direction
- Two way left turn lane or median with left turn bays

B/C

B/C

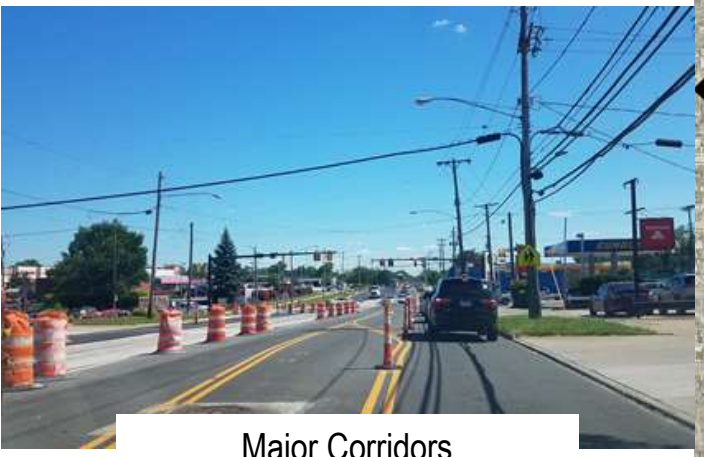
C/C



MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

TRAFFIC ANALYSIS

Southgate Transit Center



Major Corridors

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

TRANSPORTATION

AVERAGE RIDERSHIP AMONG 4 BUS LINES

581 – Daily Avg. On

498 – Daily Avg. Off

2. Island Effect - Southgate

3. Path Obstructions

4. Visual Disconnect

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

MISSING CONNECTION

Obstructed Path

1. Lack of Connection at Gateways

INTERSTATE 480

WARRENSVILLE CNTR RD

LIBBY RD

NORTHFIELD RD

SOUTHGATE BLVD

INTERSTATE 480

OVER 5,500
PARKING SPACES

ROUGHLY 80
ACRES OF SURFACE ARE DESIGNED FOR PARKING BETWEEN LIBBY& ROCKSIDE

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY
PARKING STUDY

WHAT WE'VE HEARD SO FAR

ACTIVE

- A more functional Stafford Park
- Recreation Center
- Outdoor Theater

LOCAL

- Improved paths to Employment / Self Sufficiency
- Support/Funding for Local Businesses
- Diversity of Housing Options

CONNECT

- Need for Bike Infrastructure (protected bike lanes)
- Safer Pedestrian paths within Commercial District
- Improved crosswalks
- Wayfinding signage

IDENTITY

- Becoming a Model for Sustainable Communities
- Celebrating Community Culture & Heritage
- Creating a Destination
- Connecting with Youth

Greenway Framework | Goals & Process | Route Evaluation | Implementation | Interactive Map

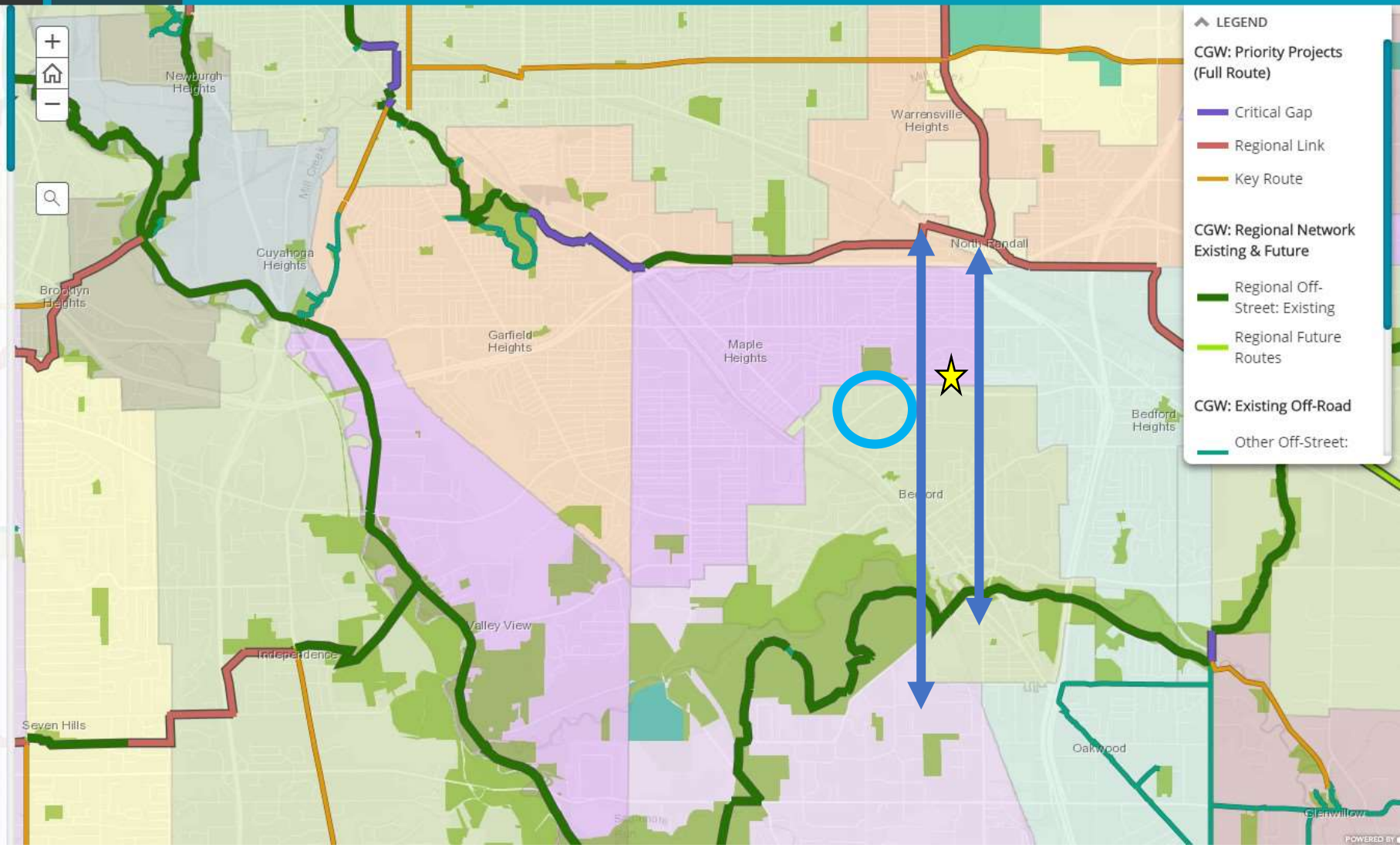
Implementation

Implementing the Cuyahoga Greenway framework will require coordinating and a long-term commitment. The full framework identifies over 820-miles of greenways and urban trails, 635-miles of which are not yet realized.

The value of having this **framework plan** is that regional and local governments, agencies, non-profit groups, and other organizations can have a shared blueprint for building routes that compliment one another and grows the overall network. New trails and non-motorized facilities can have the biggest impact when they increase access to and better with existing infrastructure.

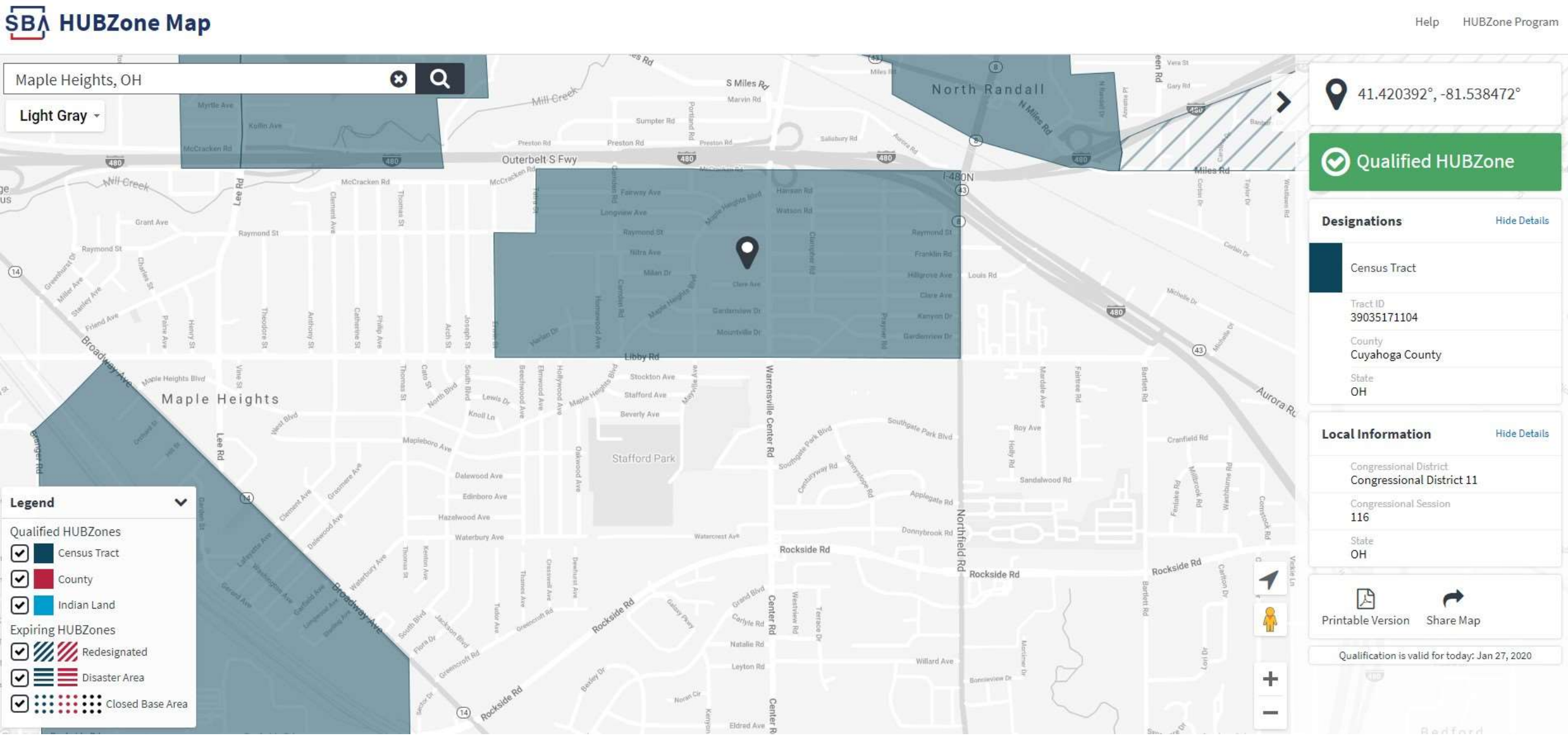
For a BIG, Positive Impact

Building out just the proposed regional trail system will have a big impact on County residents' access to trails. Today, only 280,000 residents are within a mile of a regional trail system, where over 500,000 can be within a mile in the future. That is over 40% of the county population within a mile of just the regional network.



MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

COMMUNITY INPUT



MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

COMMUNITY INPUT

Assets & Anchors

PARKING…

What if you don’t drive?

Transit Center

Recent Investment

Strengthen Connections

Welcome!

TAKEAWAYS / THOUGHTS

ar·rive

/əˈrīv/

verb

reach a place at the end of a journey or stage in a journey

move·ment

/ˈmo͞ovmənt

noun

1. an act of changing physical location or position or of having this changed.

2. a change or development

i·den·ti·ty

/ ˌīˈden(t)ədē/

noun

1. the fact of being who or what a person or thing is

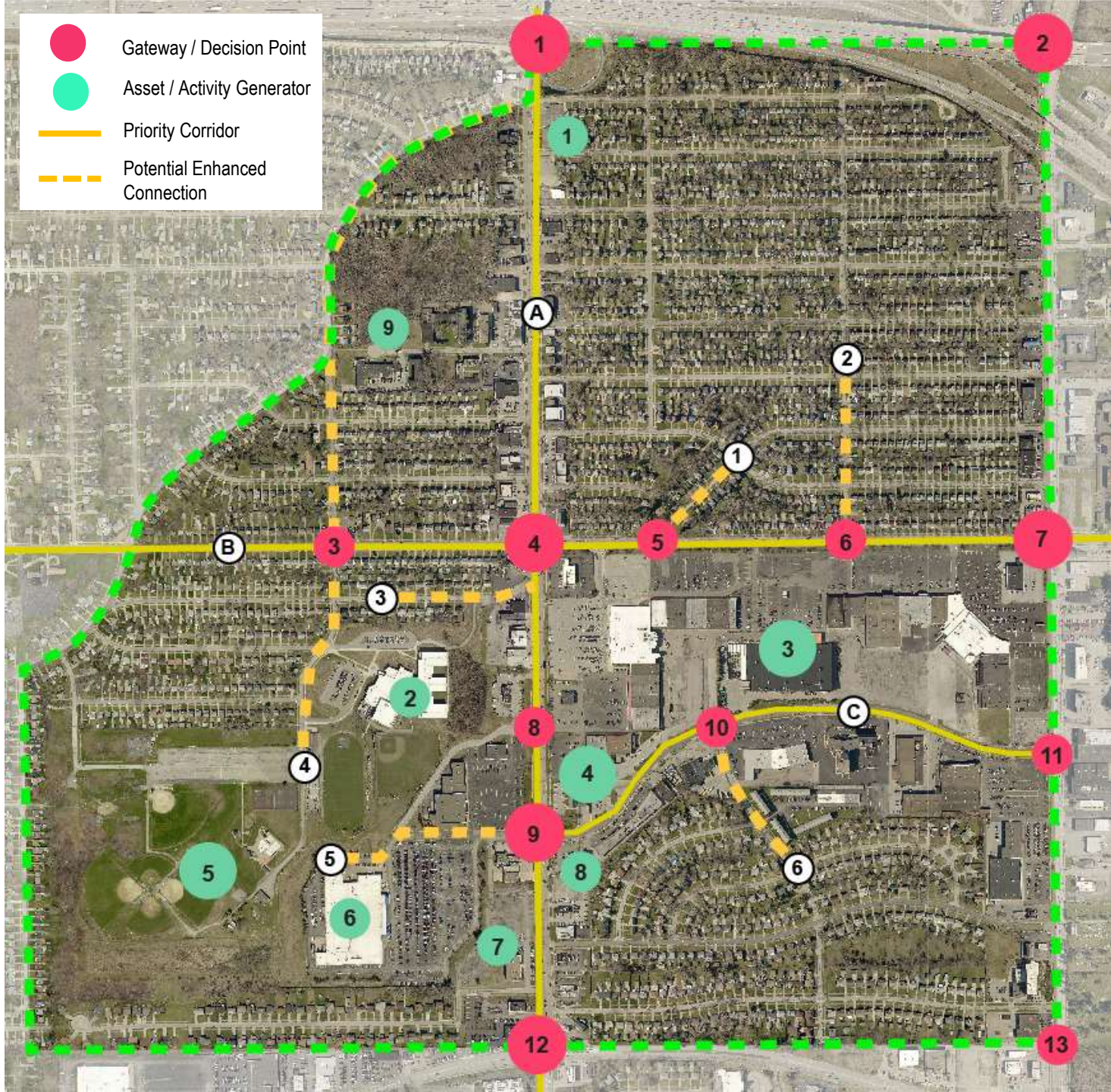
2. a close similarity or affinity

1. Warrensville Ctr Rd & I-480
2. Northfield Rd & I-480
3. Libby Rd & Mayville Ave
4. Warrensville Ctr Rd & Libby Rd
5. Kenyon Dr & Libby Rd
6. Prayner Rd & Libby Rd
7. Northfield Rd & Libby Rd
8. Warrensville Ctr Rd & Wendy's Intersection
9. Warrensville Ctr Rd & Southgate Blvd
10. Sunnyslope Rd & Southgate Blvd
11. Northfield Rd & Southgate Blvd
12. Warrensville Ctr Rd & Rockside Rd
13. Northfield Rd & Rockside Rd

A. Warrensville Ctr Rd
B. Libby Rd
C. Southgate Blvd

1. Warrensville Rd Community Baptist Church
2. Milkovich Middle School
3. Southgate USA
4. Southgate Transit Center
5. Stafford Park
6. Ford Dealership
7. 'New' KFC
8. 'New' Checkers/Rally's
9. Rid-All Green Partnership

1. Kenyon Dr
2. Prayner Rd
3. Stockton Ave
4. Mayville Ave
5. Southgate Blvd to Ford
6. Sunnyslope Rd



MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

WHAT WE'VE LEARNED

MAPLE HEIGHTS TLCI:
SOUTHGATE
CONNECTIVITY STUDY
FOCUSING IN

SOUTHGATE USA


SOUTHGATE USA PARKING LOT
milano

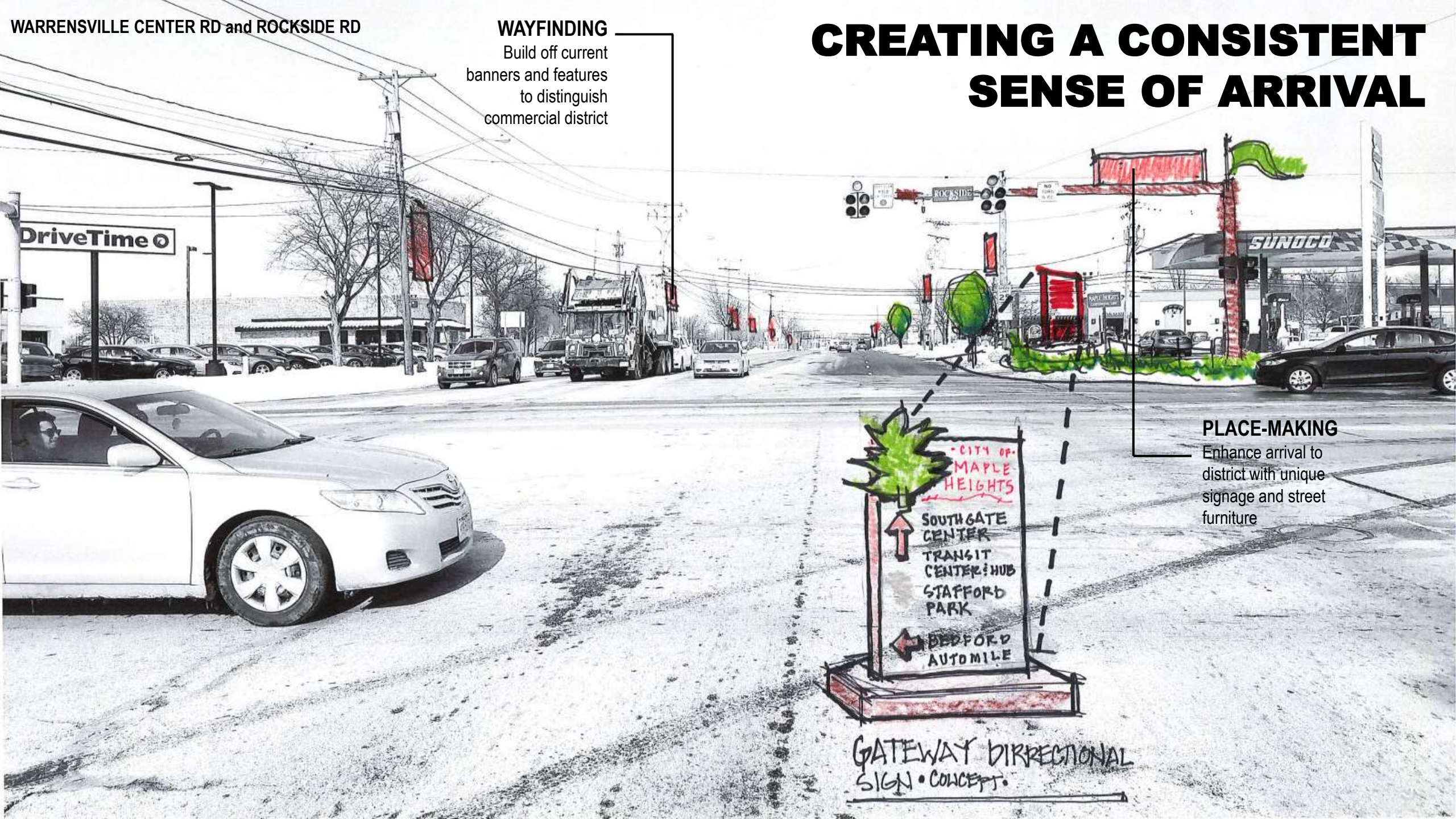
SOFTENING THE EDGE OF THE PARKING AREAS

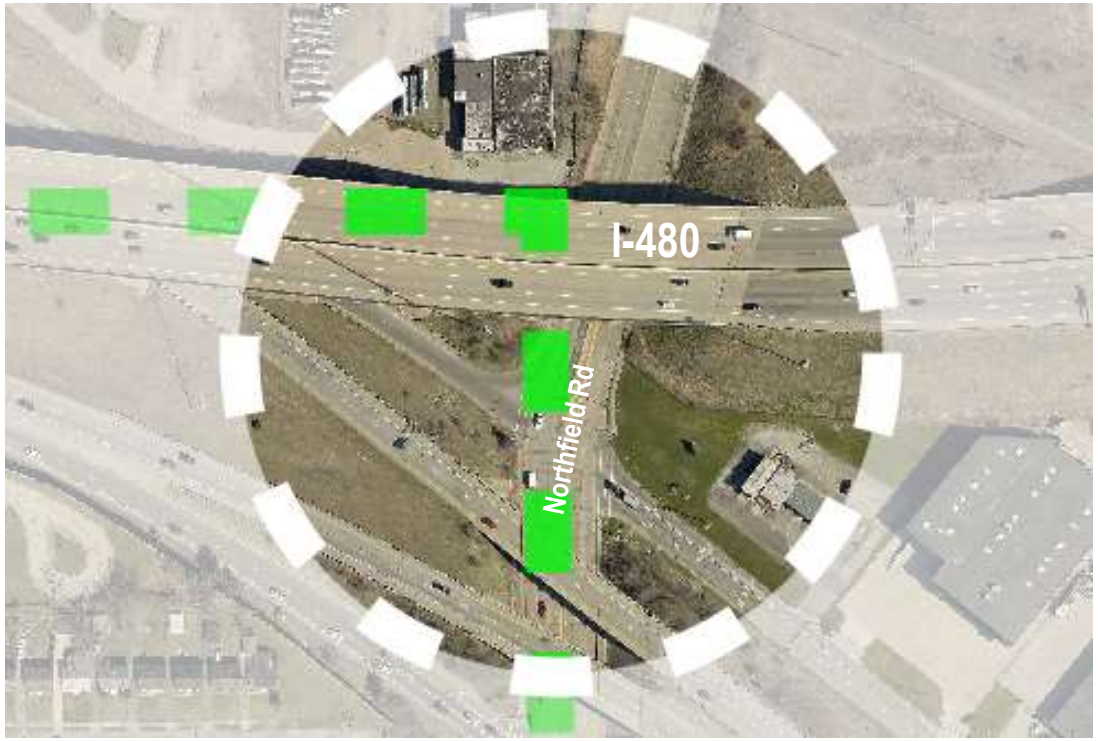

SAFELY INCORPORATING
DEDICATE BIKE PATHS

WARRENSVILLE CENTER RD –
ROCKSIDE RD SOUTH GATEWAY


WARRENSVILLE CENTER RD and ROCKSIDE RD
DriveTime
ROCKSIDE
SUNOCO

CREATING A CONSISTENT SENSE OF ARRIVAL

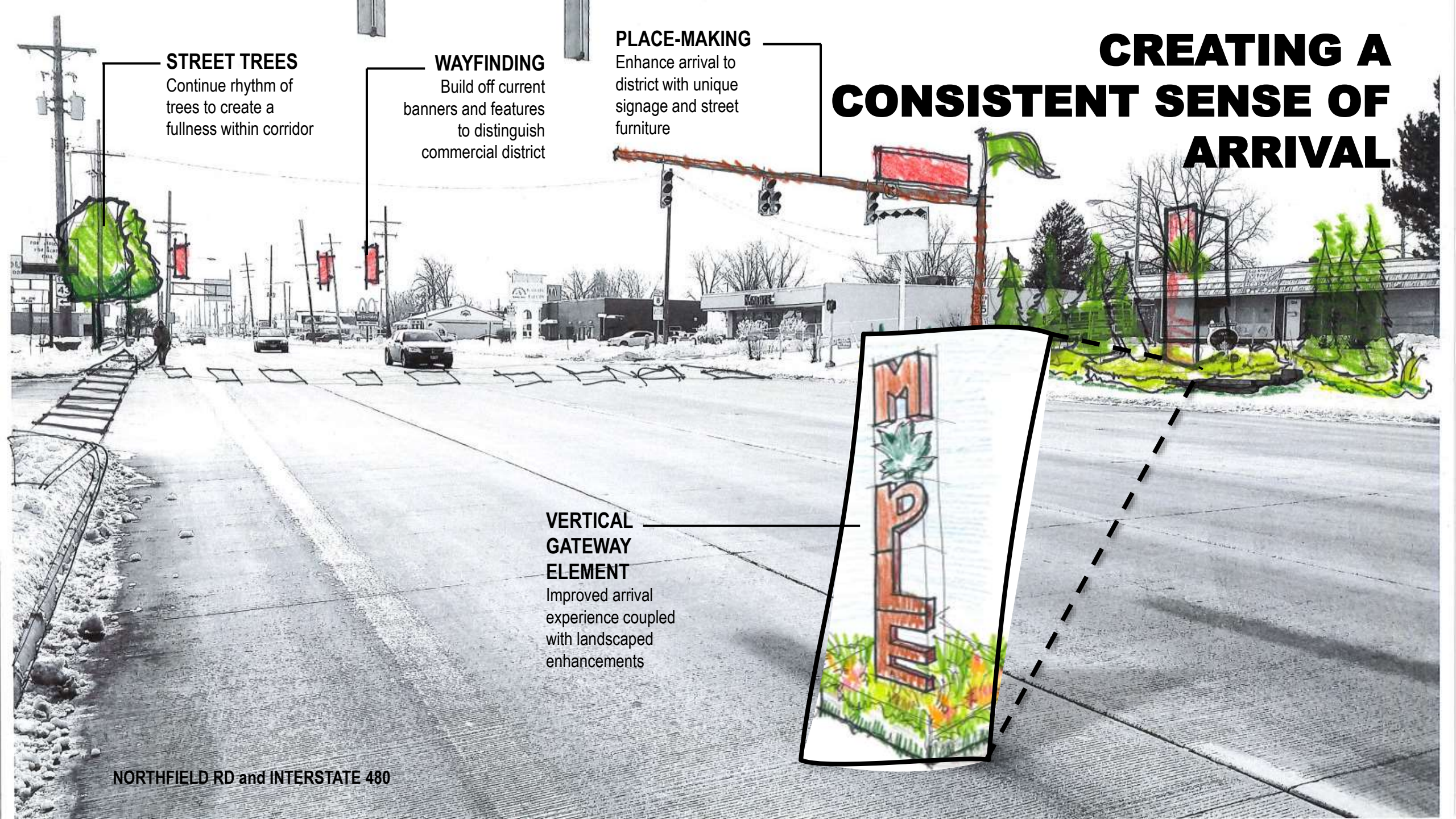




NORTHFIELD RD - NORTH GATEWAY

NORTHFIELD RD and INTERSTATE 480

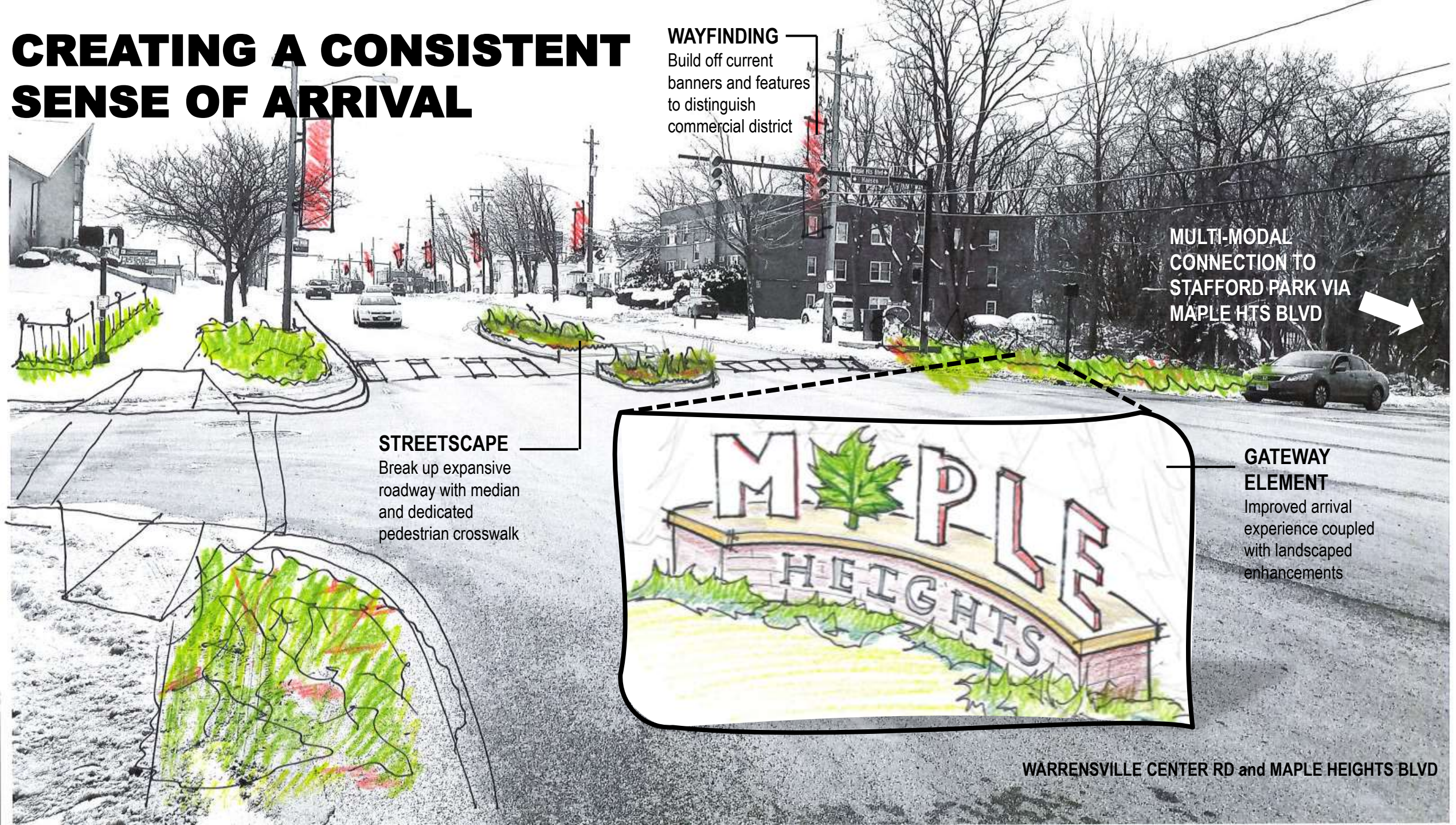
CREATING A CONSISTENT SENSE OF ARRIVAL



WARRENSVILLE CENTER RD - NORTH GATEWAY

WARRENSVILLE CENTER RD and MAPLE HEIGHTS BLVD

CREATING A CONSISTENT SENSE OF ARRIVAL




MAPLE
HEIGHTS

STAFFORD PARK


STAFFORD PARK – PARKING LOT

REDUCING EXCESSIVE IMPERVIOUS SURFACES

ACTIVATING UN / UNDER – UTILIZED SPACE

WARRENSVILLE CENTER RD & LIBBY RD

WARRENSVILLE CENTER RD looking South to LIBBY RD

IMPROVED PEDESTRIAN EXPERIENCE

STREET TREES
Continue rhythm of trees to create a fullness within corridor

PLACE-MAKING
Enhance arrival to district with unique signage and street furniture

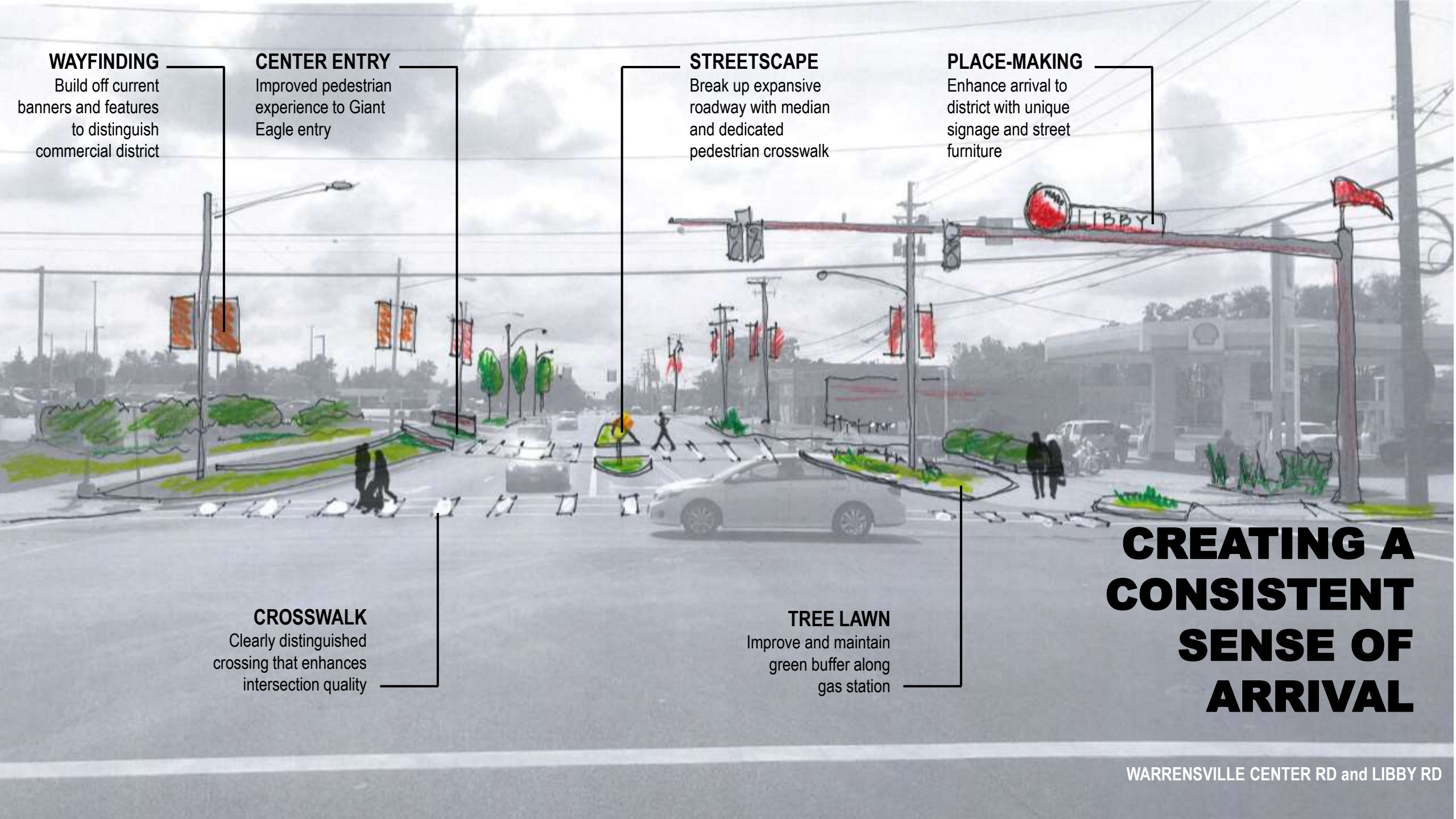
TREE LAWN
Potential to leverage florist to enhance tree lawn aesthetic

STREET TREES
Continue rhythm of trees to create a fullness within corridor

ORNAMENTAL FENCE
Allow for more of a protective path for pedestrians

WARRENSVILLE CENTER RD looking South to LIBBY RD

WARRENSVILLE CENTER RD and LIBBY RD



WAYFINDING
Build off current banners and features to distinguish commercial district

CENTER ENTRY
Improved pedestrian experience to Giant Eagle entry

STREETSCAPE
Break up expansive roadway with median and dedicated pedestrian crosswalk

PLACE-MAKING
Enhance arrival to district with unique signage and street furniture

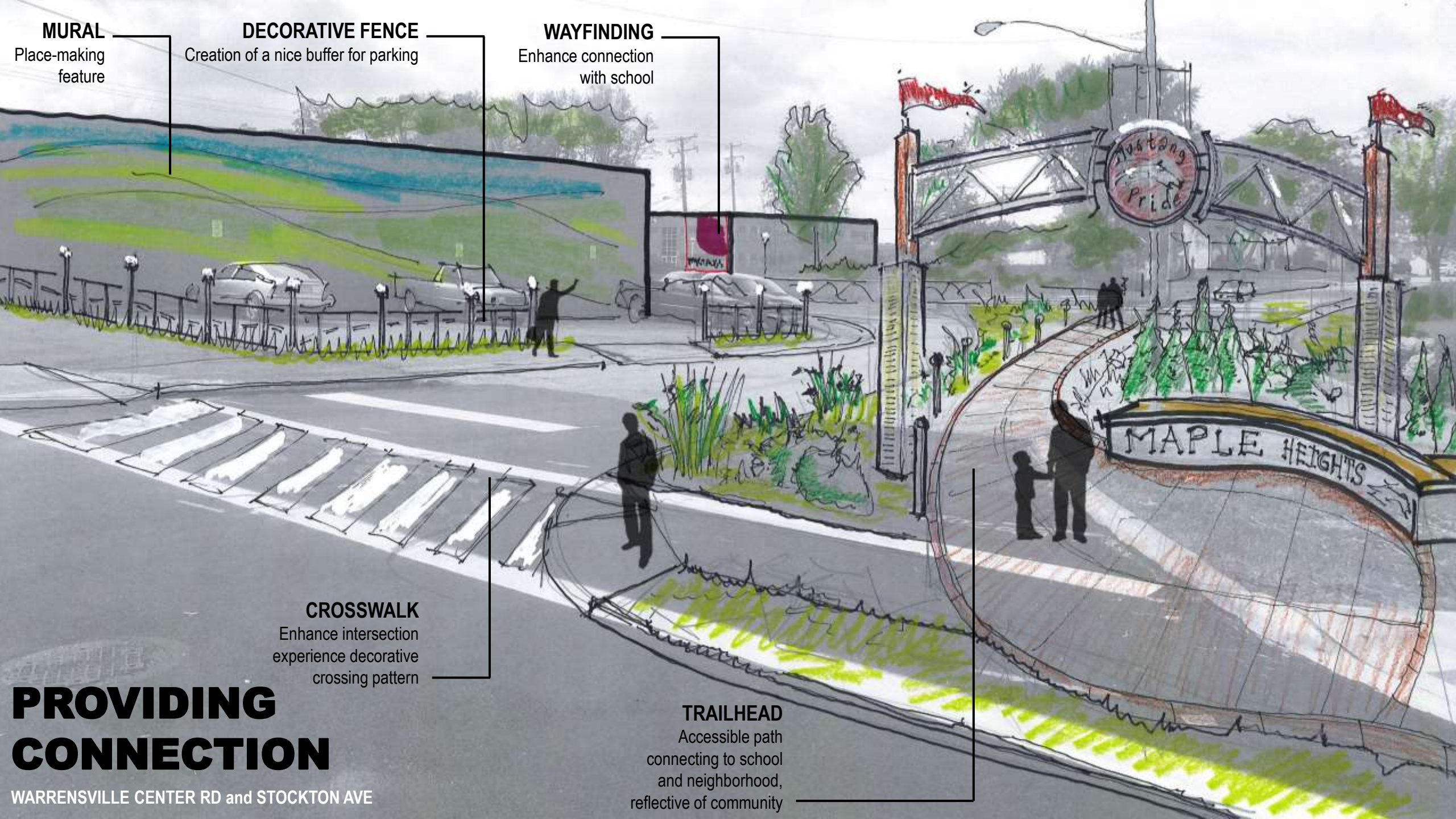
CROSSWALK
Clearly distinguished crossing that enhances intersection quality

TREE LAWN
Improve and maintain green buffer along gas station

CREATING A CONSISTENT SENSE OF ARRIVAL

WARRENSVILLE CENTER RD and LIBBY RD

WARRENSVILLE CENTER RD and STOCKTON AVE



PROVIDING CONNECTION

WARRENSVILLE CENTER RD and STOCKTON AVE

THANK YOU!


If you could give anything to your community, what would it be?

TRANSPORTATION PLANNING IMPACT

Center Ridge Road

COMPLETE STREETS & CORRIDOR ENHANCEMENT PLAN

ISSUED: APRIL 12, 2017

City Architecture WSP PARSONS BRINCKERHOFF NORTHEAST OHIO AISLINN Consulting LLC

A COLLABORATION BETWEEN THE CITIES OF FAIRVIEW PARK & ROCKY RIVER

Signage & enhancements can convey the district's brand & identity

Gateway Signage - $$

- LOCATE IN MEDIAN (LONG TERM)
- INSTALL ALONG RIGHT-OF-WAY (NEAR TERM) AND LANDSCAPE TO DEMONSTRATE & ESTABLISH DISTRICT ENTRANCE

Effective parking lot buffers can refocus the streetscape away from vehicular traffic

Parking Lot Frontage - $$$$

- BLOCK OFF PARKING SPACES AS A TEMPORARY MEASURE TO TEST IDEAS AND REDUCTION
- INCORPORATE PUBLIC ART AS SCREENING ELEMENTS - HOLD COMPETITION TO PROVIDE OPPORTUNITIES FOR RESIDENTS

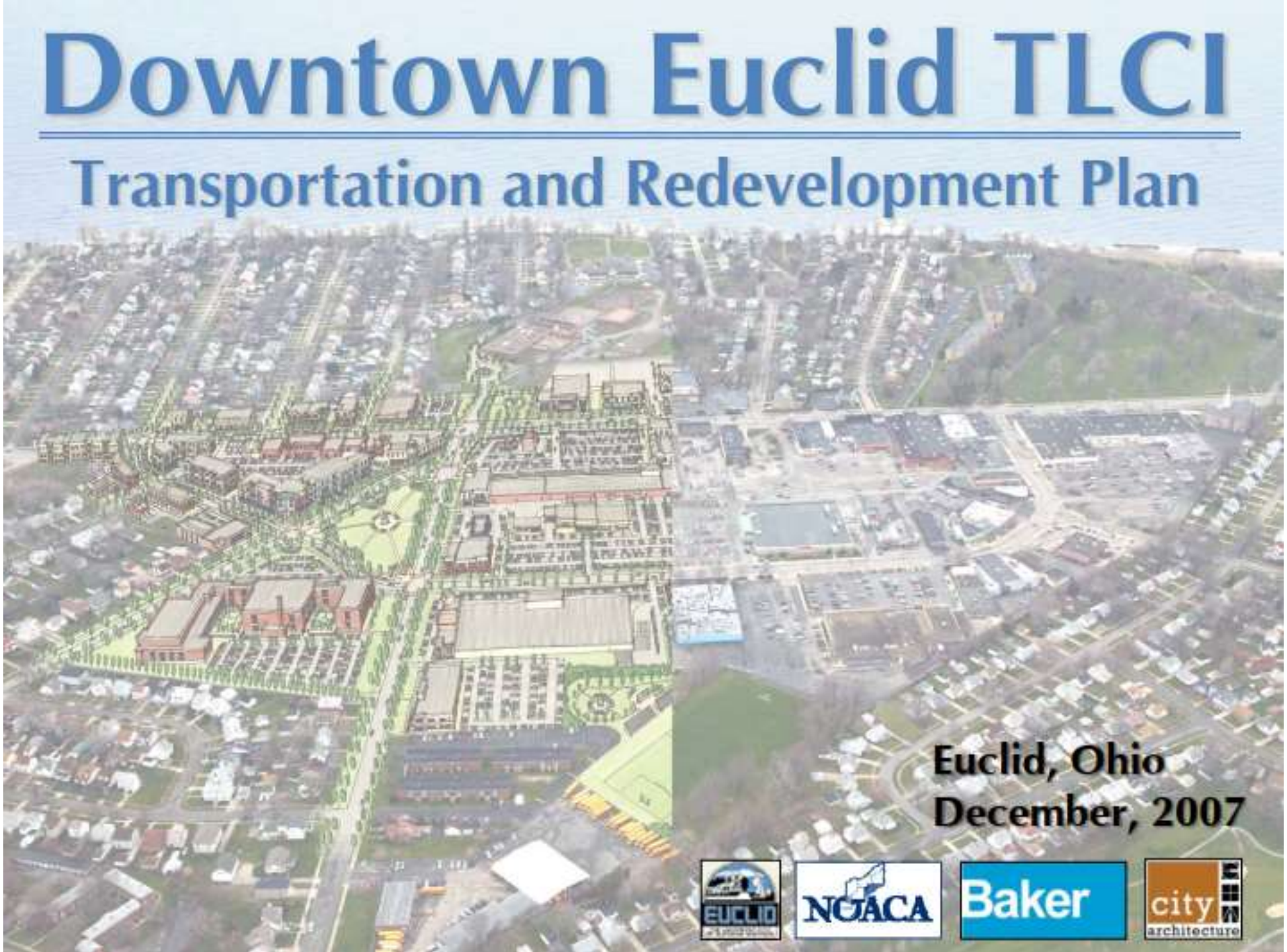
Landscaped medians can reduce pavement, slow traffic and serve as a gateway element

Median Element - $$$

- REDUCE PAVEMENT
- ENGINEER TO MINIMALLY IMPACT SURFACE DRAINAGE
- COORDINATE WITH DRIVEWAYS
- CAN BE USED TO LIMIT LEFT TURN MOVEMENTS

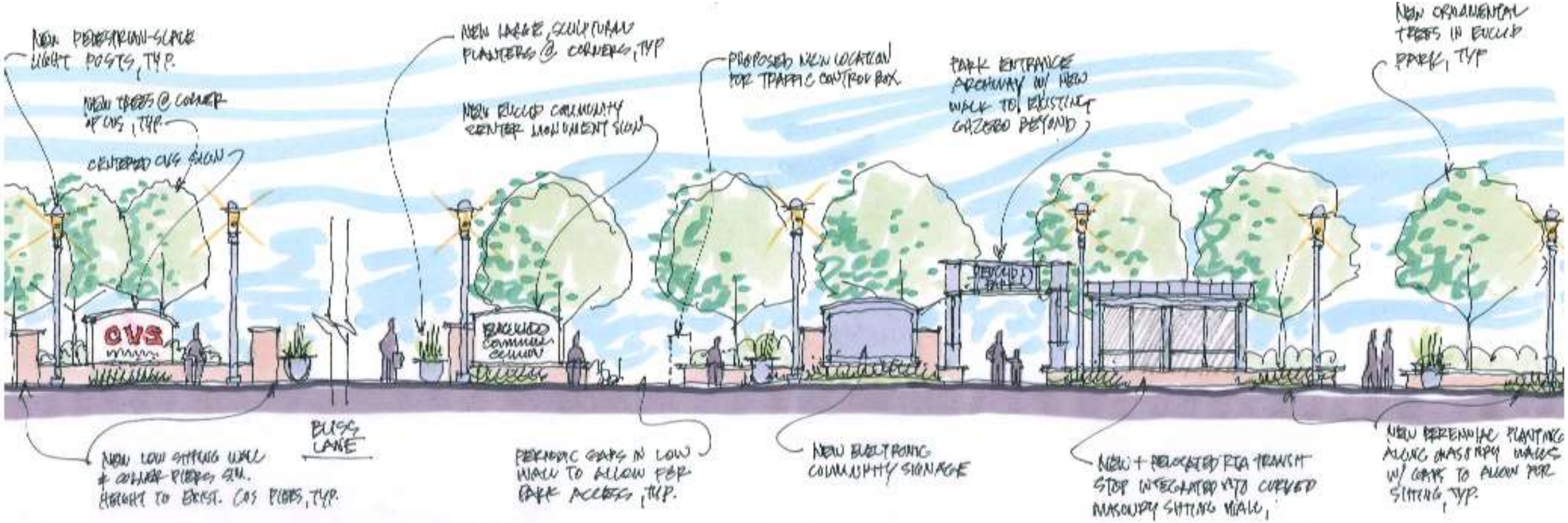
Downtown Euclid TLCI

Transportation and Redevelopment Plan



Euclid, Ohio
December, 2007

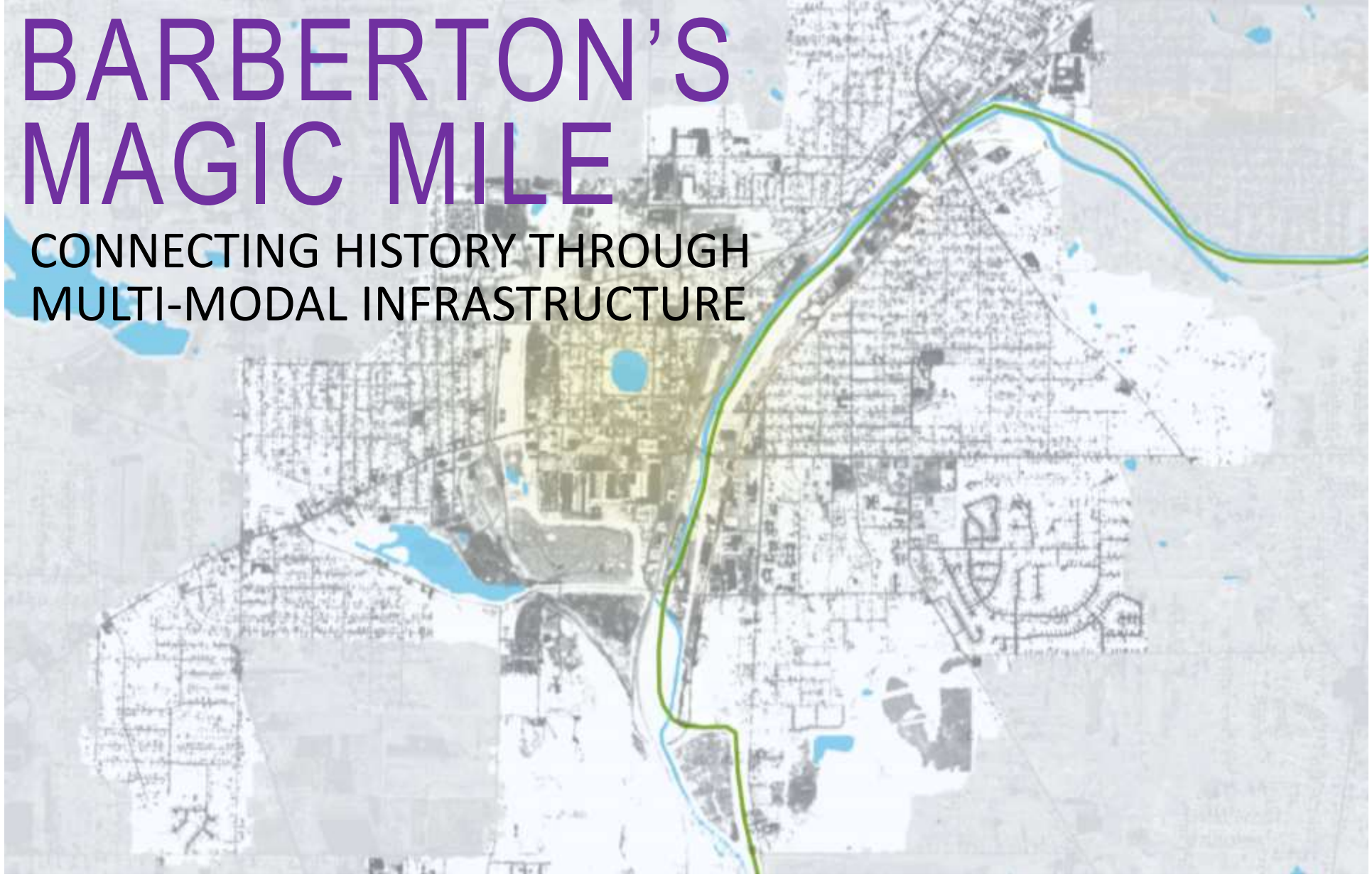
LAKESHORE BABBITT STREETSCAPE



COMPLETED APRIL 2009

BARBERTON'S MAGIC MILE

CONNECTING HISTORY THROUGH MULTI-MODAL INFRASTRUCTURE



City Architecture

amats

BARBERTON COMMUNITY FOUNDATION

NOVEMBER 2014

COMPLETED JUNE 2015

PROPOSED

PROPOSED

COMPLETED JUNE 2015

YOUR EXPERIENCE

City Architecture

SIGN-IN SHEET

Meeting: Maple Heights TLCI: Southgate Connectivity Study – Community Meeting #2 Project No. 19024

Date: January 28, 2020 Location: Warrensville Road Community Baptist Church155

Name:	Affiliation:	E-Mail Address:
Melissa Thompson	NOACA	mthompson@mpo.noaca.org
Lellinnda Spears	U.S Census Bureau	Lellinnda.d.spears@2020census.gov
Carol Brown	Church	
Avis Pulley		
JOETHE WADE		
LINDA VOPAT	CITY OF MAPLE HEIGHTS	lmvopat@gmail.com
Toni Jones	City Mbt	tjonesd2@hotmail.com
RICHARD TROJANS	City council Maple Hts	TROJANSKID6@gmail.com
GEORGETTE VIDMAR	Maple Hts Resident	ggvidmar@hotmail.com
Regina Adams	Maple Hts	adams.regina45@gmail.com
DAVID ANDERSON	Maple Hts Council	d4.councilwoman.anderson@gmail.com
Cheryl Clemons	Maple Hts	Resident

3200 Euclid Avenue, Cleveland, Ohio 44115
P 216.881.2444 F 216.881.6713

www.cityarch.com

City Architecture

SIGN-IN SHEET

Meeting: Maple Heights TLCI: Southgate Connectivity Study – Community Meeting #2 Project No. 19024

Date: January 28, 2020 Location: Warrensville Road Community Baptist Church155

Name:	Affiliation:	E-Mail Address:
Tina Stafford-Mallory	P+Z commission	Homewood44137@Gmail.com
Tangelyn Madden	Councilwoman Dist 5	
Charlie Kerr	City School	chk.law@yahoo.com
Edwina Agee	Councilwoman District 7	eawa44137@sbcglobal.net
Linda Setura	Resident	LSetura@aol.com
Grace Gallucci	NOACA	
TARIQ SHABAZZ	CANDIDATE FOR US REP (OH-11)	SHABAZZFORUSREP2020@GMAIL.COM
Gabriel Shabazz		gbriepps@gmail-com
Laplace Sterling		laplacest@gmail.com
MONIQUE THOMPSON/Ayla	RESIDENT	monalana@Sbcglobal.net
MARYANN Freeman	WCBC	MARYANNfreeman@Attorney
India Daniel	Resident	inala.triplett@yahoo.com

City Architecture

SIGN-IN SHEET

Meeting: Maple Heights TLCI: Southgate Connectivity Study – Community Meeting #2 Project No. 19024

Date: January 28, 2020 Location: Warrensville Road Community Baptist Church

Name:	Affiliation:	E-Mail Address:
Lindia Pannell	WCBC	
Deborah Willyard	WCBC	
Timothy Tatum	RESIDENT	liftitimup@yahoo.com

3200 Euclid Avenue, Cleveland, Ohio 44115
P 216.881.2444 F 216.881.6713

www.cityarch.com

City Architecture

MEETING SUMMARY

MAPLE HEIGHTS TLCI (#19024)
STAKEHOLDER MEETING

March 12, 2020

Location: Conference Call

Time: 11:00am – 12:00pm

Attendance:	Affiliation:	E-Mail Address:
Patrick Grogan	City of Maple Heights	pgrogan@mapleheightsohio.com
Melinda Bartizal	ODOT – District 12	melinda.bartizal@dot.ohio.gov
Georgette Vidmar	Resident	ggvidmar@hotmail.com
Linda Sekura	Resident/ Energy & Ecology Chair, NEO Sierra Club	lsekura@aol.com
Amy Snell	GCRTA	asnell@gcrta.org
Juleian Curtis	City Architecture (CA)	juleian@cityarch.com

Summary of Meeting

Stakeholder's were provided an opportunity to review the presentation for the final community meeting, and a draft of the planning document currently under development by the consultant team. Constructive feedback was provided by the group, and overall, stakeholders were encouraged by the progress and direction the plan is moving in.

Review of Community Meeting Presentation

1. After introductions, CA walked through the presentation for the upcoming community meeting, which begins with a brief review of the materials that were presented at the previous community meeting.

2. Results of the input that was received from the community at Community Meeting #2 for the ranking of focus areas, and preferences for transportation and streetscape enhancements were also presented and carried through the planning document.

3. The presentation then transitions into incorporating imagery from the planning document, where recommendations were reviewed at a high level for the focus areas that ranked highest among the community.

4. While not included in the draft presentation that was reviewed with the stakeholder group, transportation improvement options will be the culminating piece of the community presentation, with a specific focus on Libby Rd and Southgate Park Blvd.

5. Meeting participants will be provided roadway configuration options to select their preference from for both corridors, with the results being ultimately incorporated into the final planning document. This will likely be done through a small group exercise to encourage more discussion.

Overview of Draft Planning Document

6. The intention for briefly reviewing the under-development planning document was to provide added context for stakeholders, while also allowing the group to review how the final document is beginning to demonstrate how the process has been documented.

7. The plan is organized by City Architecture's 4 pillared approach to planning: Understand, Challenge, Transform and Implement.

8. Similar to the community meeting presentation, the plan begins with analysis: existing conditions, market, and traffic analyses.

9. Three terms emerged as themes for organizing recommendations for each of the six focus areas: arrive, identity, and movement.

10. A singular focus area was reviewed that is representative of the template that will be followed for each of the 6 areas. Beginning with the introduction of concepts for the area of focus, followed by specific recommendations at identified locations, and culminating with an implementation table that provides an estimated timeline to execute, a cost range, and the entities responsible for carrying out the recommendation.

Stakeholder Feedback

11. Overall, the reaction from stakeholders was positive regarding the materials that were presented, with excitement expressed for the upcoming community meeting and subsequent publishing of the final planning document.

12. The following feedback was provided by the group, and will be incorporated into the development of the community meeting and planning document:
    a. Related to Recommendations Section of Report & Presentation
        i. Difficult to see imagery at times on the slides and plan spreads
        ii. Confirm key plan corresponds with focus area shown
        iii. Enlarge text and visuals
    b. Community Meeting Presentation Style
        i. Shorter presentation was acknowledged as a positive
        ii. Consider slowing the pace of delivery by presenter to allow more time for the audience to digest the information and potentially comment

Next Steps

1. Incorporate stakeholder feedback and refine materials for Community Meeting #3 and Planning Document (CA)

2. Reschedule Community Meeting #3 (City of Maple Heights & CA)

3. Finalize planning document for City of Maple Heights & NOACA review (CA)

If any of the items herein are in conflict with your recollection of what was discussed or if any important elements have been omitted, it would be appreciated if you would contact us immediately. Otherwise we will assume the above items are correct.

CITY ARCHITECTURE, INC

Juleian Curtis
Assistant City Planner

Enclosure:

Copies to: All Attendees
File

City Architecture

MEETING SUMMARY

MAPLE HEIGHTS TLCI (#19024)
COMMUNITY MEETING #3

March 31, 2021

Location: Zoom

Time: 6:00pm – 7:30pm

Attendance:	Affiliation:	E-Mail Address:
Mayor Annette Blackwell	City of Maple Heights	ablackwell@mapleheightsohio.com
Patrick Grogan-Myers	City of Maple Heights	pgrogan@mapleheightsohio.com
Linda Vopat	City of Maple Heights	lvopat@mapleheightsohio.com
Ron Jackson	Maple Heights City Council	ronjacksonmaplehts@att.net
Toni Jones	Maple Heights City Council	tjonesd2@hotmail.com
Richard Trojanski	Maple Heights City Council	trojanskid6@gmail.com
Beverly	Maple Heights Resident (?)	
Melinda Bartizal	ODOT	melinda.bartizal@dot.ohio.gov
Nancy Lyon-Stadler	WSP	nancy.lyon-stadler@wsp.com
Alex Pesta	City Architecture (CA)	alex@cityarch.com
Juleian Curtis	City Architecture (CA)	juleian@cityarch.com

Summary of Meeting

Wednesday, March 31st marked the third and final community meeting of the Maple Heights Southgate Transportation for Livable Communities Initiative (TLCI) planning study. This meeting provided the opportunity to both clarify any confusion that may have been caused by the previously attempted culminating community discussion, as well as deliver the final recommendations from the planning process.

Building Momentum

- This TLCI planning process not only builds off of the foundation that was set with the City's Master Plan, but also serves to capitalize off of the recent public and private investments made in the community.
- This collection of activity has resulted in an improved bond rating for the municipality, a clear indication of the progress the City, led by Mayor Blackwell, is continuing to make.

Identity, Movement & Arrival

- Final recommendations for the planning process were grouped into three categories, identity, movement and arrive. Each of the recommendations put forth sought to improve at least one of themes.
- These three terms were established through discourse with the City, local stakeholders and members of the community.
- Each of these terms directly ties to the transportation planning process and recommendations:
    - Identity – physical infrastructure gives the first impression for travelers to, through and within your community

    - Movement – the experience moving within a community should be memorable, accommodating and extend beyond just moving through a space
    - Arrival – brings all three terms together, where a space is created that makes people feel that they have 'arrived' somewhere special
- This final community discussion also ensured the community's voice was heard and the following preferences, emotions and feelings about what this work should seek to achieve were expressed:
    - Clear signage and crossings
    - Pedestrian friendly experience needs improved in the commercial district
    - Bike lanes can serve to encourage recreation and an active lifestyle
    - When considering public art, must consider visibility, and not provide areas to hide behind
    - Important to incorporate high school into public art design process
    - A feeling of arrival is accompanied by anticipation, similar to going on vacation
    - Importance of safe and secure spaces
    - Mid-block crossings should be well lit, and provide visual cues to drivers to improve safety
- A question was raised about the road width of both Libby and Warrensville Center being able to accommodate medians at narrower locations, and the dimensions of the road will allow for medians to be accommodated in the majority of places identified.

Top Priorities

- The following items were identified as the City of Maple Heights' top three priorities coming out of this planning process
    - Enhanced City of Maple Heights Welcome Signage
    - Vertical striped crosswalks for clear identification of pedestrian crossings
    - Align signage at park entrances at Maple Heights Blvd and Mayville Ave with City's brand standards
- The community expressed excitement about these next action steps, with members of council communicating a desire to determine costs and begin raising funds for their completion

Next Steps

1. Submission of Final Report to NOACA for review and approval – April 7th

If any of the items herein are in conflict with your recollection of what was discussed or if any important elements have been omitted, it would be appreciated if you would contact us immediately. Otherwise we will assume the above items are correct.

CITY ARCHITECTURE, INC

Juleian Curtis
Assistant City Planner

Copies to: All Attendees
File

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

COMMUNITY MEETING #3 – MARCH 31, 2021

Jefferson Avenue Modular Home

Farmer Jones Indoor Market Grand Re-Opening

MOODY'S
INVESTORS SERVICE

Rating Action: Moody's upgrades Maple Heights, OH to Ba3 from B2; outlook revised to positive

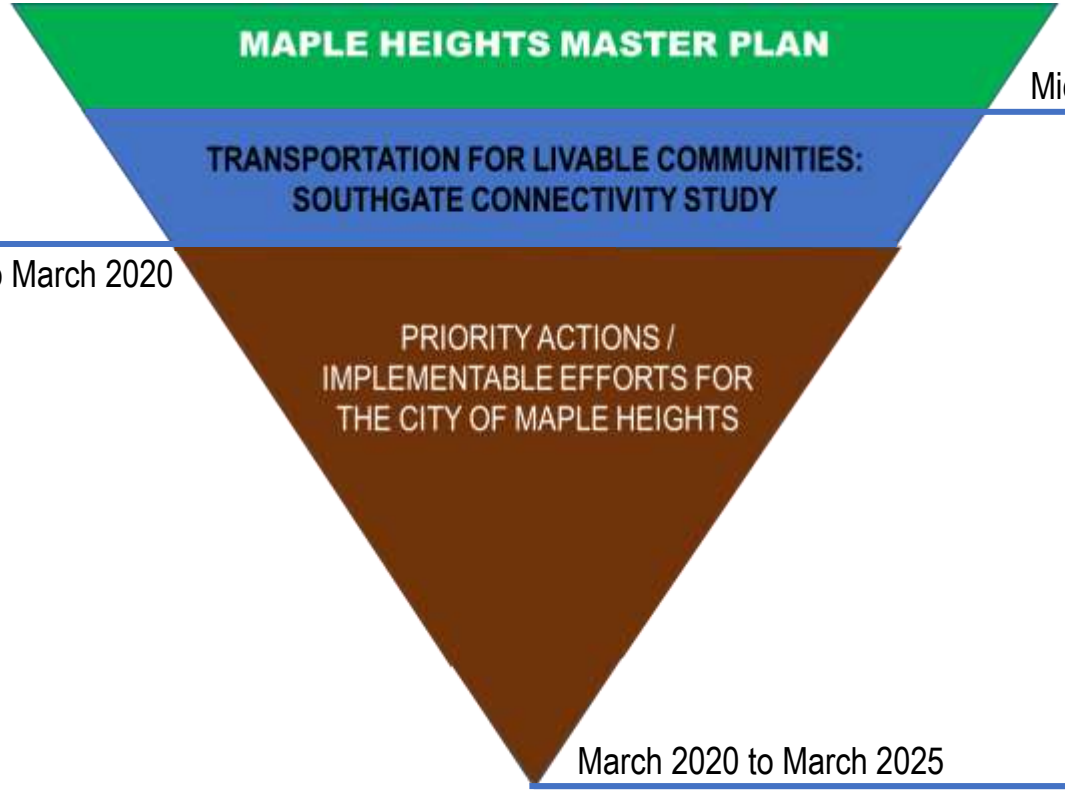
Dedicated Medical Center Grand Opening

White House Auto Detailing Grand Opening

RECAP

OVERLAYING & COORDINATING PLANNING

Various scales & initiatives



CITYWIDE

Mid 2017 to Early 2019

CORE COMMERICAL DISTRICT

May 2019 to March 2020

NOACA
Lake
Geauga
Cuyahoga
Lorain
Medina
Planning For
GREATER CLEVELAND

TARGETED INVESTMENT

March 2020 to March 2025

MAPLE HEIGHTS TLCI: SOUTHGATE CONNECTIVITY STUDY

OUR APPROACH

STUDY AREA


RIGHT
TURN
ONLY


RTA


581 – Daily Avg. Off
498 – Daily Avg. Off
90
DOWNTOWN CLEVELAND
Center
or Corridors
GHTS TLCI:
TE CONNECTIVITY
RTATION
1. Lack of Connection at Gateways
Obstructed Path
2. Island Effect - Southgate
3. Path Obstructions
4. Visual Disconnect
MAPLE HEIGHTS TLCI:
SOUTHGATE CONNECTIVITY
STUDY
MISSING CONNECTION
OVER 5,500
PARKING SPACES
ROUGHLY 80
ACRES OF SURFACE
ARE DESIGNED FOR
PARKING BETWEEN
LIBBY& ROCKSIDE
MAPLE HEIGHTS TLCI:
SOUTHGATE CONNECTIVITY
STUDY
4WARD PLANNING
Maple Heights-Southgate
Market and Economic Impact Study
Maple Heights City, OH
SUSTAINABLE LAND USE OUTCOM

COMMUNITY CONVERSATION

crosswalks

public art

Maple Heights' IDENTITY is transforming…
How can streets and public spaces help tell that story?

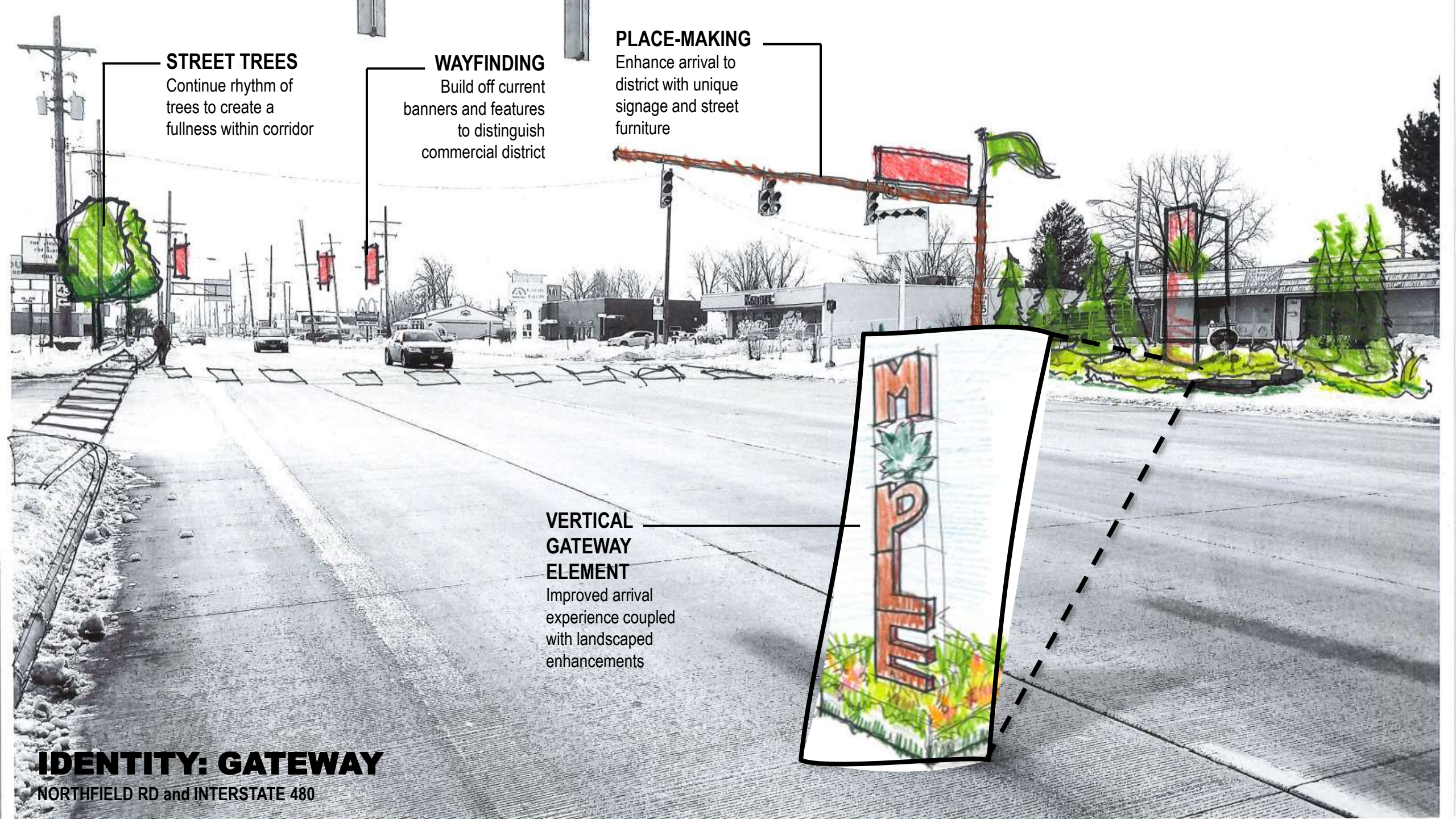
AREAS OF FOCUS

IDENTITY


North Gateway:
Warrensville Ctr Rd
Gateway:
Northfield Rd
South Gateway:
Warrensville Ctr Rd

IDENTITY: GATEWAY

NORTHFIELD RD and INTERSTATE 480

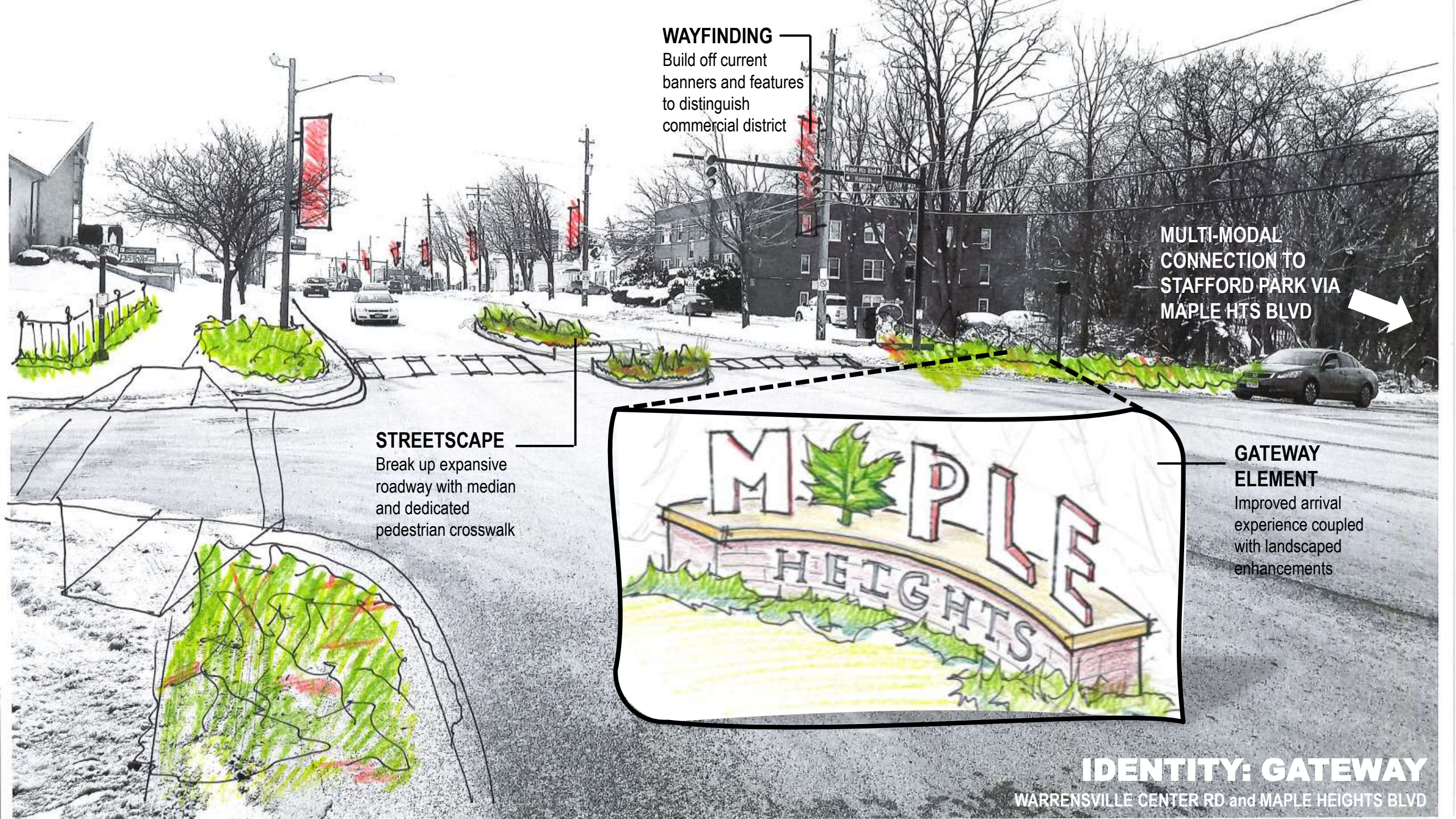


IDENTITY: GATEWAY

NORTHFIELD RD and INTERSTATE 480

IDENTITY: GATEWAY

WARRENSVILLE CENTER RD and MAPLE HEIGHTS BLVD



IDENTITY: GATEWAY

WARRENSVILLE CENTER RD and MAPLE HEIGHTS BLVD

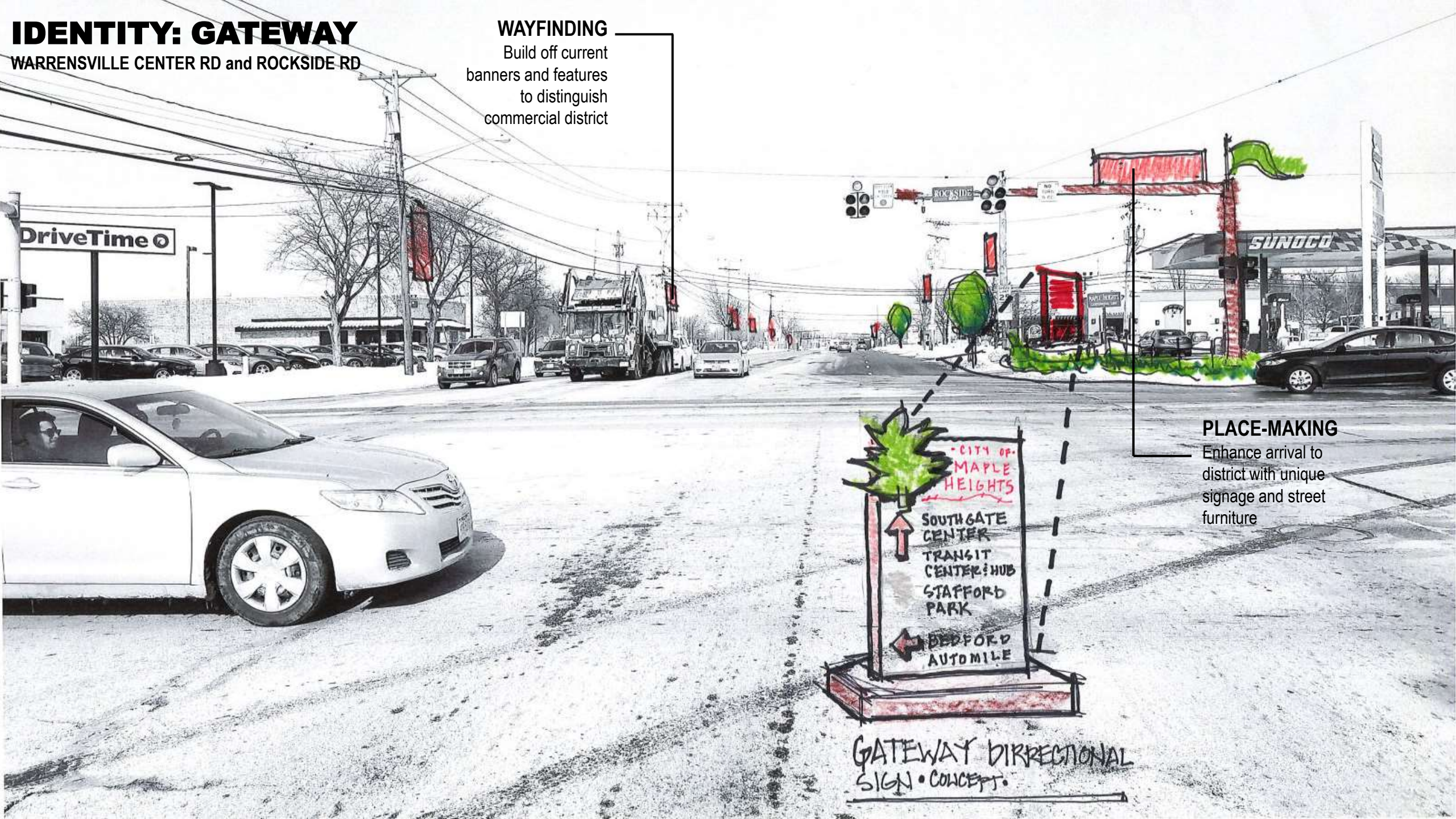
IDENTITY: GATEWAY

WARRENSVILLE CENTER RD and ROCKSIDE RD

IDENTITY: GATEWAY

WARRENSVILLE CENTER RD and ROCKSIDE RD

WAYFINDING
Build off current banners and features to distinguish commercial district



PLACE-MAKING
Enhance arrival to district with unique signage and street furniture

MOVEMENT comes in different shapes and forms…
How does it feel to move through your City?

MOVEMENT


LIBBY RD
Warrensville Ctr
KeyBank

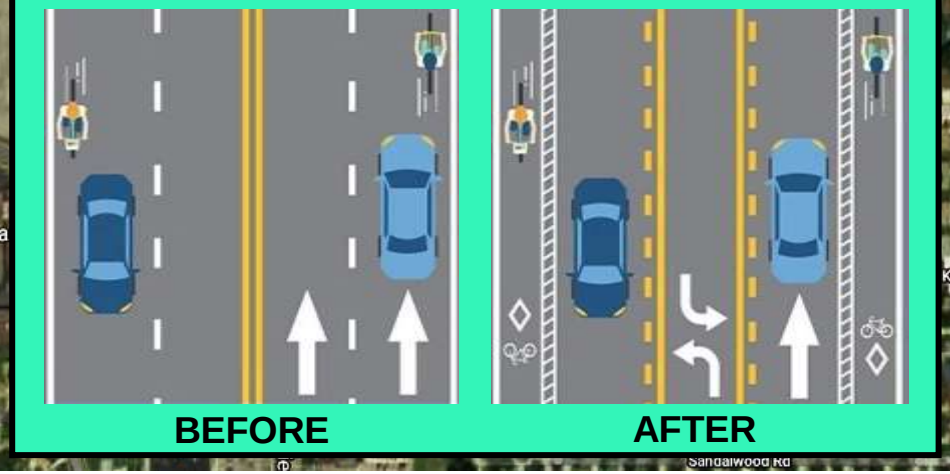
Future Conditions – Traffic Analysis
(Optimized Timing and Phasing)

- Convert Libby Road from 4 lanes ---> 3 lanes
- Access management throughout the commercial district
- Reduce lanes on Southgate Blvd to standard lane widths
- ADA compliance throughout the commercial district
- Enhanced pedestrian crossings
- Low stress bike facilities on WRC & Northfield (Cuyahoga Greenways Plan)
- Enhance non-motorized access to Southgate Transit Center

B/C

B/C

C/C




18'
Sidewalk tree
2'
L...
11'
Drive lane
11'
Planting strip
11'
Drive lane
2'
L...
18'
Sidewalk tree

an

Cuyahoga Greenways Project Home

Implementation | Interactive Map

LEGEND

CGW: Regional Network Existing & Future

- Regional Off-Street: Existing
- Regional Future Routes

CGW: Existing Off-Road

- Other Off-Street: Existing

Data: Open Space

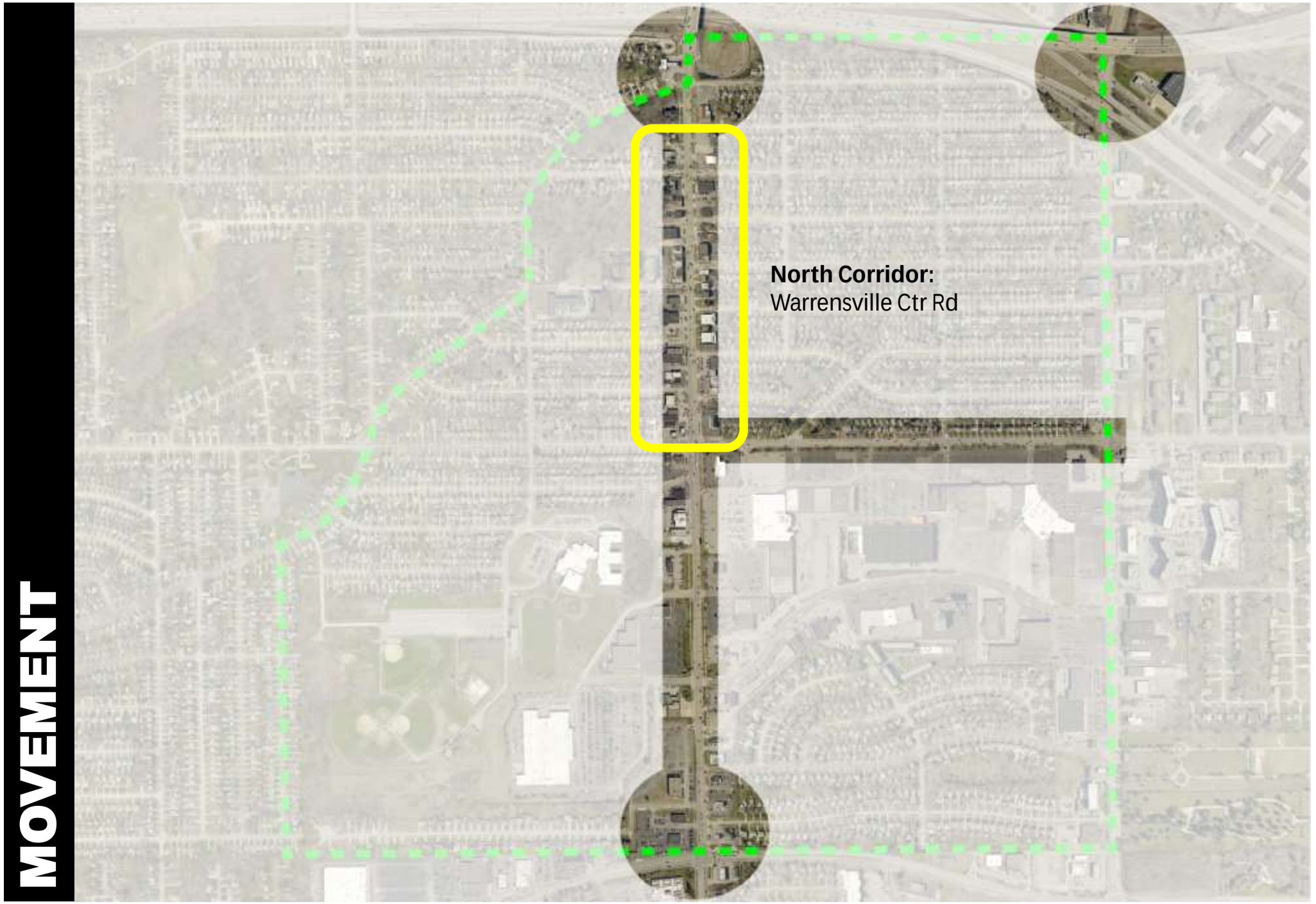
- Parks
- Other Recreational

Cuyahoga County, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA | Esri, HERE


7' Sidewalk
8' Sidewalk tree
2' L..
6' Bike lane
6' Bike lane
4' Planti..
11' Drive lane
11' Planting strip
11' Drive lane
2' L..
11' Sidewalk tree
10' Sidewalk
9' Planting strip


6' Sidewalk
7' Sidewalk tree
2' L..
6' Bike lane
2' Pl..
11' Drive lane
11' Planting strip
11' Drive lane
2' Pl..
6' Bike lane
7' Bikeshare st..
2' L..
8' Sidewalk tree
8' Sidewalk
9' Planting strip

MOVEMENT



MOVEMENT: CORRIDOR

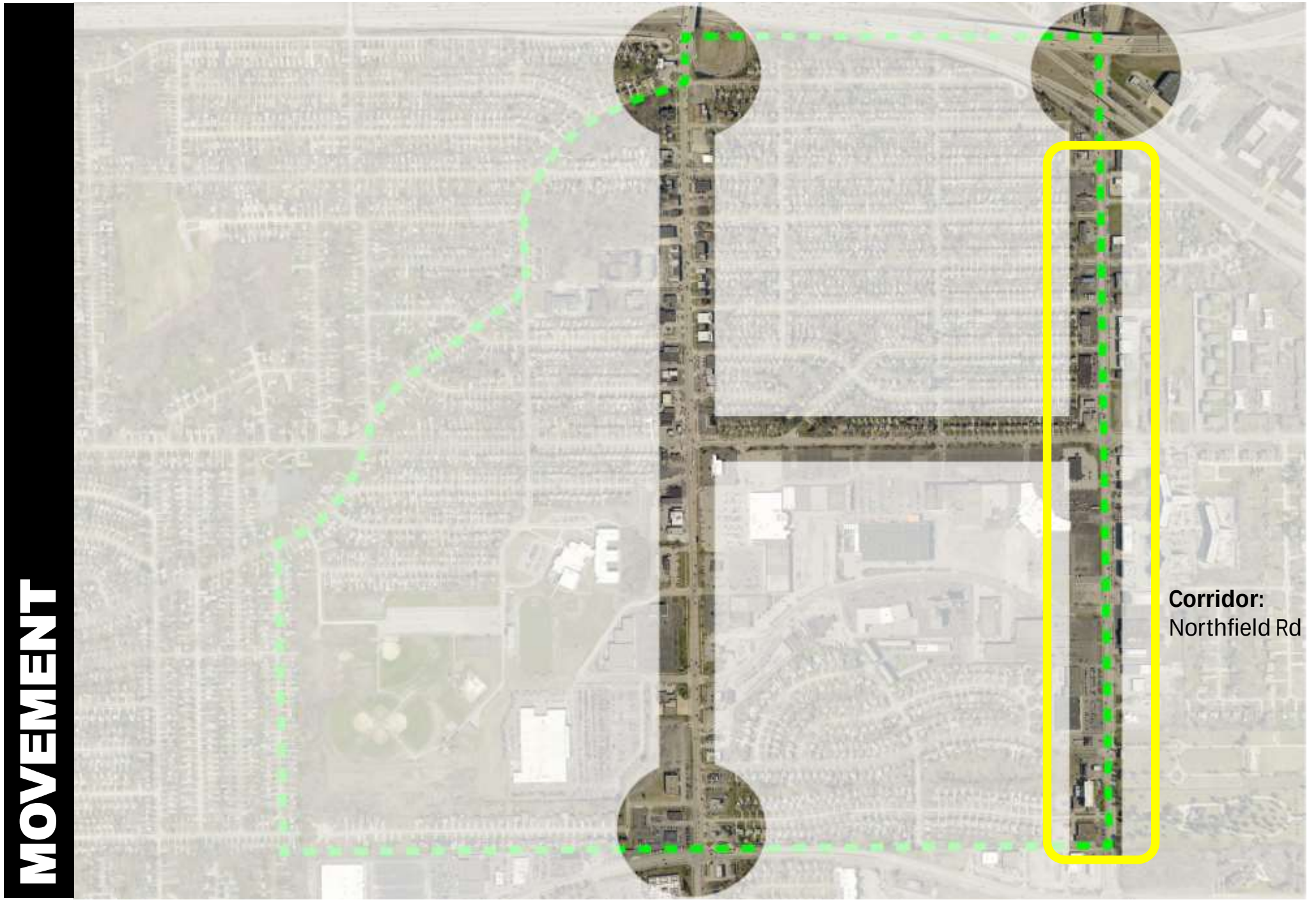
WARRENSVILLE CENTER RD

PROTECTED AND CLEARLY IDENTIFIED CROSSING

MOVEMENT

SOFTENING THE EDGE OF THE PARKING AREAS

MOVEMENT



Corridor:
Northfield Rd


NORTHFIELD RD

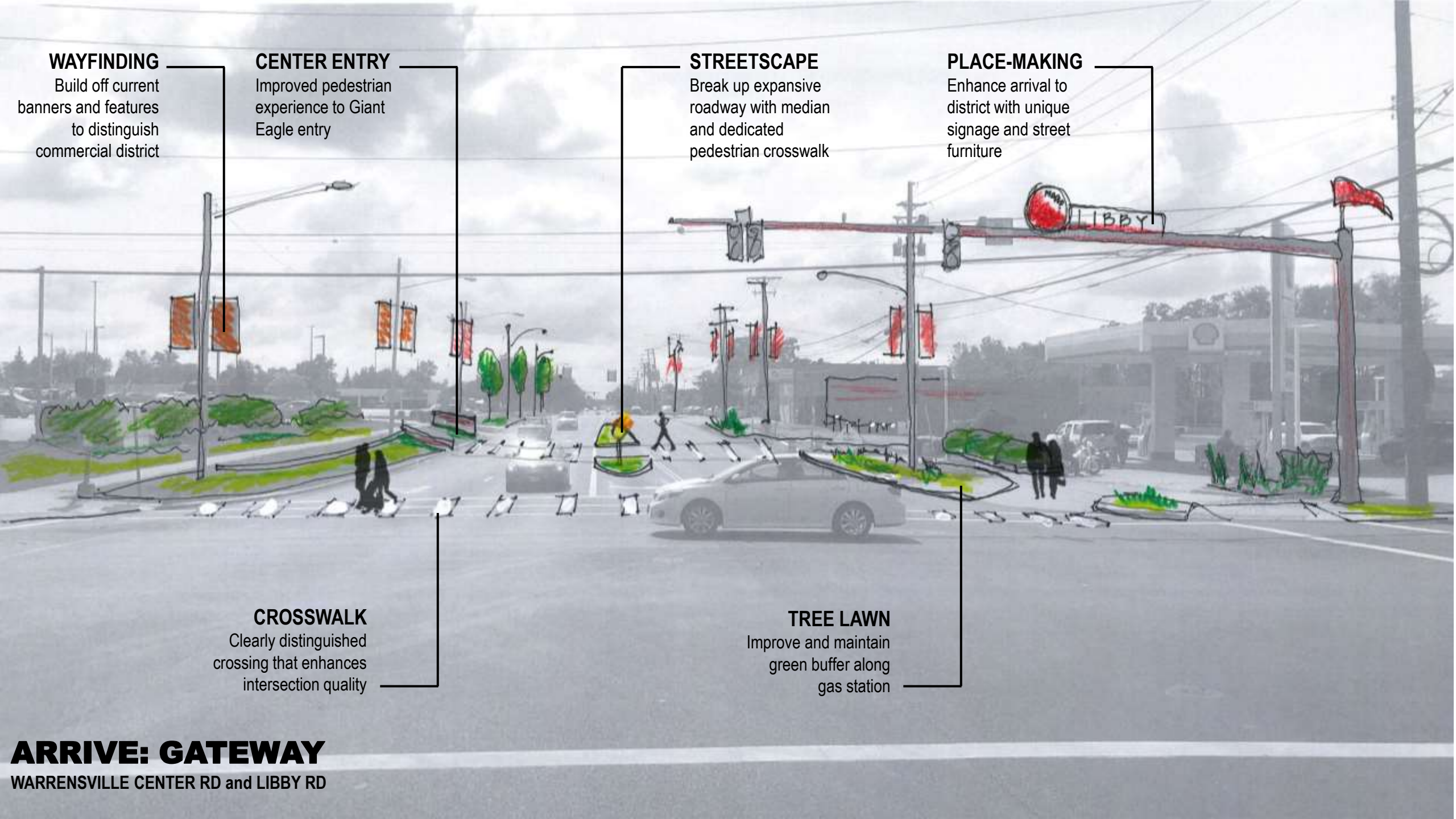
EXTENSION OF BANNER PROGRAM & PEDESTRIAN SCALE LIGHTING

Describe the feeling you have when you ARRIVE at a memorable destination.

ARRIVE

ARRIVE: GATEWAY

WARRENSVILLE CENTER RD and LIBBY RD



WAYFINDING
Build off current banners and features to distinguish commercial district

CENTER ENTRY
Improved pedestrian experience to Giant Eagle entry

STREETSCAPE
Break up expansive roadway with median and dedicated pedestrian crosswalk

PLACE-MAKING
Enhance arrival to district with unique signage and street furniture

CROSSWALK
Clearly distinguished crossing that enhances intersection quality

TREE LAWN
Improve and maintain green buffer along gas station

ARRIVE: GATEWAY

WARRENSVILLE CENTER RD and LIBBY RD

TAKING ACTION

IMMEDIATE — less than 3 years
NEAR TERM — more than 3 more years
LONG TERM — more than 5 more years

$ – less than $100,000
$$ – $100,000 to $500,000
$$$ – more than $500,000

STAGGARD PARK

Community Rank	Item	Description	Total Projected Costs	Timeframe	Funding Sources
1	1	Improvement and placement of directional signage for park at Libby Rd and Maple Ave, Libby Rd and Maple Heights Blvd, and Stockton Ave and Bloomers Flr Ctr Rd	$	Immediate	NOACA TLCI, CSG Program, ODOT TAP, City of Maple Heights
	2	Align signage at park entrances at Maple Hei	$	Immediate	NOACA TLCI, CSG Program, ODOT TAP, City of Maple Heights
	3	Eliminate a portion of excess pavement to incr the future and new lands (spring)			
	4	Vertical striped crosswalks at Libby Rd and Ma			
	5	Extension of trail at Millswitch Middle School Stockton Ave at Bloomers Flr Ctr Rd			
	6	Installation of new paths at Stockton Ave–Wa with proposed trailhead elements at Staggs			
	7	barrier with a natural buffer that coordinates t			
	8	closest paths for non-pedestrian modes of tra			
	9	Explore the ability to create and extend Sout			
	10	Creation of a trail head at Stockton Ave and M while enhancing the connection to the right			
	11	Trailhead elements, centralized amenities, and			
		mural program in collaboration with existing			
		Tree planting program in collaboration with e			
		treated path that provides safe access for pe			
		Programmed space for food trucks, communa			

SOUTH GATEWAY - ROCKSIDE RD

Community Rank	Item	Description	Total Projected Costs	Timeframe	Funding Sources
2	1	Addition of gateway element that announces arrival and provides way finding for the commercial district	$$	Immediate	NOACA TLCI, CSG Program, ODOT TAP, City of Maple Heights
	2	Enhancement of banner program along Warrensville Ctr Rd	$	Immediate	NOACA TLCI, NOACA TIP, City of Maple Heights
	3	Potential elimination of excess curb cuts at gas station entry at NE corner of intersection	$$	Long Term	ODOT TAP, TIF, Assessment, CSG Program, City of Maple Heights
	4	Installation of center median at intersection, removing a portion of the existing center turning lane	$$$	Long Term	ODOT TAP, TIF, Assessment, DORR Naturewerks, DORR CDFF, City of Maple Heights
	5	Vertical striped crosswalks for clear identification of pedestrian crossing	$	Immediate	NOACA TLCI
	6	Explore addition of bus shelters to improve transit waiting environments	$$	Long Term	CSG Program, ODOT TAP, NOACA TLCI
	7	Enhanced City of Maple Heights Welcome Sig			
	8	Additional planting of trees to enhance tree c			

SOUTHGATE USA

Community Rank	Item	Description
3	1	Commercial District signage
	2	Way finding and improved awareness of the p
	3	Incorporate roadway improvements of Libby and the Lanes, medians, and other green elen
	4	Extension of pedestrian path on the south side establishing existing trees
	5	Vertical striped crosswalks at all pedestrian cro Warrensville Ctr Rd, Libby Rd, Northfield Rd, Rd, S crossing efforts to Nu Thi
	6	Added crossings at Program Rd–Libby Rd and S
	7	Explore addition of bus shelters to improve tra
	8	Banner program enhancement that differentia
	9	Programmed space for food trucks, communa

NORTH GATEWAY - WARRENSVILLE CENTER RD

Community Rank	Item	Description	Total Projected Costs	Timeframe	Funding Sources
4	1	Demolition for right-of-way establish edge between Warrensville Church and sidewalk	$$	Immediate	TIF, City of Maple Heights
	2	Enhancement of existing banner program along ware corridors	$$	Immediate	NOACA TLCI, NOACA TIP, City of Maple Heights
	3	Addition of way finding signage at City Limits, particularly directional signage to Southgate Park	$$	Long Term	NOACA TLCI, CSG Program, ODOT TAP, City of Maple Heights
	4	Installation of center median as a traffic calming measure and potential pedestrian refuge	$$	Near Term	ODOT TAP, TIF, Assessment, DORR Naturewerks, DORR CDFF, City of Maple Heights
	5	Vertical striped crosswalks for clear identification of pedestrian crossing	$	Immediate	CSG Program, ODOT TAP, NOACA TLCI
	6	Roadway reconfiguring along Warren Road	$$$	Long Term	ODOT TAP, TIF, Assessment, DORR Naturewerks, DORR CDFF, City of Maple Heights, NOACA TLCI, NOACA TIP, CSG Program
	7	Study feasibility of tree lawn along Maple Heights Blvd to encourage multi-modal access	$$	Near Term	NOACA TLCI, CSG Program, ODOT TAP, City of Maple Heights
	8	Enhanced City of Maple Heights Welcome Signage	$$	Immediate	NOACA TLCI, CSG Program, City of Maple Heights
	9	Bicentennial forest preservation of tree planters at Maple Heights Blvd and Warrensville Ctr Rd	$$	Immediate	DORR Naturewerks, City of Maple Heights

NORTH GATEWAY - NORTHFIELD

Community Rank	Item	Description	Total Projected Costs	Timeframe	Funding Sources
5	1	Addition of gateway element that announces arrival and provides way finding for the commercial district	$$	Near Term	NOACA TLCI, CSG Program, ODOT TAP, City of Maple Heights
	2	Enhancement of banner program along Northfield Rd	$	Immediate	NOACA TLCI, NOACA TIP, City of Maple Heights
	3	Mastic/Gravel travel to create fairness within the Northfield Rd corridor, and add in traffic calming	$$	Near Term	ODOT TAP, TIF, DORR Naturewerks, DORR CDFF, City of Maple Heights
	4	Vertical striped crosswalks for clear identification of pedestrian crossing	$	Immediate	CSG Program, ODOT TAP, NOACA TLCI
	5	Enhanced City of Maple Heights Welcome Signage	$	Near Term	NOACA TLCI, CSG Program, ODOT TAP, City of Maple Heights

WARRENSVILLE CENTER RD - LIBBY RD

Community Rank	Item	Description	Total Projected Costs	Timeframe	Funding Sources
6	1	Improvement of arrival through community entry and Hyacinth art installation	$$	Near Term	NOACA TLCI, CSG Program, ODOT TAP, City of Maple Heights
	2	Mastic/Gravel travel to create fairness within the Warrensville Ctr Rd corridor	$$	Near Term	ODOT TAP, TIF, Assessment, DORR Naturewerks, DORR CDFF, City of Maple Heights
	3	Improved pedestrian paths along Warrensville Ctr Rd corridor	$$	Immediate	CSG Program, ODOT TAP, NOACA TLCI, NOACA TIP
	4	Vertical striped crosswalks for clear identification of pedestrian crossing	$	Long Term	CSG Program, ODOT TAP, NOACA TLCI
	5	Improve pedestrian safety through a formalized crossing of Warrensville Ctr Rd and Stockton Ave that provides a direct connect to Southgate USA	$$$	Near Term	CSG Program, ODOT TAP, NOACA TLCI
	6	Enhanced transit waiting environments that provide added seating and protection from the elements	$$	Immediate	NOACA TLCI, GOBRA, City of Maple Heights
	7	Commercial district way finding signage	$$	Near Term	NOACA TLCI, CSG Program, ODOT TAP, City of Maple Heights
	8	District-branded city furniture that aligns with City-wide standards			NOACA TLCI, City of Maple Heights, DORR Naturewerks

PRIORITIZING INVESTMENT

For possible next steps, the City could work with NOACA to implement their Street Supplies program, a free roadway "library" of components for temporary transportation projects. These components can be used to test ideas for future permanent installation. Also, listed below are immediate actions with respective funding sources.

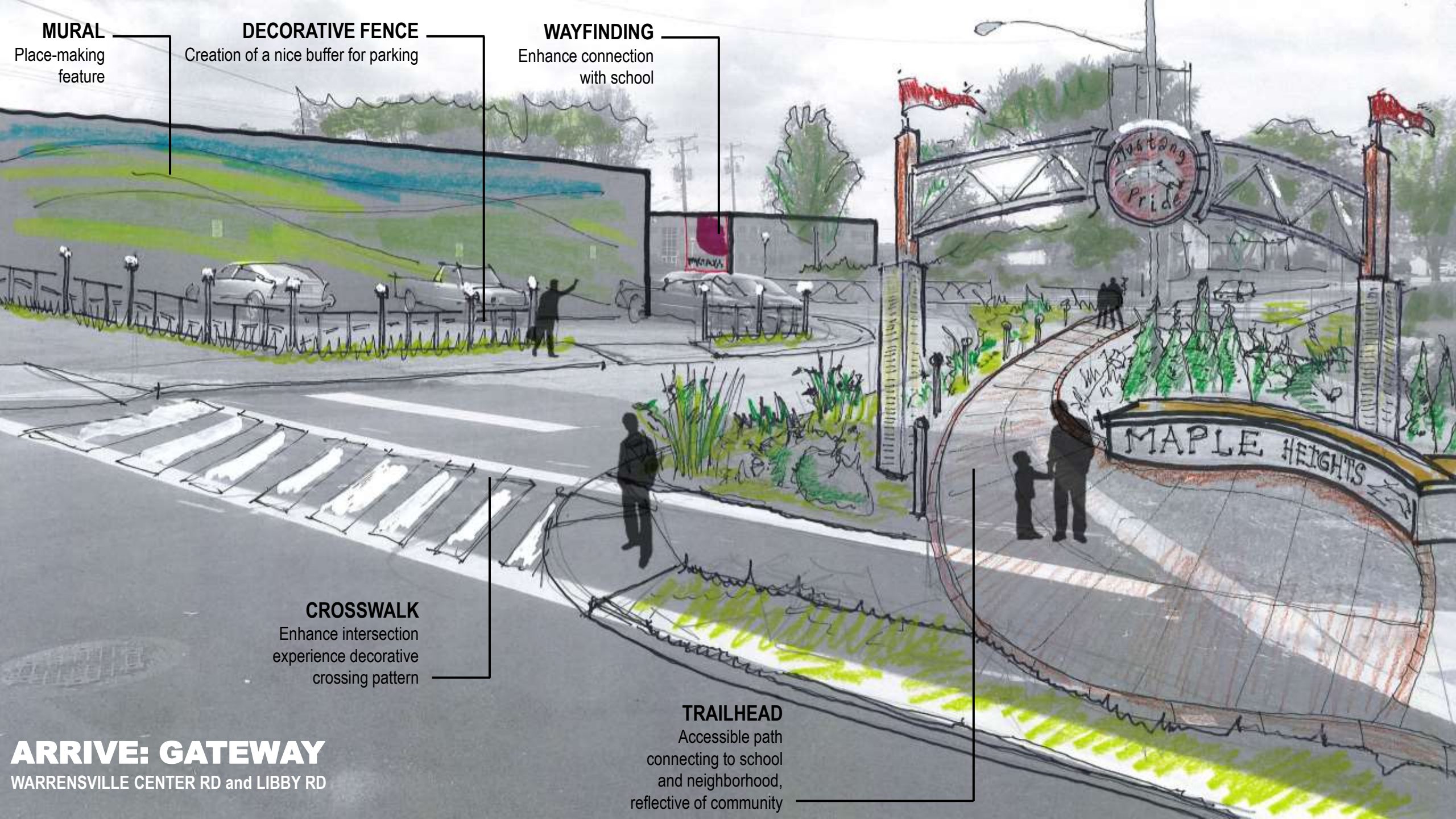
LOCATION/INITIATIVE	COST	POTENTIAL FUNDING SOURCES
SOUTH GATEWAY - ROCKSIDE RD		
Addition of gateway element that announces arrival and provides wayfinding for the commercial district	$$	NOACA TLCI, CSG Program, ODOT TAP, City of Maple Heights
Enhanced City of Maple Heights Welcome Signage	$	NOACA TLCI, CSG Program, City of Maple Heights
Enhancement of banner program along Warrensville Ctr Rd	$	NOACA TLCI, CSG Program, City of Maple Heights
Vertical striped crosswalks for clear identification of pedestrian crossing	$	CSG Program, ODOT TAP, NOACA TLCI
NORTH GATEWAY - WARRENSVILLE CENTER RD		
Enhanced City of Maple Heights Welcome Signage	$	NOACA TLCI, CSG Program, ODOT TAP, City of Maple Heights
Strategic forest preservation of tree growth at Maple Heights Blvd and Warrensville Ctr Rd	$$	ODNR Natureworks, City of Maple Heights
Decorative fencing to establish edge between Warrensville Church and sidewalk	$$	ODOT TAP, TIF, City of Maple Heights
Vertical striped crosswalks for clear identification of pedestrian crossing	$	CSG Program, ODOT TAP, NOACA TLCI
NORTH GATEWAY - NORTHFIELD RD		
North Gateway Northfield Item 2: Enhancement of banner program along Northfield Rd	$	NOACA TLCI, NOACA TIP, City of Maple Heights
North Gateway Northfield Item 4: Vertical striped crosswalks for clear identification of pedestrian crossing	$	CSG Program, ODOT TAP, NOACA TLCI
STAFFORD PARK		
Improvement and placement of directional signage for park at Libby Rd and Mayville Ave, Libby Rd and Maple Heights Blvd, and Stockton Ave and Warrensville Ctr Rd	$	NOACA TLCI, CSG Program, ODOT TAP, City of Maple Heights
Align signage at park entrances at Maple Heights Blvd and Mayville Ave with city's brand standards	$	NOACA TLCI, CSG Program, ODOT TAP, City of Maple Heights
Programmed space for food trucks, community events, throughout all months of year	$	City of Maple Heights
Vertical striped crosswalks at Libby Rd and Mayville Ave, Libby Rd and Maple Heights Blvd, and across Stockton Ave at Warrensville Ctr Rd	$	CSG Program, ODOT TAP, NOACA TLCI
WARRENSVILLE CENTER ROAD - LIBBY ROAD		
Commercial district wayfinding signage	$$	NOACA TLCI, CSG Program, ODOT TAP, City of Maple Heights
Vertical striped crosswalks for clear identification of pedestrian crossing	$	CSG Program, ODOT TAP, NOACA TLCI

TOP 3 PRIORITIES

- Enhanced City of Maple Heights Welcome Signage
- Vertical striped crosswalks for clear identification of pedestrian crossings
- Align signage at park entrances at Maple Heights Blvd and Mayville Ave with City's brand standards

ARRIVE: GATEWAY

WARRENSVILLE CENTER RD and STOCKTON AVE



ARRIVE: GATEWAY

WARRENSVILLE CENTER RD and LIBBY RD

IDENTITY.

ARRIVE.

MOVEMENT.

THE WINNING CULTURE OF MAPLE HEIGHTS CAN BE STRENGTHENED THROUGH TRANSPORTATION CONNECTIONS AND PLACEMAKING CENTERED AROUND COMMUNITY.

MAPLE HEIGHTS

SOUTHGATE CONNECTIVITY STUDY

Traffic Analysis & Recommendations

January 2020

1. BACKGROUND

The Southgate Connectivity Study incorporates planning and urban design with a focus on traffic operations, multi-modal connections, and corridor improvements to support bicycle infrastructure, and general transportation planning that will revitalize the city of Maple Heights' Southgate area. The study assesses the potential for enhanced multimodal connectivity between community assets, adjacent residential neighborhoods, and nearby emerging employment centers. The project study area, as defined by the city in the Request for Proposals, is shown in Figure 1. Traffic analysis is focused on Libby Road between Warrensville Center Road and Northfield Road.

Figure 1: Project Study Area

1.1 Bicycle and Pedestrian Facilities

Maple Heights does not currently have any dedicated bicycle facilities. This is a challenge for the community and its residents, particularly with the decrease in vehicle ownership. Within the Maple Heights Master Plan, NOACA identified a high demand for bike travel in Maple Heights with the Broadway Corridor called out as a potential priority bikeway. Likewise, the Cuyahoga Greenways Plan recommends provision of bicycle facilities that serve all ages and abilities in throughout Cuyahoga County, including the area that encompasses Maple Heights. In addition, local leaders have noted the lack of transportation options for younger and older Maple Heights residents.

The 2018 Maple Heights Master Plan documents the need for a complete transportation network, which addresses pedestrian needs with sidewalks and appropriate roadway crossing treatments for pedestrians. Pedestrian facilities, treatments and amenities should be provided to accommodate safe pedestrian travel with connections to the front entrances of shopping plazas and/or used to safely connect students to their schools. This is especially important along priority corridors.

1.2 Transit Service

The study area benefits from transit service provided by the Greater Cleveland Regional Transit Authority (GCRTA RTA) with the presence of the Southgate Transit Center which is served by multiple bus routes. Transit routes serving Maple Heights generally provide connections to Downtown Cleveland and crosstown with service every 30-45 minutes weekdays from early in the morning through 7 PM. Later in the evening and on the weekends, bus frequency is much lower with buses operating at a 60-minute frequency.

Current transit operations in the Southgate study area consists of four local GCRTA bus routes and one regional express route operated by the Portage Area Regional Transportation Authority (PARTA) as shown in Figure 2. These routes all connect at the Southgate Transit Center, located within the northeast quadrant of the Warrensville Center Road / Southgate Park Boulevard intersection. The Southgate Transit Center is a common stop for many of the buses that serve Cuyahoga County's southeast suburbs, including flyer service to Downtown Cleveland. Southgate Transit Center was built by RTA to provide a safe and convenient place for buses to turn around and lay over, and for passengers to wait for buses or for transfers between bus routes. The facility includes comfort station and break room for bus operators for use during layovers at the end of their trips. The facility also includes 28 parking spaces that can be used for park-and-ride service.

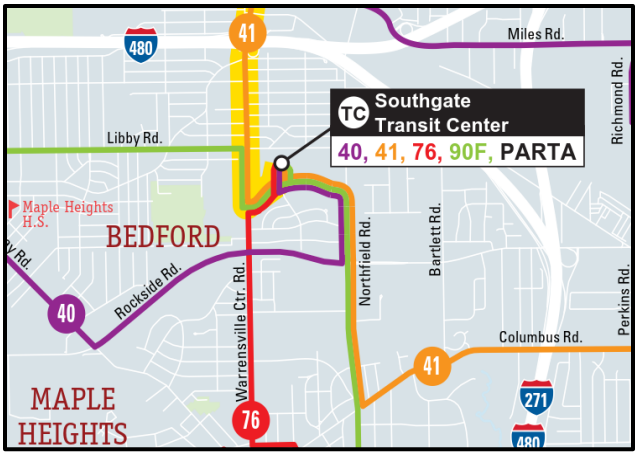


Figure 2: Transit Service in Southgate Study Area

GCRTA Routes 40 and 76 terminate at the Southgate Transit Center at their southern end. Some trips by Route 41 also end at Southgate. GCRTA Route 91F and PARTA Route 100 both serve the Southgate Transit Center.

GCRTA Route 40: Lakeview-Lee

Route 40 is a local crosstown bus route that provides service between Taft Avenue and Eddy Road in East Cleveland, and Southgate Transit Center in Maple Heights. This crosstown route runs north-south on East 110th Street and Lakeview in the north end and primarily on Lee and Broadway to the south of East Cleveland. Route 40 connects with the Red, Green and Blue Line Rapid lines and most major east-west bus routes, providing access to regional transit service throughout the region.

GCRTA Route 41-41F: Warrensville

Route 41-41F is a local crosstown bus route that runs north-south on Euclid Avenue and Noble Road in the northern area and on Warrensville Center Road to the south. Route 41-41F connects to the Red, Green and Blue Line rail lines as well as most major east-west bus routes, providing riders with access to regional destinations.

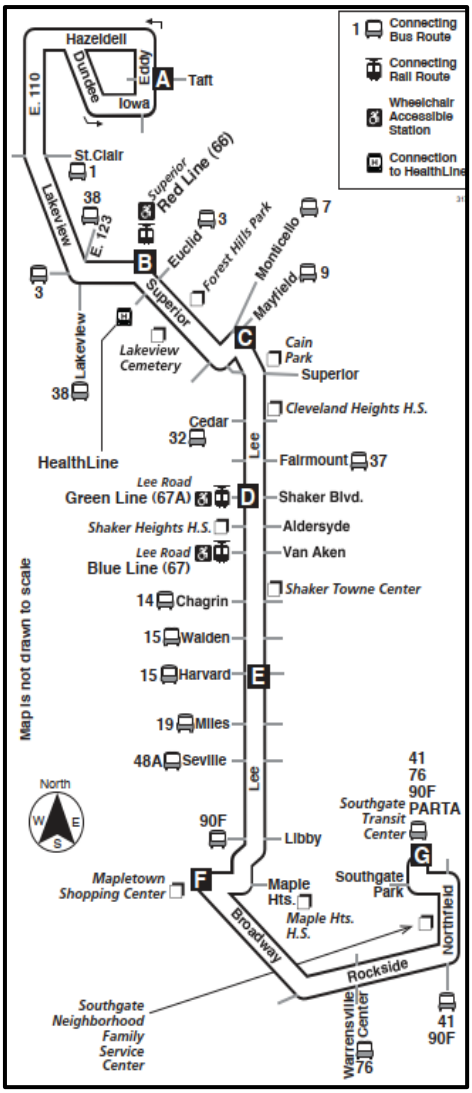


Figure 3: GCRTA Route 40

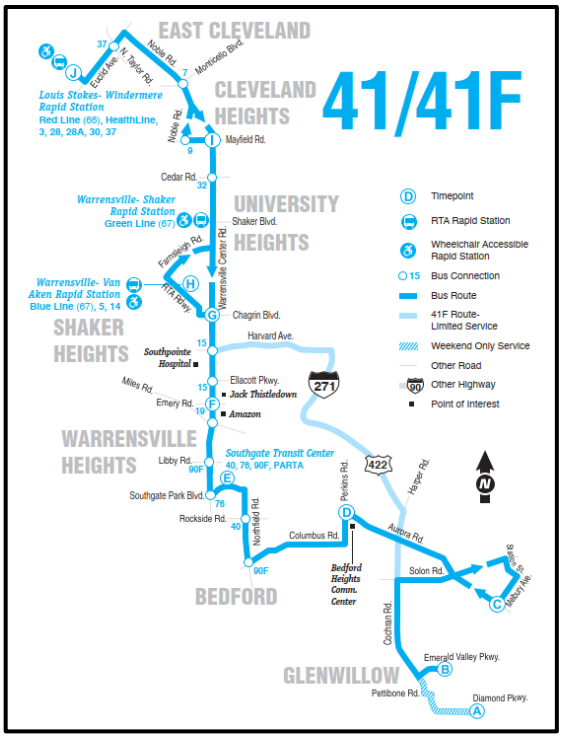


Figure 4: GCRTA Route 41/41F

Points of interest along the route include Shaw High School, University Square, John Carroll University, Southpointe Hospital, JACK Thistledown, Amazon Fulfillment Center, Bedford Heights Community Center, Solon Industrial Park, and Solon Square Shopping Center.

GCRTA Route 76: Broadway-Turney

Route 76 is a local crosstown bus route that runs north-south with service between the Turney-Ella Loop to the north and the Southgate Transit Center to the south; some select trips extend service beyond the Turney-Ella Loop into Downtown Cleveland. The route alignment travels on Broadway Avenue and Turney Road through Cleveland, Garfield Heights, Maple Heights and Bedford. Route 76 provides access to bus, rail and trolley transit at Tower City and Public Square, including the HealthLine and the CSU Line BRT service. Popular destinations along the route include Bedford Medical Center, Bedford City Hall, Garfield Commons, Garfield Heights City Hall, Turneytown Shopping Center, MetroHealth Broadway Care Access, Main Post Office, Progressive Field, Quicken Loans Arena, Tower City, and the Cleveland Public Library Main Library.

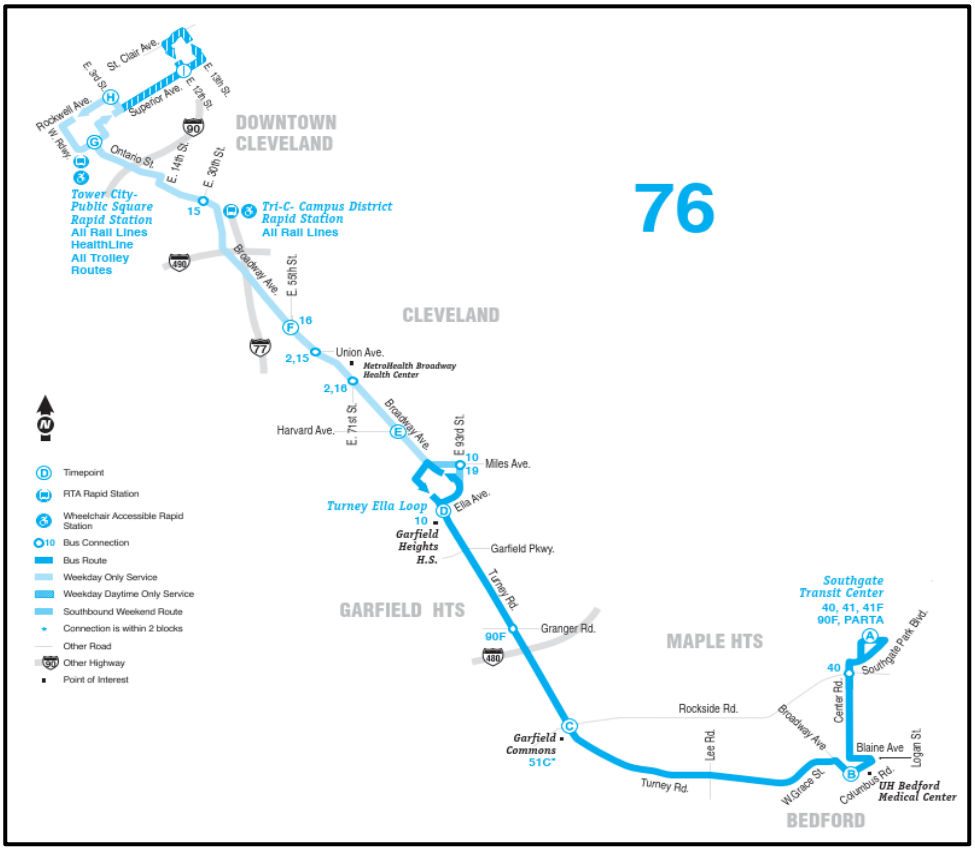


Figure 5: GCRTA Route 76

GCRTA Route 90F: Broadway-Libby

Route 90F provides "flyer" service between Downtown Cleveland and Summit County Line Loop at Broadway and Richmond Road with select trips operating via Northfield and Alexander Roads. Buses travel on I-77 and I-480 without stops. Local stop service to Granger Road in Garfield Heights. This becomes Libby Road as the buses head to Northfield. Buses continue on Broadway Avenue, and end at Broadway and Richmond Road -- the Summit County Line -- in Oakwood Village. The 90F route provides access to Tower-City Public Square Rapid Station, the HealthLine, all rail lines and all trolley routes. Popular Destinations along the route include Tower City, the Justice Center, Cleveland Convention Center, Mapletown Shopping Center, Meadowbrook Shopping Center, and the Summit County Line.

The route alignment is shown in schematic form in Figure 8, and the alignment in the area around Southgate is shown in Figure 1.

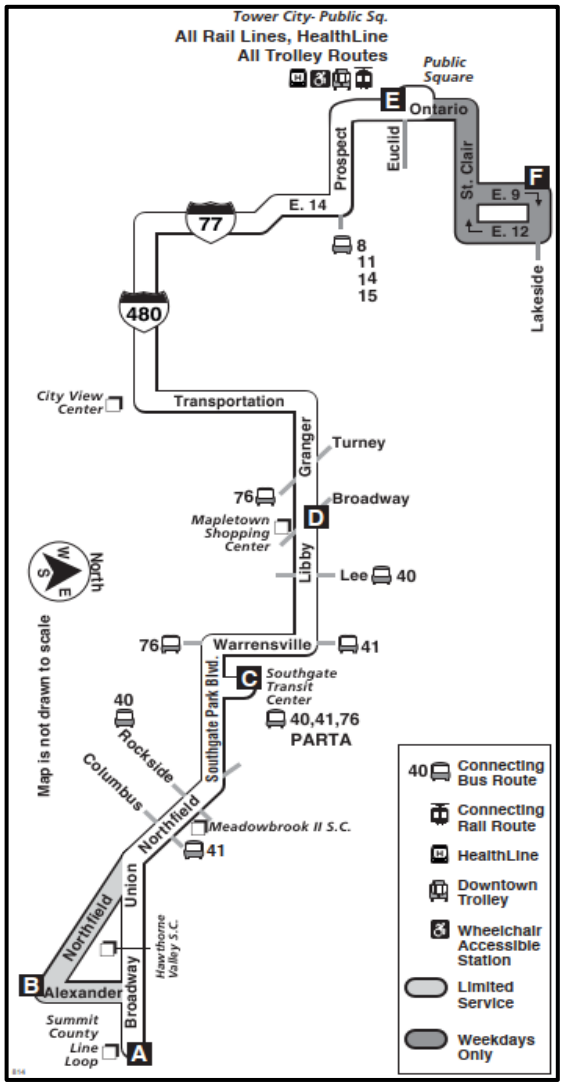


Figure 6: GCRTA Route 90F

PARTA Route 100: Cleveland Express

PARTA Route 100 provides express service between Kent State University and greater Cleveland, including a stop at the Southgate Transit Center. Areas served include Kent State University Student Center, Kent Central Gateway, Streetsboro, the Southgate Transit Center, Downtown Cleveland, the STJ Transit Center, the Greyhound station, and University Circle.

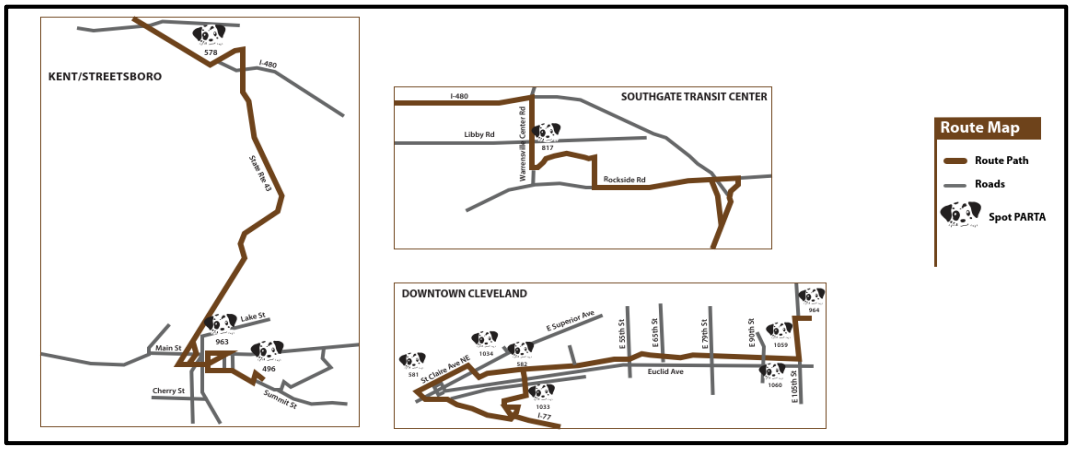


Figure 7: PARTA Route 100F

2. TRAFFIC ANALYSIS

2.1 Purpose and Methodology

Analysis of traffic operations is included as part of the Southgate TLCI study to understand current roadway operations and identify areas with potential excess capacity. The traffic analysis was initiated early in the study process to understand the feasible range of possibilities for the Southgate plan. Traffic operations were analyzed along the Libby corridor, including the three signalized intersections between the Warrensville Center Road and Northfield Road intersections. Traffic data was collected and analyzed to assess the feasibility of a reduction in traffic capacity on Libby Road to add facilities to better accommodate non-motorized travel. If feasible, reducing the number of vehicular lanes along Libby road would provide flexibility and opportunities for improvements for non-motorized travelers and the public realm. The study area intersections included in the analysis are:

1. Libby Road/Warrensville Center Road
2. Libby Road/Prayner Road
3. Libby Road/Northfield Road

Traffic volumes were collected on September 10, 2019 at the three study area intersections from 6:00 AM to 10:00 AM and from 3:00 P.M. to 7:00 PM. The traffic volume data provided the capability to identify and document AM and PM peak hour volumes.

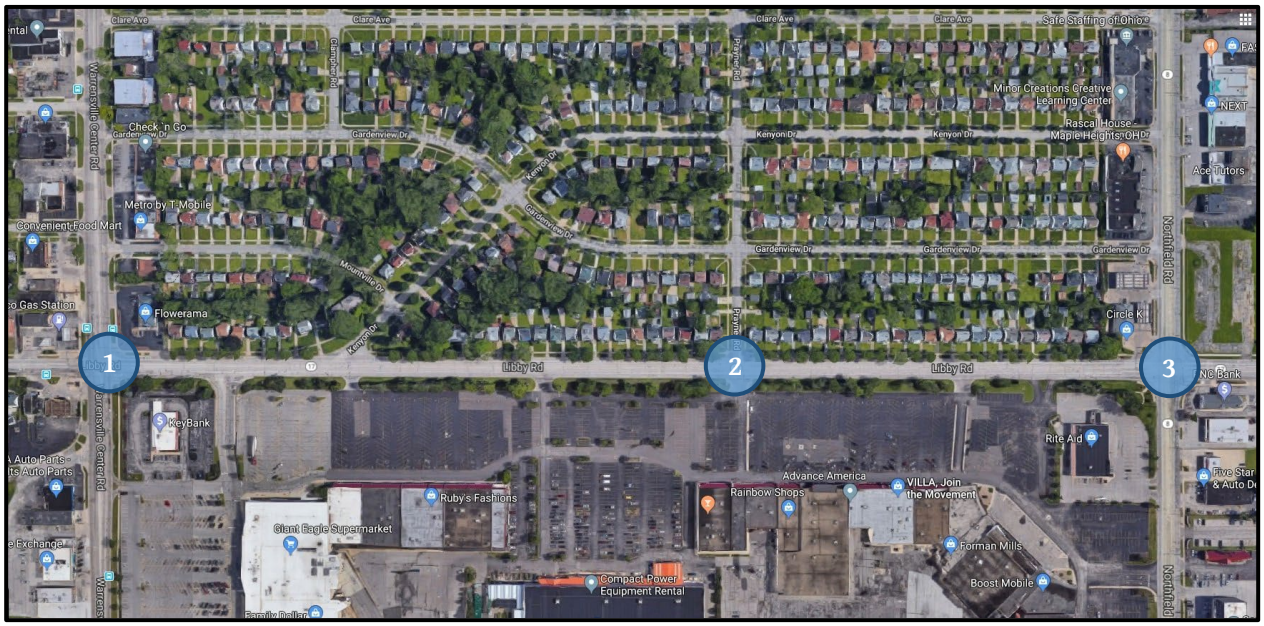


Figure 8: Study Area for Traffic Analysis

Traffic data was analyzed using Synchro Version 9 and SimTraffic 9, traffic simulation models, to evaluate peak hour traffic performance and operational efficiency at each intersection. These two models are used for evaluation of traffic operations because they function from the same software package and provide differing perspectives based on their individual modeling platforms. Synchro analyzes intersections, corridors and roadway networks at a macro level.

SimTraffic performs at a microsimulation level, clearly and visually reflecting how intersections within a corridor or network interact with each other.

The analysis results for each intersection include average delay (measured in seconds), level of service (LOS), and volume/capacity ratio (v/c). Average delay is an indication of the delay that would typically be experienced during the analyzed period under the defined traffic operations. Level of service is a grading scale based upon average delay; LOS A represents free-flow conditions, LOS E represents operational capacity, and LOS F represent over-capacity conditions. LOS D is the accepted design standard for urban/developed areas like Maple Heights. The delay thresholds for signalized and unsignalized intersections are defined in the Transportation Research Board's Highway Capacity Manual 2010 and are shown in the table below. A v/c ratio less than 1.0 indicates the travel lane is operating below capacity; a v/c ratio of 1.0 indicates operations at capacity (LOS E), and a v/c ratio exceeding 1.0 indicates over-capacity conditions (LOS F).

Table 1: Level of Service Thresholds

Level of Service (LOS)		
LOS	Signalized Intersection Average Delay (sec/veh)	Unsignalized Intersection Average Delay (sec/veh)
A	≤10	0-10
B	>10-20	>10-15
C	>20-35	>15-25
D	>35-55	>25-35
E	>55-80	>35-50
F	>80	>50

Source: Highway Capacity Manual 2010

2.2 Existing Conditions Traffic Analysis

The study area's primary roadways and their distinguishing characteristics are summarized below:

- **Warrensville Center Road** is a four-lane, north-south roadway with two travel lanes in each direction and dedicated left turn lanes at the bigger, signalized intersections.
- **Northfield Road** is a five-lane, north-south roadway with two travel lanes in each direction plus a center turn lane.
- **Libby Road** is a four-lane, east-west roadway with two eastbound and two westbound travel lanes.
- **Southgate Park Boulevard** is an east-west roadway that carries two wide travel lanes, one in each direction.

The study area traffic volumes are influenced by commuter traffic traveling to and from Interstate 480 via Warrensville Center Road and Northfield Road, Rockside Road and the Southgate Transit Center. In addition, the recently opened Amazon Fulfillment Center, located roughly one mile north of the study area, impacts the area with employee and truck/delivery traffic.

AM peak hour traffic volumes are shown in Figure 9 and PM peak hour volumes are shown in Figure 10. The results of the analysis of traffic operations are provided in Table 2. The analysis results show that all intersections operate at LOS C or better. Since LOS D is the accepted design standard for urban areas and a v/c ratio of 1.0 reflects conditions at capacity, the level of service and v/c results indicate that the study area roadways provide more capacity than is required by peak hour demand. As such, reconfiguration of the roadways that incorporate capacity reductions would likely be feasible. Analysis of the proposed conditions is an appropriate next step to assess potential roadway configuration alternatives.

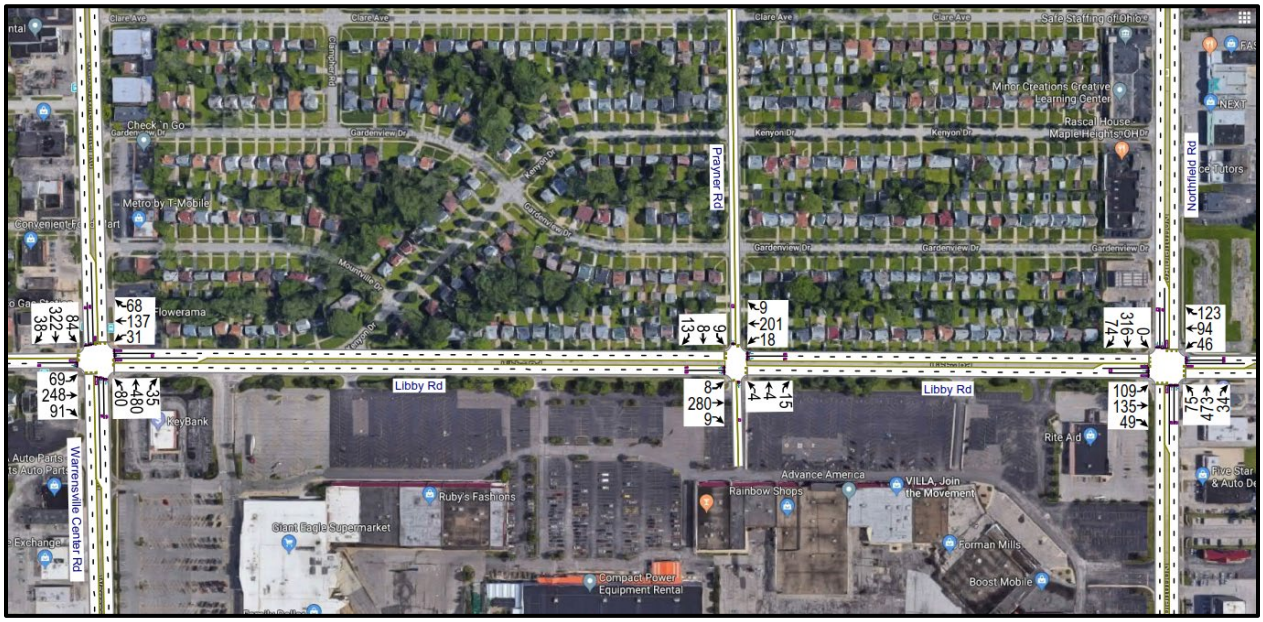


Figure 9: AM Peak Hour Traffic Volumes

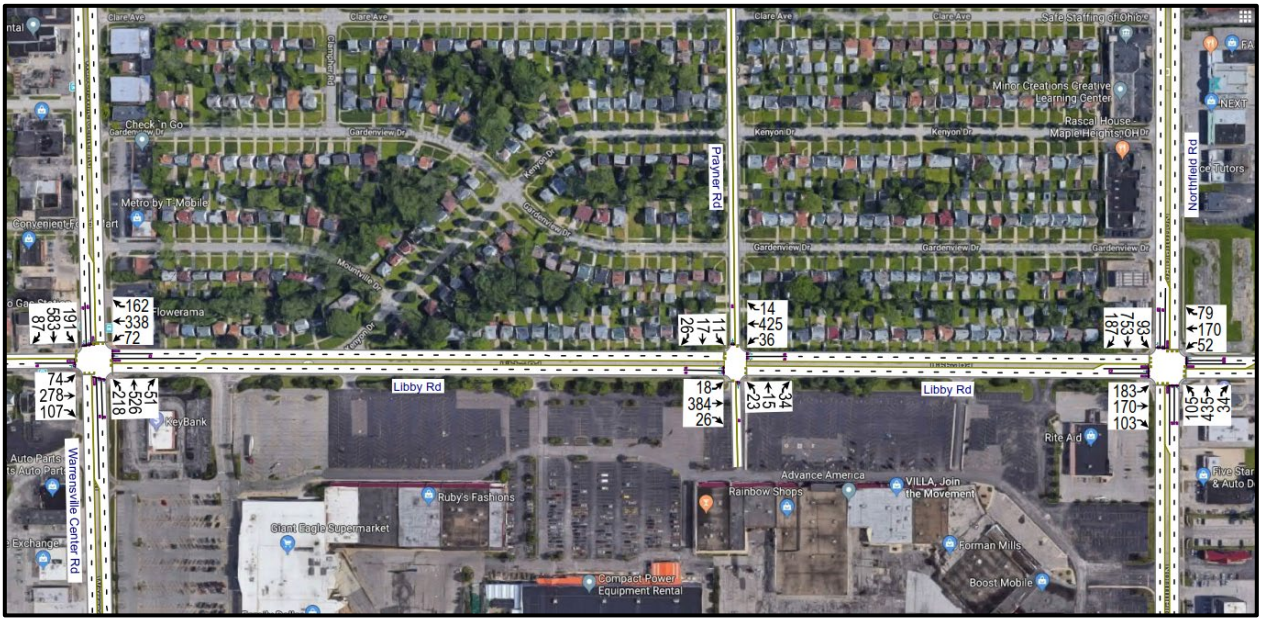


Figure 10: PM Peak Hour Traffic Volumes

Table 2: Existing Conditions Traffic Analysis Results

Intersection		A.M. Peak Hour	P.M. Peak Hour	A.M. Peak Hour	P.M. Peak Hour
		Synchro		SimTraffic	
Libby Road / Warrensville Center	LOS	C	C	B	C
	Delay	23.1	34.5	18.4	27.1
	V/C	0.78	0.97	-	-
Libby Road / Prayner Road	LOS	B	B	B	B
	Delay	13.2	12.5	12.3	11.6
	V/C	0.46	0.57	-	-
Libby Road / Northfield Road	LOS	B	B	C	C
	Delay	14.1	19.1	22.0	16.7
	V/C	0.57	0.72	-	-

2.3 Future (Proposed) Conditions Traffic Analysis

The results of the existing conditions analysis indicate that a reduction in roadway capacity on Libby Road may be feasible, enabling the potential implementation of non-motorized transportation infrastructure. Reconfiguration of Libby Road as a two-lane road with a center turn lane (or dedicated left turn lanes), allowing the excess width to be reassigned for bicycle and/or pedestrian use. This reconfiguration would also improve operational safety by removing left turning vehicles from the through traffic stream.

Currently, Libby Road is approximately 52 feet wide with a detached sidewalk on the north side; sidewalk is not provided on the south side of the road. Provision of two travel lanes (12-13 ft each) and a center turn lane (10-11 ft) would require 34-37 ft of width, resulting in an extra 15-18 ft of available paved width. This "excess" width could be used for buffered bike lanes or a cycle track without moving the curbs. A multiuse trail could be provided on the south side of Libby Road; this may require relocation of the south curb.

Table 3 provides the traffic analysis results for the proposed future condition with two travel lanes plus a center turn lane on Libby Road. The future conditions analysis is based on current traffic volumes and does not address the potential for new development within or near the study area.

Table 3: Future Conditions Traffic Analysis Results

Intersection		A.M. Peak Hour	P.M. Peak Hour	A.M. Peak Hour	P.M. Peak Hour
		Synchro		SimTraffic	
Libby Road / Warrensville Center	LOS	C	C	B	C
	Delay	24.7	33.1	19.3	29.0
	V/C	0.78	0.97	-	-
Libby Road / Prayner Road	LOS	B	C	B	C
	Delay	13.9	23.2	14.8	21.7
	V/C	0.46	0.75	-	-
Libby Road / Northfield Road	LOS	B	C	C	C
	Delay	18.4	25.1	24.4	21.4
	V/C	0.57	0.76	-	-

3. RECOMMENDATIONS

The traffic analysis specifically helps to inform decisions regarding roadway capacity and traffic operations. The recommendation to reconfigure Libby Road as a two-lane road with a center turn lane is supported by the analysis. In addition, other enhancements would be valuable to improve the walkability, safety and multimodal accommodations within the study area. Such recommendations are also summarized below. All of the recommendations would enhance the livability and walkability of the area, as well as improve operational safety, with the combined impact of making the area more attractive for potential redevelopment.

- Convert Libby Road from a four-lane road to a two-lane road with a center turn lane or left turn bays, using the remaining corridor width to install non-motorized infrastructure, specifically a low-stress bicycle facility that accommodates all ages and abilities.

  As discussed in the future conditions traffic analysis, reconfiguration of Libby Road would facilitate implementation of buffered bike lanes, a cycle track, and/or a multiuse trail. A trail along the south side of Libby Road would accommodate pedestrians where a sidewalk does not currently exist.

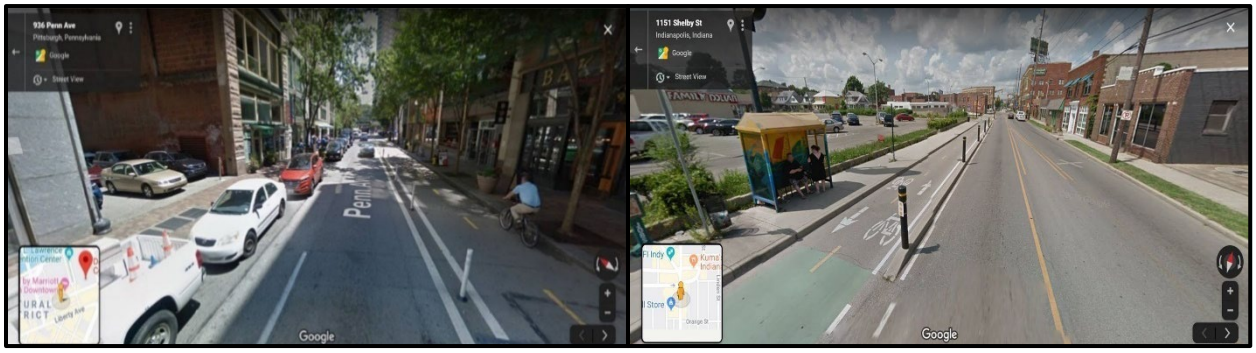


Figure 11: Cycle Track Examples
(left: Penn Avenue, Pittsburgh PA; right: Shelby Avenue, Indianapolis IN)

- Implement access management strategies throughout study area to improve operational safety by organizing the corridor and minimizing potential conflicts associated with driveway operations.

  Consolidating and/or closing driveways is particularly important along Warrensville Center Road and Northfield Road, given their traffic volumes and the density of destinations along the corridors. Many properties have multiple access points; removing/consolidating driveways would improve both vehicular and pedestrian safety by reducing the number of potential conflict areas.

- Install raised, landscaped medians along Warrensville Center Road.

  Raised, landscaped medians would provide multiple safety benefits in addition to beautification of the corridor. Raised, landscape medians would physically control locations for left turns; this would reduce crash potential along the corridor by better organizing traffic behavior, and it would provide a traffic calming effect. It would also provide a refuge

for pedestrians desiring to cross at non-intersection locations. Furthermore, landscaped medians would create a gateway to the Southgate commercial area and provide the opportunity to establish a distinct sense of place.

Note: Mid-block pedestrian crossings on Warrensville Center Road in the study area are not recommended based on pedestrian safety considerations and given the proximity of protected pedestrian crossings at the closely spaced signalized intersections.

- Install a low-stress bicycle facility that accommodates all ages and abilities along Warrensville Center Road and Northfield Road (multiuse trail).

  A multiuse trail along Warrensville Center Road and Northfield Road would facilitate non-motorized travel along the corridor, connecting destinations within Maple Heights and areas to the north, like the Amazon distribution center and the Warrensville Heights library and YMCA. A multi-use trail facility is preferred over any type of in-road facility due to vehicle volumes and travel speeds on both roads; in-road infrastructure would not accommodate all ages and abilities. In addition, provision of a multiuse trail would facilitate Maple Heights' connections to the off-road network recommended in the Cuyahoga Greenways Plan.

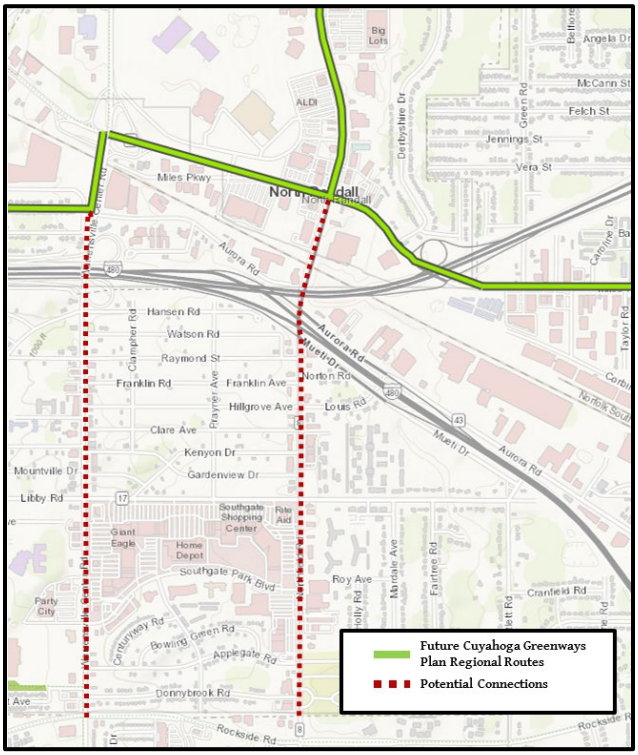


Figure 11: Cuyahoga Greenways Plan Recommendations with Potential Maple Heights Connections

- Install highly visible and ADA-compliant pedestrian treatments at intersections

  Such treatments would improve pedestrian safety and comfort in the study area. Furthermore, ADA-compliant pedestrian treatments are required on projects that improve the adjacent roadway and/or intersections.

- Facilitate non-motorized access to the Southgate Transit Center.

  Provide sidewalk connections and enhance the pedestrian realm to improve the walkability in and around the transit center.

- Reconfigure Southgate Park Boulevard – eliminate the wide travel lanes

  Currently, Southgate Park Boulevard is configured with two very wide (approximately 22 feet) travel lanes. Restriping the road as a two lane facility with buffered bike lanes or bike

lanes and a center turn lane would better organize the corridor, improve operational safety, and provide bicycle infrastructure. Installation of a raised median with left turn lanes instead of a center turn lane would regulate left turn movements which would further improve safety and provide an opportunity to provide landscaping. The aforementioned treatments would not require curb relocation. If curb relocation is possible, reconfiguration of the roadway could allow for the provision of a multiuse trail and additional enhancements to the pedestrian realm. The recommendations are expected to be feasible based on the Average Daily Traffic (ADT) volume projections developed from traffic counts provided by NOACA.

- Integrate recommendations into the surrounding roadway network.

  Any changes to intersection approaches must consider and be integrated into the treatments on the "other side" of the intersection for intersections located on the study area border (i.e., Libby/Warrensville Center and Libby/Northfield). This may require transition treatments on the far side of the intersection to provide safe traffic movements.

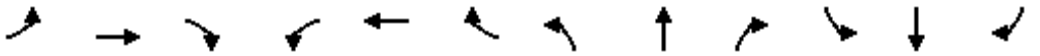
4. APPENDIX: TRAFFIC ANALYSIS REPORTS

Synchro & SimTraffic

Synchro Analysis

AM Peak

1. Existing
2. Future

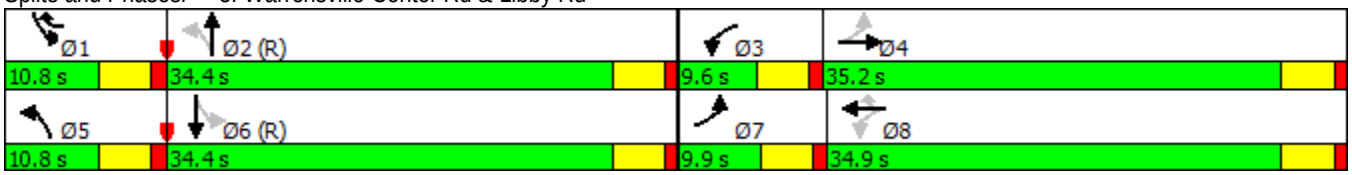


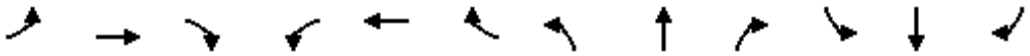
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	248	91	31	137	68	80	480	35	84	322	38
Future Volume (vph)	69	248	91	31	137	68	80	480	35	84	322	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	210		0	250		0	200		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.958				0.850		0.989			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1792	0	1752	1827	1583	1641	3459	0	1805	3407	0
Flt Permitted	0.449			0.237			0.495			0.321		
Satd. Flow (perm)	828	1792	0	437	1827	1583	855	3459	0	610	3407	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				100		10			22	
Link Speed (mph)		30			35			25			25	
Link Distance (ft)		627			1615			703			901	
Travel Time (s)		14.3			31.5			19.2			24.6	
Peak Hour Factor	0.82	0.87	0.81	0.65	0.59	0.68	0.80	0.82	0.73	0.87	0.93	0.68
Heavy Vehicles (%)	3%	1%	3%	3%	4%	2%	10%	3%	6%	0%	4%	2%
Adj. Flow (vph)	84	285	112	48	232	100	100	585	48	97	346	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	397	0	48	232	100	100	633	0	97	402	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		3	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	33.5		9.5	33.5	9.5	9.5	33.5		9.5	33.5	
Total Split (s)	9.9	35.2		9.6	34.9	10.8	10.8	34.4		10.8	34.4	
Total Split (%)	11.0%	39.1%		10.7%	38.8%	12.0%	12.0%	38.2%		12.0%	38.2%	
Maximum Green (s)	5.4	30.7		5.1	30.4	6.3	6.3	29.9		6.3	29.9	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		22.0			22.0			13.0			13.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	27.8	24.5		26.5	22.4	34.0	46.4	39.1		46.9	40.9	
Actuated g/C Ratio	0.31	0.27		0.29	0.25	0.38	0.52	0.43		0.52	0.45	
v/c Ratio	0.27	0.78		0.24	0.51	0.15	0.20	0.42		0.24	0.26	
Control Delay	20.0	39.4		16.7	29.4	5.3	13.1	20.6		13.5	17.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	20.0	39.4		16.7	29.4	5.3	13.1	20.6		13.5	17.9	
LOS	C	D		B	C	A	B	C		B	B	
Approach Delay		36.0			21.5			19.6			17.1	
Approach LOS		D			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 34 (38%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 23.1		Intersection LOS: C	
Intersection Capacity Utilization 56.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Warrensville Center Rd & Libby Rd



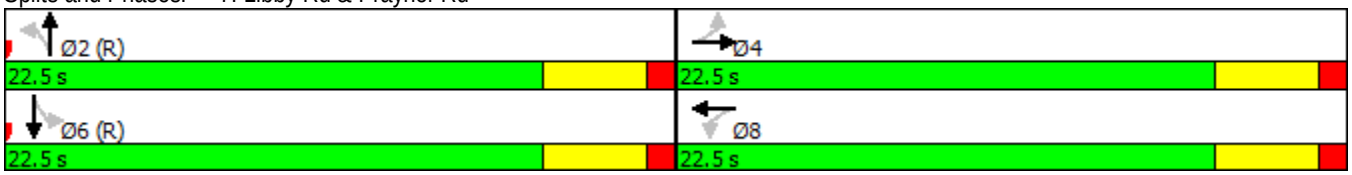


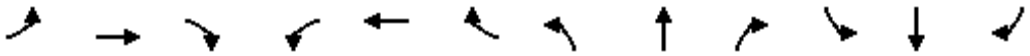
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	280	9	18	201	9	4	4	15	9	8	13
Future Volume (vph)	8	280	9	18	201	9	4	4	15	9	8	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.993			0.919			0.940	
Flt Protected		0.998			0.995			0.990			0.983	
Satd. Flow (prot)	0	3552	0	0	3431	0	0	1729	0	0	1756	0
Flt Permitted		0.938			0.898			0.971			0.941	
Satd. Flow (perm)	0	3338	0	0	3097	0	0	1695	0	0	1681	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			12			24			20	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1615			1088			260			892	
Travel Time (s)		31.5			21.2			5.9			20.3	
Peak Hour Factor	0.67	0.89	0.75	0.75	0.88	0.75	0.50	0.50	0.62	0.56	0.88	0.65
Heavy Vehicles (%)	0%	1%	0%	0%	4%	11%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	12	315	12	24	228	12	8	8	24	16	9	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	339	0	0	264	0	0	40	0	0	45	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		9.9			9.9			26.1			26.1	
Actuated g/C Ratio		0.22			0.22			0.58			0.58	
v/c Ratio		0.46			0.38			0.04			0.05	
Control Delay		13.9			15.3			3.4			3.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.9			15.3			3.4			3.8	
LOS		B			B			A			A	
Approach Delay		13.9			15.3			3.4			3.8	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 13.2		Intersection LOS: B	
Intersection Capacity Utilization 30.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: Libby Rd & Prayner Rd



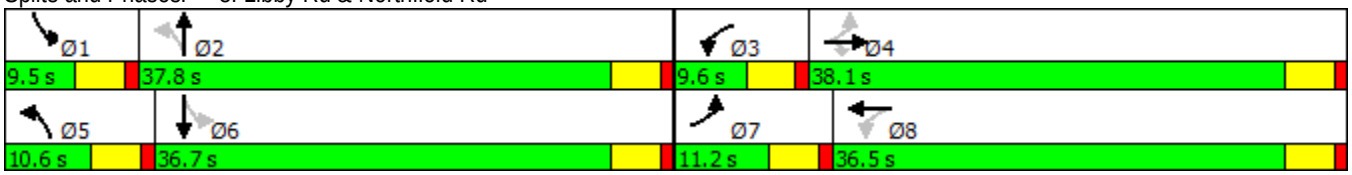


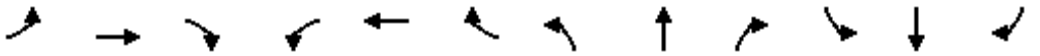
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	135	49	46	94	123	75	473	34	0	316	74
Future Volume (vph)	109	135	49	46	94	123	75	473	34	0	316	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	14	12	12	12	12	12	12
Storage Length (ft)	115		0	150		0	150		0	150		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.911			0.986			0.965	
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1770	1900	1615	1656	3033	0	1671	3358	0	1900	3374	0
Flt Permitted	0.392			0.660			0.396					
Satd. Flow (perm)	730	1900	1615	1150	3033	0	697	3358	0	1900	3374	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121		164			12			47	
Link Speed (mph)		35			30			30			30	
Link Distance (ft)		1088			602			697			918	
Travel Time (s)		21.2			13.7			15.8			20.9	
Peak Hour Factor	0.65	0.89	0.85	0.82	0.84	0.75	0.75	0.91	0.65	0.77	0.87	0.66
Heavy Vehicles (%)	2%	0%	0%	9%	0%	2%	8%	6%	6%	0%	3%	4%
Adj. Flow (vph)	168	152	58	56	112	164	100	520	52	0	363	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	168	152	58	56	276	0	100	572	0	0	475	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.09	0.92	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	36.5	36.5	9.5	36.5		9.5	36.5		9.5	36.5	
Total Split (s)	11.2	38.1	38.1	9.6	36.5		10.6	37.8		9.5	36.7	
Total Split (%)	11.8%	40.1%	40.1%	10.1%	38.4%		11.2%	39.8%		10.0%	38.6%	
Maximum Green (s)	6.7	33.6	33.6	5.1	32.0		6.1	33.3		5.0	32.2	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		22.0	22.0		22.0			22.0			22.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	18.7	14.9	14.9	14.2	9.1		40.9	40.9			32.7	
Actuated g/C Ratio	0.27	0.21	0.21	0.20	0.13		0.58	0.58			0.47	
v/c Ratio	0.57	0.38	0.13	0.21	0.52		0.20	0.29			0.30	
Control Delay	29.0	29.5	1.0	21.1	16.0		8.2	8.0			12.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	29.0	29.5	1.0	21.1	16.0		8.2	8.0			12.2	
LOS	C	C	A	C	B		A	A			B	
Approach Delay		24.9			16.8			8.0			12.2	
Approach LOS		C			B			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 70.3			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 14.1		Intersection LOS: B	
Intersection Capacity Utilization 45.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 8: Libby Rd & Northfield Rd





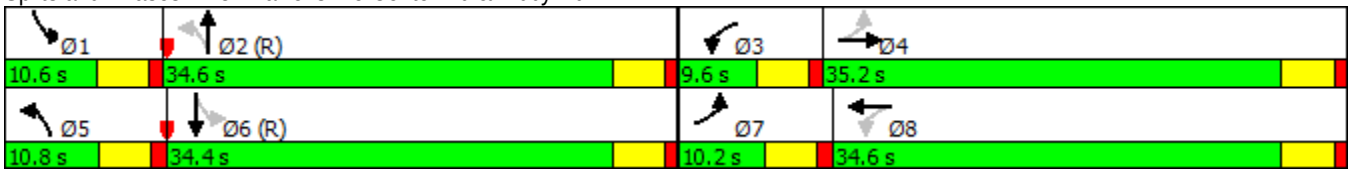
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	248	91	31	137	68	80	480	35	84	322	38
Future Volume (vph)	69	248	91	31	137	68	80	480	35	84	322	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	210		0	250		0	200		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.958			0.955			0.989			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1792	0	1752	1755	0	1641	3459	0	1805	3407	0
Flt Permitted	0.297			0.257			0.478			0.332		
Satd. Flow (perm)	548	1792	0	474	1755	0	826	3459	0	631	3407	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			26			10			22	
Link Speed (mph)		30			35			25			25	
Link Distance (ft)		627			1615			703			901	
Travel Time (s)		14.3			31.5			19.2			24.6	
Peak Hour Factor	0.82	0.87	0.81	0.65	0.59	0.68	0.80	0.82	0.73	0.87	0.93	0.68
Heavy Vehicles (%)	3%	1%	3%	3%	4%	2%	10%	3%	6%	0%	4%	2%
Adj. Flow (vph)	84	285	112	48	232	100	100	585	48	97	346	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	397	0	48	332	0	100	633	0	97	402	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	33.5		9.5	33.5		9.5	33.5		9.5	33.5	
Total Split (s)	10.2	35.2		9.6	34.6		10.8	34.6		10.6	34.4	
Total Split (%)	11.3%	39.1%		10.7%	38.4%		12.0%	38.4%		11.8%	38.2%	
Maximum Green (s)	5.7	30.7		5.1	30.1		6.3	30.1		6.1	29.9	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		22.0			22.0			13.0			13.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	28.8	25.4		27.0	23.0		46.5	40.3		46.0	40.1	
Actuated g/C Ratio	0.32	0.28		0.30	0.26		0.52	0.45		0.51	0.45	
v/c Ratio	0.33	0.76		0.22	0.71		0.20	0.41		0.23	0.26	
Control Delay	21.1	37.3		17.0	34.4		13.3	20.4		13.7	18.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.1	37.3		17.0	34.4		13.3	20.4		13.7	18.3	
LOS	C	D		B	C		B	C		B	B	
Approach Delay		34.5			32.2			19.4			17.4	
Approach LOS		C			C			B			B	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 36 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 24.7 Intersection LOS: C
Intersection Capacity Utilization 56.8% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 3: Warrensville Center Rd & Libby Rd

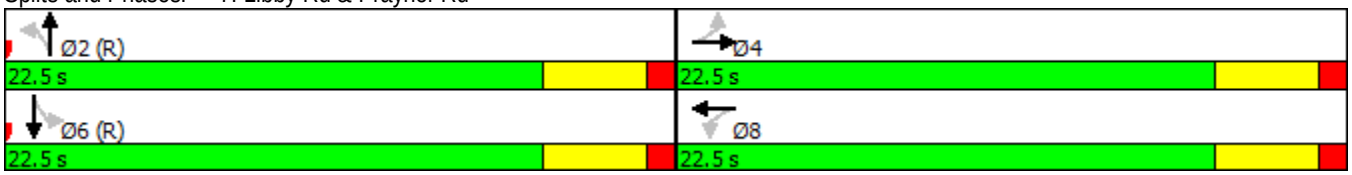


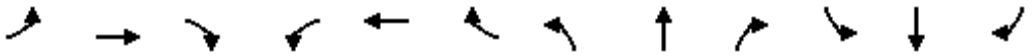
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	280	9	18	201	9	4	4	15	9	8	13
Future Volume (vph)	8	280	9	18	201	9	4	4	15	9	8	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.994			0.919			0.940	
Flt Protected		0.998			0.995			0.990			0.983	
Satd. Flow (prot)	0	1869	0	0	1808	0	0	1729	0	0	1756	0
Flt Permitted		0.984			0.958			0.969			0.938	
Satd. Flow (perm)	0	1843	0	0	1740	0	0	1692	0	0	1675	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			6			24			20	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1615			1088			260			892	
Travel Time (s)		31.5			21.2			5.9			20.3	
Peak Hour Factor	0.67	0.89	0.75	0.75	0.88	0.75	0.50	0.50	0.62	0.56	0.88	0.65
Heavy Vehicles (%)	0%	1%	0%	0%	4%	11%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	12	315	12	24	228	12	8	8	24	16	9	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	339	0	0	264	0	0	40	0	0	45	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		13.2			13.2			22.8			22.8	
Actuated g/C Ratio		0.29			0.29			0.51			0.51	
v/c Ratio		0.62			0.51			0.05			0.05	
Control Delay		14.6			15.7			5.1			5.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		14.6			15.7			5.1			5.6	
LOS		B			B			A			A	
Approach Delay		14.6			15.7			5.1			5.6	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 13.9		Intersection LOS: B	
Intersection Capacity Utilization 31.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: Libby Rd & Prayner Rd



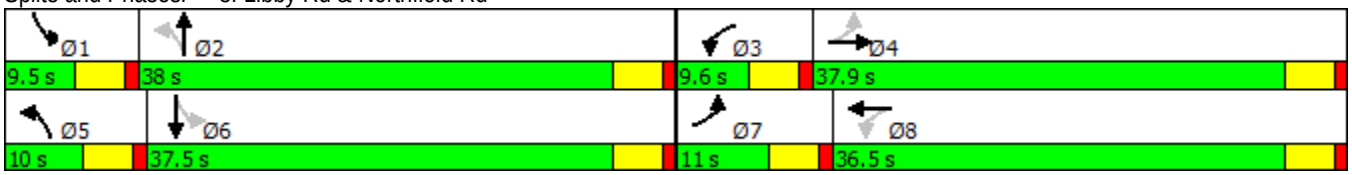


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	135	49	46	94	123	75	473	34	0	316	74
Future Volume (vph)	109	135	49	46	94	123	75	473	34	0	316	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	14	12	12	12	12	12	12
Storage Length (ft)	115		0	150		0	150		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.959			0.911			0.986			0.965	
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1770	1822	0	1656	1597	0	1671	3358	0	1900	3374	0
Flt Permitted	0.289			0.626			0.387					
Satd. Flow (perm)	538	1822	0	1091	1597	0	681	3358	0	1900	3374	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			84			12			47	
Link Speed (mph)		35			30			30			30	
Link Distance (ft)		1088			602			697			918	
Travel Time (s)		21.2			13.7			15.8			20.9	
Peak Hour Factor	0.65	0.89	0.85	0.82	0.84	0.75	0.75	0.91	0.65	0.77	0.87	0.66
Heavy Vehicles (%)	2%	0%	0%	9%	0%	2%	8%	6%	6%	0%	3%	4%
Adj. Flow (vph)	168	152	58	56	112	164	100	520	52	0	363	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	168	210	0	56	276	0	100	572	0	0	475	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.09	0.92	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	36.5		9.5	36.5		9.5	36.5		9.5	36.5	
Total Split (s)	11.0	37.9		9.6	36.5		10.0	38.0		9.5	37.5	
Total Split (%)	11.6%	39.9%		10.1%	38.4%		10.5%	40.0%		10.0%	39.5%	
Maximum Green (s)	6.5	33.4		5.1	32.0		5.5	33.5		5.0	33.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		22.0			22.0			22.0			22.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	24.3	20.6		20.0	14.8		41.2	41.2			33.6	
Actuated g/C Ratio	0.32	0.27		0.26	0.19		0.54	0.54			0.44	
v/c Ratio	0.61	0.41		0.17	0.73		0.23	0.31			0.31	
Control Delay	29.3	24.9		18.8	31.8		11.2	10.8			14.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	29.3	24.9		18.8	31.8		11.2	10.8			14.7	
LOS	C	C		B	C		B	B			B	
Approach Delay		26.9			29.6			10.8			14.7	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 76.3			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 18.4		Intersection LOS: B	
Intersection Capacity Utilization 51.8%		ICU Level of Service A	
Analysis Period (min) 15			

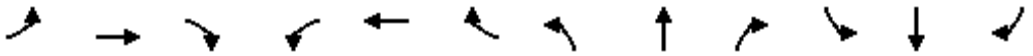
Splits and Phases: 8: Libby Rd & Northfield Rd



PM Peak

1.Existing

2. Future



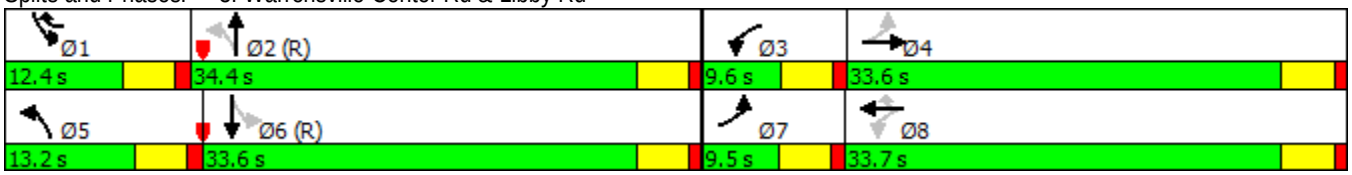
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	278	107	72	338	162	218	526	51	191	583	87
Future Volume (vph)	74	278	107	72	338	162	218	526	51	191	583	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	210		0	250		0	200		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.956				0.850		0.985			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1788	0	1752	1827	1583	1641	3442	0	1805	3395	0
Flt Permitted	0.137			0.227			0.183			0.267		
Satd. Flow (perm)	253	1788	0	419	1827	1583	316	3442	0	507	3395	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				123		14			28	
Link Speed (mph)		30			35			25			25	
Link Distance (ft)		627			1615			703			901	
Travel Time (s)		14.3			31.5			19.2			24.6	
Peak Hour Factor	0.82	0.87	0.81	0.65	0.59	0.68	0.80	0.82	0.73	0.87	0.93	0.68
Heavy Vehicles (%)	3%	1%	3%	3%	4%	2%	10%	3%	6%	0%	4%	2%
Adj. Flow (vph)	90	320	132	111	573	238	273	641	70	220	627	128
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	452	0	111	573	238	273	711	0	220	755	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	

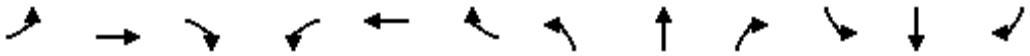
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		3	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	33.5		9.5	33.5	9.5	9.5	33.5		9.5	33.5	
Total Split (s)	9.5	33.6		9.6	33.7	12.4	13.2	34.4		12.4	33.6	
Total Split (%)	10.6%	37.3%		10.7%	37.4%	13.8%	14.7%	38.2%		13.8%	37.3%	
Maximum Green (s)	5.0	29.1		5.1	29.2	7.9	8.7	29.9		7.9	29.1	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		22.0			22.0			13.0			13.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	33.1	29.1		33.3	29.2	41.7	41.2	31.7		37.3	29.3	
Actuated g/C Ratio	0.37	0.32		0.37	0.32	0.46	0.46	0.35		0.41	0.33	
v/c Ratio	0.51	0.76		0.48	0.97	0.30	0.92	0.58		0.68	0.67	
Control Delay	26.6	35.6		22.0	58.1	7.2	57.6	26.2		27.2	28.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	26.6	35.6		22.0	58.1	7.2	57.6	26.2		27.2	28.8	
LOS	C	D		C	E	A	E	C		C	C	
Approach Delay		34.1			40.6			34.9			28.4	
Approach LOS		C			D			C			C	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 34.5 Intersection LOS: C
Intersection Capacity Utilization 71.3% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 3: Warrensville Center Rd & Libby Rd



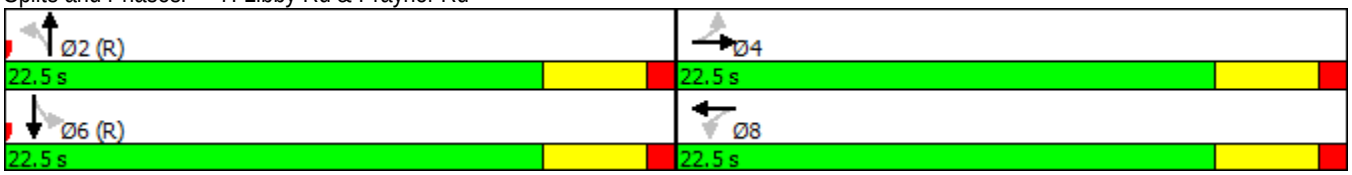


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	384	26	36	425	14	23	15	34	11	17	26
Future Volume (vph)	18	384	26	36	425	14	23	15	34	11	17	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.994			0.945			0.940	
Flt Protected		0.998			0.995			0.984			0.989	
Satd. Flow (prot)	0	3532	0	0	3560	0	0	1767	0	0	1736	0
Flt Permitted		0.923			0.867			0.926			0.953	
Satd. Flow (perm)	0	3266	0	0	3102	0	0	1663	0	0	1672	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			11			36			32	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1615			1088			260			892	
Travel Time (s)		31.5			21.2			5.9			20.3	
Peak Hour Factor	0.90	0.87	0.72	0.75	0.97	0.70	0.82	0.62	0.94	0.69	0.71	0.81
Heavy Vehicles (%)	0%	1%	0%	3%	0%	0%	0%	0%	0%	0%	0%	4%
Adj. Flow (vph)	20	441	36	48	438	20	28	24	36	16	24	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	497	0	0	506	0	0	88	0	0	72	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		12.7			12.7			23.3			23.3	
Actuated g/C Ratio		0.28			0.28			0.52			0.52	
v/c Ratio		0.53			0.57			0.10			0.08	
Control Delay		11.7			15.7			5.2			5.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		11.7			15.7			5.2			5.0	
LOS		B			B			A			A	
Approach Delay		11.7			15.7			5.2			5.0	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 12.5		Intersection LOS: B	
Intersection Capacity Utilization 43.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: Libby Rd & Prayner Rd

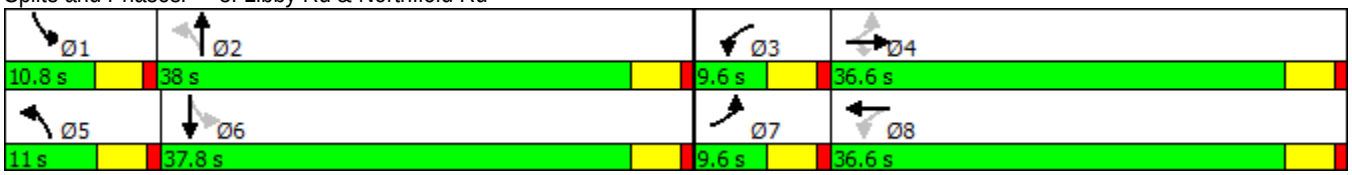


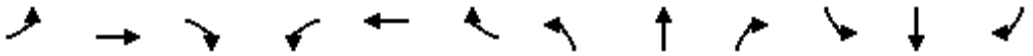
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	170	103	52	170	79	105	435	34	93	753	187
Future Volume (vph)	183	170	103	52	170	79	105	435	34	93	753	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	14	12	12	12	12	12	12
Storage Length (ft)	115		0	150		0	150		0	150		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.949			0.984			0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1583	1787	3177	0	1805	3521	0	1805	3437	0
Flt Permitted	0.447			0.613			0.167			0.433		
Satd. Flow (perm)	841	1881	1583	1153	3177	0	317	3521	0	823	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			124		98			15			43	
Link Speed (mph)		35			30			30			30	
Link Distance (ft)		1088			602			697			918	
Travel Time (s)		21.2			13.7			15.8			20.9	
Peak Hour Factor	0.92	0.90	0.83	0.87	0.89	0.81	0.85	0.92	0.61	0.73	0.97	0.84
Heavy Vehicles (%)	1%	1%	2%	1%	1%	0%	0%	1%	0%	0%	2%	0%
Adj. Flow (vph)	199	189	124	60	191	98	124	473	56	127	776	223
Shared Lane Traffic (%)												
Lane Group Flow (vph)	199	189	124	60	289	0	124	529	0	127	999	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.09	0.92	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	36.5	36.5	9.5	36.5		9.5	36.5		9.5	36.5	
Total Split (s)	9.6	36.6	36.6	9.6	36.6		11.0	38.0		10.8	37.8	
Total Split (%)	10.1%	38.5%	38.5%	10.1%	38.5%		11.6%	40.0%		11.4%	39.8%	
Maximum Green (s)	5.1	32.1	32.1	5.1	32.1		6.5	33.5		6.3	33.3	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		22.0	22.0		22.0			22.0			22.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	19.1	16.2	16.2	17.2	12.1		41.0	35.9		39.6	33.4	
Actuated g/C Ratio	0.25	0.22	0.22	0.23	0.16		0.55	0.48		0.53	0.44	
v/c Ratio	0.72	0.47	0.28	0.20	0.49		0.41	0.31		0.25	0.64	
Control Delay	38.8	31.2	7.4	20.7	21.1		12.3	13.9		9.2	18.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	38.8	31.2	7.4	20.7	21.1		12.3	13.9		9.2	18.6	
LOS	D	C	A	C	C		B	B		A	B	
Approach Delay		28.4			21.1			13.6			17.5	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 75.1			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 19.1		Intersection LOS: B	
Intersection Capacity Utilization 65.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 8: Libby Rd & Northfield Rd





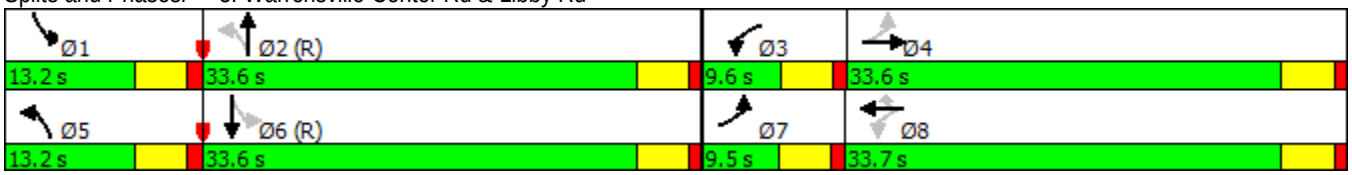
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	278	107	72	338	162	218	526	51	191	583	87
Future Volume (vph)	74	278	107	72	338	162	218	526	51	191	583	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	210		210	250		0	200		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.956				0.850		0.985			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1788	0	1752	1827	1583	1641	3442	0	1805	3395	0
Flt Permitted	0.137			0.227			0.187			0.255		
Satd. Flow (perm)	253	1788	0	419	1827	1583	323	3442	0	484	3395	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				231		14			28	
Link Speed (mph)		30			35			25			25	
Link Distance (ft)		627			1615			703			901	
Travel Time (s)		14.3			31.5			19.2			24.6	
Peak Hour Factor	0.82	0.87	0.81	0.65	0.59	0.68	0.80	0.82	0.73	0.87	0.93	0.68
Heavy Vehicles (%)	3%	1%	3%	3%	4%	2%	10%	3%	6%	0%	4%	2%
Adj. Flow (vph)	90	320	132	111	573	238	273	641	70	220	627	128
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	452	0	111	573	238	273	711	0	220	755	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	33.5		9.5	33.5	33.5	9.5	33.5		9.5	33.5	
Total Split (s)	9.5	33.6		9.6	33.7	33.7	13.2	33.6		13.2	33.6	
Total Split (%)	10.6%	37.3%		10.7%	37.4%	37.4%	14.7%	37.3%		14.7%	37.3%	
Maximum Green (s)	5.0	29.1		5.1	29.2	29.2	8.7	29.1		8.7	29.1	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0	7.0		7.0			7.0	
Flash Dont Walk (s)		22.0			22.0	22.0		13.0			13.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	33.1	29.1		33.3	29.2	29.2	40.6	31.1		37.9	29.3	
Actuated g/C Ratio	0.37	0.32		0.37	0.32	0.32	0.45	0.35		0.42	0.33	
v/c Ratio	0.51	0.76		0.48	0.97	0.36	0.92	0.59		0.67	0.67	
Control Delay	26.6	35.6		18.0	52.6	2.4	57.3	26.9		26.1	28.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	26.6	35.6		18.0	52.6	2.4	57.3	26.9		26.1	28.8	
LOS	C	D		B	D	A	E	C		C	C	
Approach Delay		34.1			35.5			35.3			28.2	
Approach LOS		C			D			D			C	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 22 (24%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 33.1 Intersection LOS: C
Intersection Capacity Utilization 71.3% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 3: Warrensville Center Rd & Libby Rd

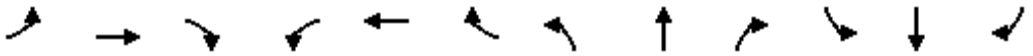


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	384	26	36	425	14	23	15	34	11	17	26
Future Volume (vph)	18	384	26	36	425	14	23	15	34	11	17	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.995			0.945			0.940	
Flt Protected		0.998			0.995			0.984			0.989	
Satd. Flow (prot)	0	1861	0	0	1876	0	0	1767	0	0	1736	0
Flt Permitted		0.972			0.908			0.920			0.951	
Satd. Flow (perm)	0	1812	0	0	1712	0	0	1652	0	0	1669	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			5			36			32	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1615			1088			260			892	
Travel Time (s)		31.5			21.2			5.9			20.3	
Peak Hour Factor	0.90	0.87	0.72	0.75	0.97	0.70	0.82	0.62	0.94	0.69	0.71	0.81
Heavy Vehicles (%)	0%	1%	0%	3%	0%	0%	0%	0%	0%	0%	0%	4%
Adj. Flow (vph)	20	441	36	48	438	20	28	24	36	16	24	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	497	0	0	506	0	0	88	0	0	72	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	62.0	62.0		62.0	62.0		28.0	28.0		28.0	28.0	
Total Split (%)	68.9%	68.9%		68.9%	68.9%		31.1%	31.1%		31.1%	31.1%	
Maximum Green (s)	57.5	57.5		57.5	57.5		23.5	23.5		23.5	23.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		35.3			35.3			45.7			45.7	
Actuated g/C Ratio		0.39			0.39			0.51			0.51	
v/c Ratio		0.69			0.75			0.10			0.08	
Control Delay		20.8			29.6			10.3			10.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		20.8			29.6			10.3			10.2	
LOS		C			C			B			B	
Approach Delay		20.8			29.6			10.3			10.2	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 23.2		Intersection LOS: C	
Intersection Capacity Utilization 51.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: Libby Rd & Prayner Rd

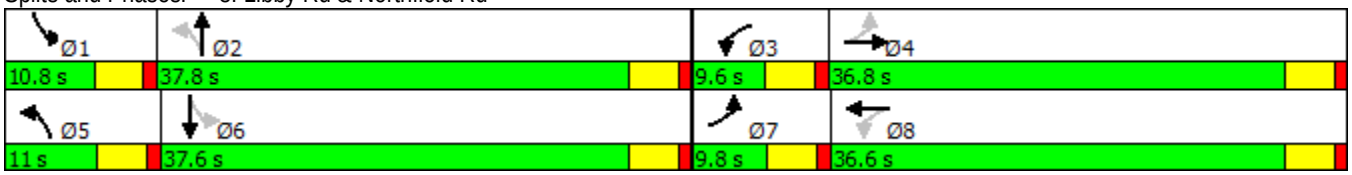


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	170	103	52	170	79	105	435	34	93	753	187
Future Volume (vph)	183	170	103	52	170	79	105	435	34	93	753	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	14	12	12	12	12	12	12
Storage Length (ft)	115		0	150		0	150		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.941			0.949			0.984			0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1763	0	1787	1672	0	1805	3521	0	1805	3437	0
Flt Permitted	0.327			0.353			0.152			0.398		
Satd. Flow (perm)	615	1763	0	664	1672	0	289	3521	0	756	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			29			15			43	
Link Speed (mph)		35			30			30			30	
Link Distance (ft)		1088			602			697			918	
Travel Time (s)		21.2			13.7			15.8			20.9	
Peak Hour Factor	0.92	0.90	0.83	0.87	0.89	0.81	0.85	0.92	0.61	0.73	0.97	0.84
Heavy Vehicles (%)	1%	1%	2%	1%	1%	0%	0%	1%	0%	0%	2%	0%
Adj. Flow (vph)	199	189	124	60	191	98	124	473	56	127	776	223
Shared Lane Traffic (%)												
Lane Group Flow (vph)	199	313	0	60	289	0	124	529	0	127	999	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.09	0.92	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	36.5		9.5	36.5		9.5	36.5		9.5	36.5	
Total Split (s)	9.8	36.8		9.6	36.6		11.0	37.8		10.8	37.6	
Total Split (%)	10.3%	38.7%		10.1%	38.5%		11.6%	39.8%		11.4%	39.6%	
Maximum Green (s)	5.3	32.3		5.1	32.1		6.5	33.3		6.3	33.1	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		22.0			22.0			22.0			22.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	24.3	20.2		23.0	17.8		39.9	33.5		39.6	33.3	
Actuated g/C Ratio	0.30	0.25		0.28	0.22		0.49	0.41		0.49	0.41	
v/c Ratio	0.76	0.67		0.23	0.74		0.47	0.36		0.28	0.70	
Control Delay	41.8	32.3		19.8	38.1		16.6	17.7		12.1	22.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	41.8	32.3		19.8	38.1		16.6	17.7		12.1	22.8	
LOS	D	C		B	D		B	B		B	C	
Approach Delay		36.0			35.0			17.5			21.6	
Approach LOS		D			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 81			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 25.1		Intersection LOS: C	
Intersection Capacity Utilization 71.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 8: Libby Rd & Northfield Rd



SimTraffic Analysis

AM Peak

1. Existing

2. Future

3: Warrensville Center Rd & Libby Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.5	0.6	0.6	0.4	0.0	0.0	3.1	0.2	0.2	3.0	0.1	0.2
Total Del/Veh (s)	28.7	30.9	22.8	29.5	32.1	6.0	12.1	14.2	8.2	13.1	12.3	6.2
Occupancy (veh)	1	3	1	0	3	1	1	4	0	1	3	0

3: Warrensville Center Rd & Libby Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	18.4
Occupancy (veh)	19

7: Libby Rd & Prayner Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	17.4	12.6	4.7	20.4	13.9	5.3	7.1	5.0	1.6	5.1	4.0	1.6
Occupancy (veh)	0	4	0	0	2	0	0	0	0	0	0	0

7: Libby Rd & Prayner Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	12.3
Occupancy (veh)	7

8: Libby Rd & Northfield Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.0	0.0	3.7	0.1	0.2	3.2	0.2	0.2	0.1	0.2	0.4
Total Del/Veh (s)	22.9	22.5	5.2	22.3	24.8	7.4	10.3	6.9	3.5	9.1	3.3	11.6
Occupancy (veh)	1	2	0	0	1	1	1	3	0	3	1	13

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	22.0
Occupancy (veh)	55

Intersection: 3: Warrensville Center Rd & Libby Rd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	174	326	83	218	71	95	214	196	78	150	123
Average Queue (ft)	61	166	23	89	29	33	110	76	37	73	42
95th Queue (ft)	145	281	61	173	59	72	188	161	69	131	96
Link Distance (ft)		580		1539	1539		655	655		855	855
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150		210			250			200		
Storage Blk Time (%)	0	12		0			0			0	
Queuing Penalty (veh)	0	8		0			0			0	

Intersection: 7: Libby Rd & Prayner Rd

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	155	113	122	96	33	39
Average Queue (ft)	71	32	55	38	8	9
95th Queue (ft)	126	77	99	75	30	33
Link Distance (ft)	1539	1539	1013	1013	213	845
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 8: Libby Rd & Northfield Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	TR	L	T	TR	T	TR
Maximum Queue (ft)	137	178	63	90	102	120	85	143	128	134	106
Average Queue (ft)	60	71	24	34	44	51	34	76	45	67	38
95th Queue (ft)	116	135	54	72	82	94	70	128	95	116	82
Link Distance (ft)		1013	1013		556	556		651	651	872	872
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	115			150			150				
Storage Blk Time (%)	1	2					0	0		0	
Queuing Penalty (veh)	2	2					0	0		0	

Network Summary

Network wide Queuing Penalty: 13

3: Warrensville Center Rd & Libby Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.5	0.6	0.5	0.5	0.1	0.1	3.1	0.2	0.2	3.0	0.1	0.2
Total Del/Veh (s)	28.4	30.5	21.4	30.6	33.5	24.5	12.5	14.1	8.9	13.7	12.7	6.9
Occupancy (veh)	1	3	1	1	3	1	1	4	0	1	3	0

3: Warrensville Center Rd & Libby Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	19.3
Occupancy (veh)	19

7: Libby Rd & Prayner Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	21.9	14.8	9.9	22.2	17.1	8.9	7.8	3.9	2.7	6.4	4.7	2.4
Occupancy (veh)	0	4	0	0	2	0	0	0	0	0	0	0

7: Libby Rd & Prayner Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	14.8
Occupancy (veh)	8

8: Libby Rd & Northfield Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.0	0.0	3.8	0.4	0.4	3.1	0.2	0.2	0.1	0.2	0.4
Total Del/Veh (s)	23.9	22.8	15.8	22.6	26.8	13.6	12.1	8.7	4.5	11.7	5.3	13.9
Occupancy (veh)	1	2	1	0	1	1	1	3	0	3	1	14

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	24.4
Occupancy (veh)	57

Intersection: 3: Warrensville Center Rd & Libby Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	174	317	113	277	109	216	186	85	162	141
Average Queue (ft)	58	161	24	117	39	114	80	41	79	51
95th Queue (ft)	137	272	69	221	83	191	160	74	138	107
Link Distance (ft)		580		1540		668	668		866	866
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150		210		250			200		
Storage Blk Time (%)		11		2		0			0	
Queuing Penalty (veh)		8		1		0			0	

Intersection: 7: Libby Rd & Prayner Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	232	209	47	46
Average Queue (ft)	97	87	9	11
95th Queue (ft)	180	163	35	37
Link Distance (ft)	1540	1013	225	857
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Libby Rd & Northfield Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	T	TR
Maximum Queue (ft)	137	195	88	192	111	171	150	147	130
Average Queue (ft)	65	88	32	89	33	81	51	74	48
95th Queue (ft)	126	158	69	156	73	142	111	127	101
Link Distance (ft)		1013		556		651	651	884	884
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	115		150		150				
Storage Blk Time (%)	1	5		1	0	1		0	
Queuing Penalty (veh)	3	5		1	0	0		0	

Network Summary

Network wide Queuing Penalty: 17

PM Peak

1.Existing

2. Future

3: Warrensville Center Rd & Libby Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.5	0.6	0.6	0.6	0.2	0.1	2.9	0.2	0.3	2.6	0.2	0.3
Total Del/Veh (s)	33.7	32.0	23.5	42.5	44.4	6.7	33.5	21.4	14.2	23.3	23.6	19.0

3: Warrensville Center Rd & Libby Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	27.1

7: Libby Rd & Prayner Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	17.4	11.4	5.3	20.8	13.3	5.6	7.1	6.4	3.1	7.1	6.6	2.8

7: Libby Rd & Prayner Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	11.6

8: Libby Rd & Northfield Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.3	0.0	0.0	3.6	0.2	0.2	3.2	0.2	0.2	2.6	0.2	0.3
Total Del/Veh (s)	31.4	26.8	7.3	23.1	27.1	8.3	17.1	11.7	5.3	14.1	15.2	10.6

8: Libby Rd & Northfield Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.5
Total Del/Veh (s)	16.7

Total Network Performance

Denied Del/Veh (s)	0.7
Total Del/Veh (s)	30.6

Intersection: 3: Warrensville Center Rd & Libby Rd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	174	364	234	578	239	255	344	290	212	294	262
Average Queue (ft)	71	192	74	225	46	110	141	123	78	148	133
95th Queue (ft)	167	317	196	473	128	220	284	245	157	246	236
Link Distance (ft)		580		1539	1539		655	655		855	855
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150		210			250			200		
Storage Blk Time (%)	0	16	0	13		4	0		1	2	
Queuing Penalty (veh)	2	12	0	12		13	0		3	4	

Intersection: 7: Libby Rd & Prayner Rd

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	175	120	156	128	67	60
Average Queue (ft)	85	43	86	59	24	20
95th Queue (ft)	142	94	139	106	55	50
Link Distance (ft)	1539	1539	1013	1013	213	845
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 8: Libby Rd & Northfield Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	140	248	92	83	147	120	126	186	146	174	275	270
Average Queue (ft)	92	99	38	34	71	51	50	89	55	51	150	137
95th Queue (ft)	150	194	73	69	120	95	92	153	110	125	237	232
Link Distance (ft)		1013	1013		556	556		651	651		872	872
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	115			150			150			150		
Storage Blk Time (%)	7	3			0		0	1		0	6	
Queuing Penalty (veh)	12	6			0		0	1		0	6	

Network Summary

Network wide Queuing Penalty: 70

3: Warrensville Center Rd & Libby Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.5	0.6	0.6	1.4	1.3	1.3	2.9	0.3	0.3	2.6	0.2	0.3
Total Del/Veh (s)	34.6	31.5	25.1	46.2	41.9	18.8	46.8	21.6	14.5	28.9	23.0	18.3

3: Warrensville Center Rd & Libby Rd Performance by movement

Movement	All
Denied Del/Veh (s)	1.0
Total Del/Veh (s)	29.0

7: Libby Rd & Prayner Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	28.7	18.6	18.2	32.1	27.1	24.2	14.0	16.8	7.1	11.8	15.8	6.7

7: Libby Rd & Prayner Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	21.7

8: Libby Rd & Northfield Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.7	0.3	0.1	3.6	0.4	0.4	3.2	0.2	0.2	2.6	0.2	0.3
Total Del/Veh (s)	39.0	34.5	26.1	23.2	28.5	17.7	21.0	14.8	7.3	16.7	18.7	14.3

8: Libby Rd & Northfield Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	21.4

Total Network Performance

Denied Del/Veh (s)	1.0
Total Del/Veh (s)	37.0

Intersection: 3: Warrensville Center Rd & Libby Rd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	174	409	222	687	235	265	483	417	224	321	280
Average Queue (ft)	71	189	61	216	88	135	171	145	91	160	143
95th Queue (ft)	163	325	156	542	227	257	387	337	184	259	239
Link Distance (ft)		580		1540			668	668		855	855
Upstream Blk Time (%)							0	0			
Queuing Penalty (veh)							0	0			
Storage Bay Dist (ft)	150		210		210	250			200		
Storage Blk Time (%)	0	16		11	0	10	0		3	2	
Queuing Penalty (veh)	1	12		32	0	29	1		9	4	

Intersection: 7: Libby Rd & Prayner Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	330	408	87	73
Average Queue (ft)	174	205	29	23
95th Queue (ft)	272	339	70	59
Link Distance (ft)	1540	1013	225	857
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Libby Rd & Northfield Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	140	407	135	240	157	186	150	174	323	303
Average Queue (ft)	103	169	36	114	59	100	64	61	174	159
95th Queue (ft)	167	385	85	194	111	163	124	149	273	262
Link Distance (ft)		1013		556		663	663		884	884
Upstream Blk Time (%)		0								
Queuing Penalty (veh)		0								
Storage Bay Dist (ft)	115		150		150			150		
Storage Blk Time (%)	9	13		3	0	1		0	10	
Queuing Penalty (veh)	27	23		2	0	1		0	10	

Network Summary

Network wide Queuing Penalty: 151

Maple Heights-Southgate Market and Economic Impact Study

Maple Heights City, OH

ECONOMIC AND REAL ESTATE ANALYSIS FOR SUSTAINABLE LAND USE OUTCOMES™

DRAFT REPORT – NOT FOR EXTERNAL CIRCULATION

Table of Contents

EXECUTIVE SUMMARY

ECONOMIC AND REAL ESTATE ANALYSIS FOR SUSTAINABLE LAND USE OUTCOMES ™

4WARD PLANNING™

Background: Project Scope

The purpose of the Southgate Connectivity Study is to develop integrated multimodal transportation and economic development strategies to revitalize the Southgate USA commercial area in the City of Maple Heights, Ohio. The study will also capitalize on the recent momentum of the Amazon Fulfillment Center development, located in nearby North Randall, one mile north of Southgate. 4ward Planning was hired by City Architecture (the prime consultant to the city of Maple Heights) to provide market and economic impact analysis services in support of the Southgate Connectivity Study. As presented below, 4ward Planning first performed a cursory (high level) socio-economic trends, and labor and industry analysis in order to better understand key regional demographic and labor trends which influence prospective business investment and employment opportunities. Next, in order to better understand the ripple effect on area job creation and new business investment from the Amazon Fulfillment Center in North Randall, we utilized IMPLAN (the most widely used input-output economic analysis modeling application) to perform an economic impact analysis associated with the operations (direct, indirect and induced impacts).

Market Analysis of Regional Market Drivers

- Socio-Economic Analysis
  - *Socio-Economic Trends Analysis*
  - *Labor and Industry Trends Analysis*

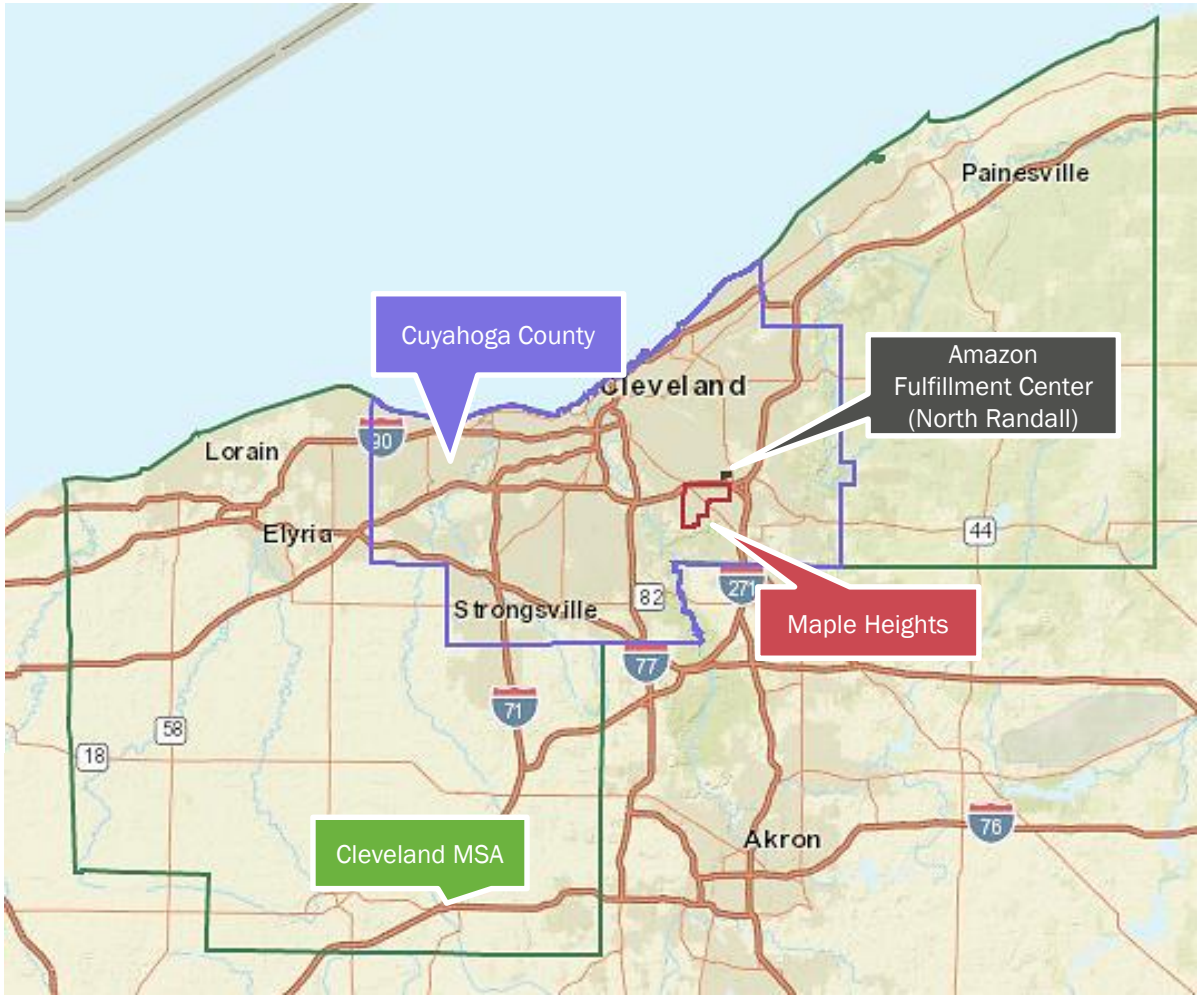
Economic Impact Analysis of Amazon Facility Operations

- Jobs
- Labor Income
- Economic Output

Background: Studied Geographies

To identify market opportunities in the study area, this market analysis analyzes the following geographies:

- **Maple Heights City**: As defined by City boundaries
- **Cuyahoga County**: As defined by county boundaries
- **Cleveland-Elyria, OH Metropolitan Statistical Area (MSA):** Includes the following five Ohio counties: Cuyahoga, Geauga, Lake, Lorain, and Medina counties.
- **Ohio:** As defined by state boundaries.



Study Takeaways: Market Study

Aging population in the region

Population growth in both Maple Heights and the County has been negative, albeit relatively flat, in recent years and is expected to continue to remain relatively flat over the next five years. Despite relatively flat growth through 2024, all geographies are expected to experience an increasing share of residents ages 65 and older, who are partially represented by the baby boom generation (those born between 1946 and 1964). The shifting and aging of the region's population will increase demand for new housing types and health care occupations, as many older empty nesters downsize from single-family housing units to multi-family rental units and/or require an increasing amount of health care services (e.g. growth in home health aides).

Relatively low education attainment and incomes

Educational attainment is relatively low in Maple Heights, where just 16 percent of adult residents 25 and older hold a bachelor's degree or higher level of education (compared to 33 percent in Cuyahoga County). Since median household income is often correlated with educational attainment, it is not surprising that 2019 median household income within Maple Heights ($39,840) is also lower than those within the County ($48,994) and MSA ($54,092).

Low-wage job opportunities

According to data provided by the U.S. Bureau of Labor Statistics and the American Community Survey, labor participation rates in both the County and MSA have generally been declining over the past decade. According to the Ohio Department of Job and Family Services, from 2016 to 2026, the occupations that provide the greatest number of near-term annual job openings in the Cleveland MSA typically require little formal education but provide relatively-low wages. (e.g. combined food prep server occupations).

Study Takeaways: Market Study

Amazon's fulfillment center in North Randall has brought new jobs and investment to the County

In October 2018, Amazon opened a new fulfillment facility in North Randall, on the site of the formerly blighted Randall Park Mall. The 855,000-square-foot North Randall fulfillment center currently employs approximately 2,000 full-time associates, and up to 1,500 additional seasonal workers during the holiday season. According to the economic impact analysis, including direct, indirect and induced impacts, the center in North Randall supports approximately 4,550 total permanent jobs, generating $232.8 million in labor income (includes employee compensation and proprietor income) and $968.1 billion in economic output in Cuyahoga County.

Over the next five years of operation, the center is expected to continue supporting approximately 4,550 total permanent jobs annually, generating over $1.1 billion in labor income and $4.8 billion in output within the county, from 2019 to 2023.

New workers will attract new businesses and firms to the local area

In addition to the non-store retailer industry sector, the top three industry sectors impacted by indirect and induced employment are the real estate, warehousing and storage and employment services sectors, based on the IMPLAN economic impact analysis.

Real estate, wholesale trade, and management of companies and enterprises sectors represent the top tree largest industries impacted by indirect and induced output.

Further, some of this new indirect and induced investment, in the form of new supplier facilities, service businesses, and workforce housing, might be attracted to locating along the corridor leading to the center or in nearby Maple Heights – providing various opportunities to local area residents.

Study Takeaways: Market Study

Specific Opportunities for Maple Heights Residents

The market trends, existing socio-economic and industry conditions and economic impacts of the newly established Amazon fulfillment center suggests there will be a variety of opportunities in the near- and long-term that will benefit businesses and residents of Maple Heights.

- **Delivery Service Drivers** – This occupation does not require more than a high school diploma; however, does require a commercial deriver's license (CDL), which entails training hours. Wage rates will vary by size of truck operated and employer, but generally pays well above the minimum wage. This occupation will see increasing demand from employers such as Amazon as they are currently looking to bring their delivery service in-house and move away from third party service delivery providers.

- **Industrial Machinery Repair** – Given the presence of the Amazon fulfillment center, as well as other similar facilities in the metro area, there will be continued need for industrial machinery repair technicians to service these increasingly automated facilities. Generally, the skills associated with this occupation can be acquired via a technical school or community college certificate program. Pay rates are generally well above the minimum wage and often include full fringe benefits.

- **Housing rehabilitation** – As an increasing number of workers come to the Randall/Maple Heights area, there will be increased demand for workforce housing close to their places of employment. In many cases, this demand will be satisfied through the rehabilitation of existing housing stock, rather than the construction of new housing. Accordingly, local persons who become skilled within one or more of the construction trades (carpentry, plumbing and electrical, in particular) will likely find steady employment at well above average wage rates.

Socio-Economic Trends Analysis

4WARD PLANNING™

Key Findings: Socio-Economic Analysis

Forecasted flat population growth

Population growth in both Maple Heights and the County has been relatively flat, albeit negative, in recent years. From 2010 to 2019, Maple Heights's population decreased by approximately 0.34 percent per year. Absent large-scale development, Maple Heights's population is expected to continue to remain relatively flat and slightly declining, at -0.32 percent per year over the next five years (decreasing by approximately 360 people).

Shifting and aging of the region's population

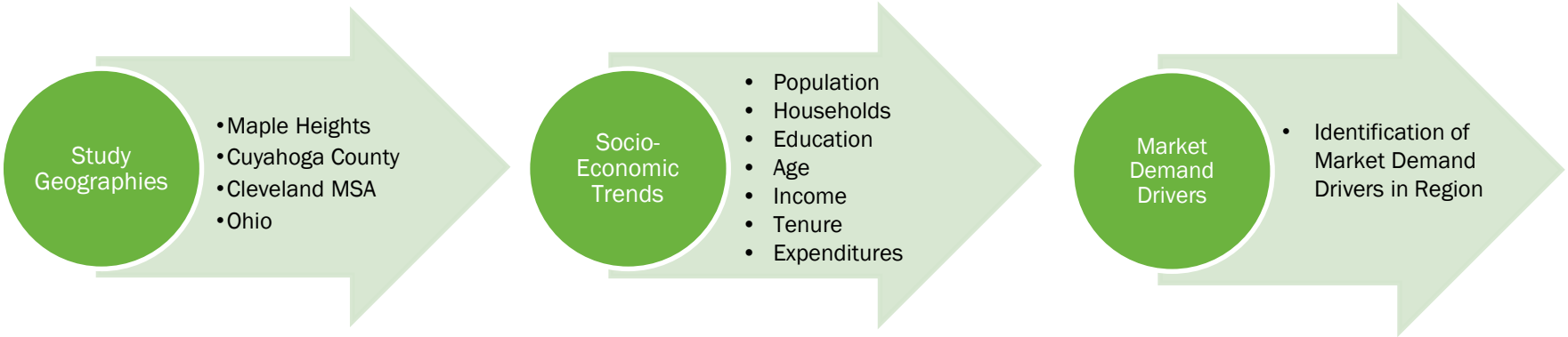
Despite relatively flat growth through 2024, all geographies are expected to experience an increased share of residents ages 65 and older, who are partially represented by the baby boom generation (those born between 1946 and 1964). This increasing share of older residents is due to a number of factors, including a decrease in the number of families with children, younger persons leaving the region for employment elsewhere and a declining share of young persons marrying and having children.

Relatively low education attainment and household incomes

Educational attainment is relatively low in Maple Heights, where just 16 percent of adult residents 25 and older hold a bachelor's degree or higher level of education (compared to 33 percent in Cuyahoga County). Since median household income is often correlated with educational attainment, it is not surprising that 2019 median household income within Maple Heights ($39,840) is also lower than those within the County ($48,994) and MSA ($54,092).

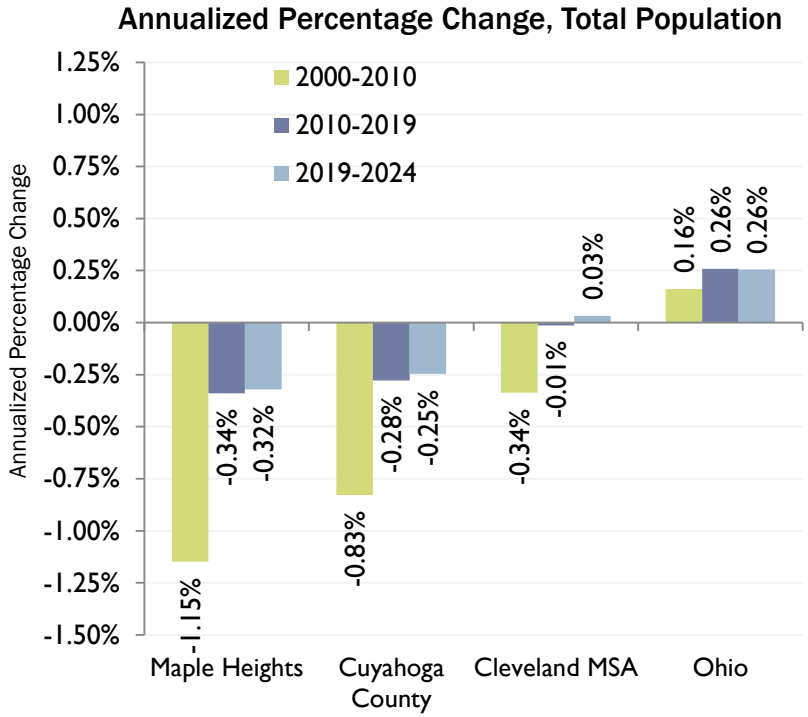
Methodology: Socio-Economic Analysis

Utilizing a combination of published government data (U.S. Census, Bureau of Labor Statistics, and Ohio Department of Labor and Workforce Development) and proprietary analysis software (Esri Community Analyst), 4ward Planning prepared a series of data tables comparatively illustrating demographic trends for Maple Heights City, Cuyahoga County, the Cleveland MSA, and Ohio, for comparison purposes. Specifically, demographic trends associated with population, households, educational attainment, and age cohorts have been analyzed. Additionally, we analyzed income distribution, homeownership rates and tenure, and consumer expenditure estimates (including restaurant, arts and entertainment expenditures). Demographic data is displayed for 2010, 2019 (estimated), and 2024 (projected).



Total Population

Population growth in Maple Heights has been relatively flat, albeit negative, in recent years. From 2010 to 2019, Maple Heights's population decreased by approximately 0.34 percent per year. Absent large-scale development, Maple Heights's population is expected to remain relatively flat, at -0.32 percent per year over the next five years (decreasing by approximately 360 people). Total population growth in Cuyahoga County, overall, is also projected to remain relatively flat, over the next five years, at -0.25 percent per year (decreasing by 15,300 people).

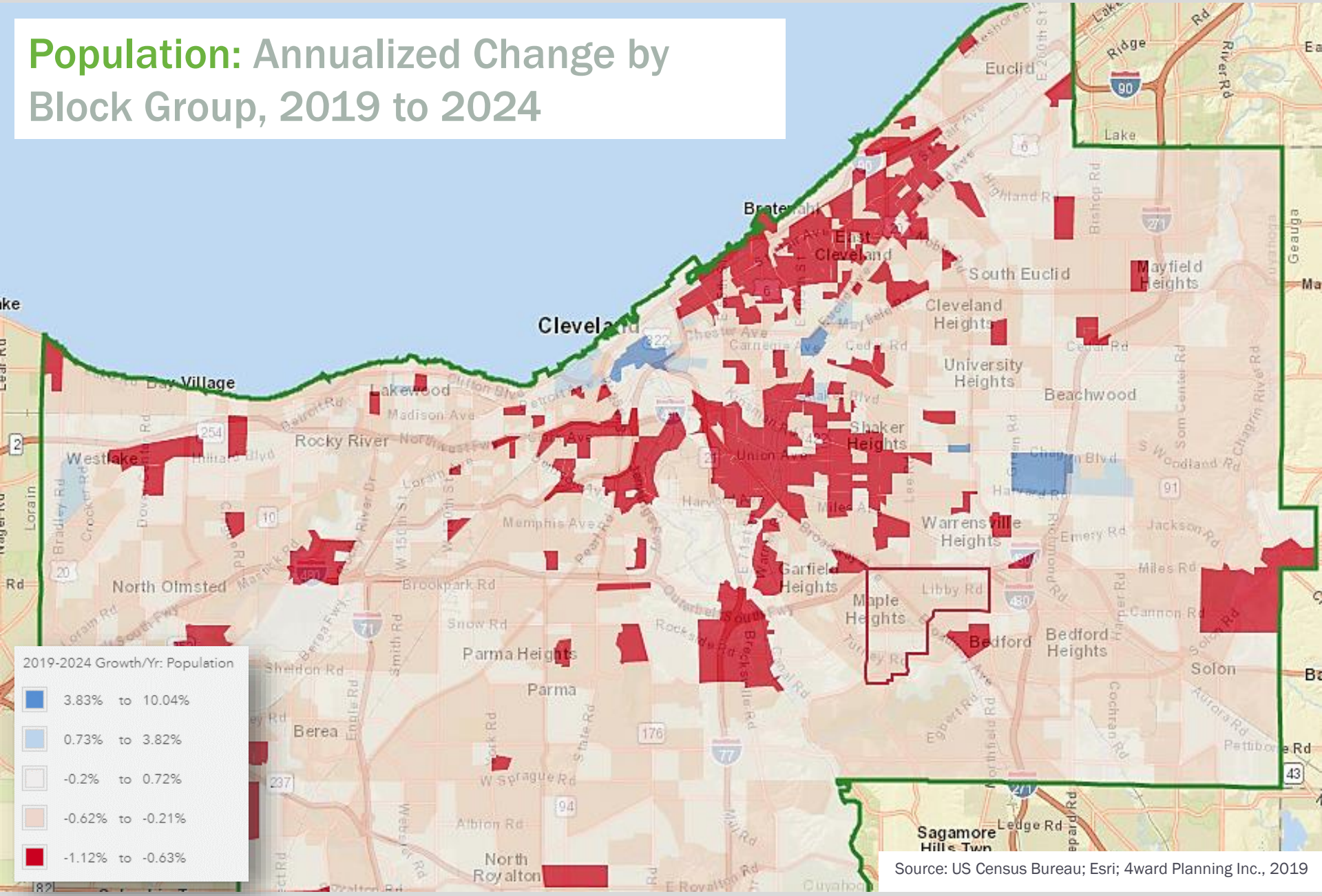


Population by Geography

	2000	2010	2019 (Estimated)	2024 (Forecasted)	Net Change (2019-2024)
Maple Heights	26,112	23,113	22,407	22,047	-360
Cuyahoga County	1,393,979	1,278,416	1,246,484	1,231,186	-15,298
Cleveland MSA	2,148,144	2,076,010	2,073,482	2,076,829	3,347
Ohio	11,353,140	11,537,268	11,805,053	11,955,872	150,819

Source: US Census Bureau; Esri; 4ward Planning Inc., 2019

Population: Annualized Change by Block Group, 2019 to 2024

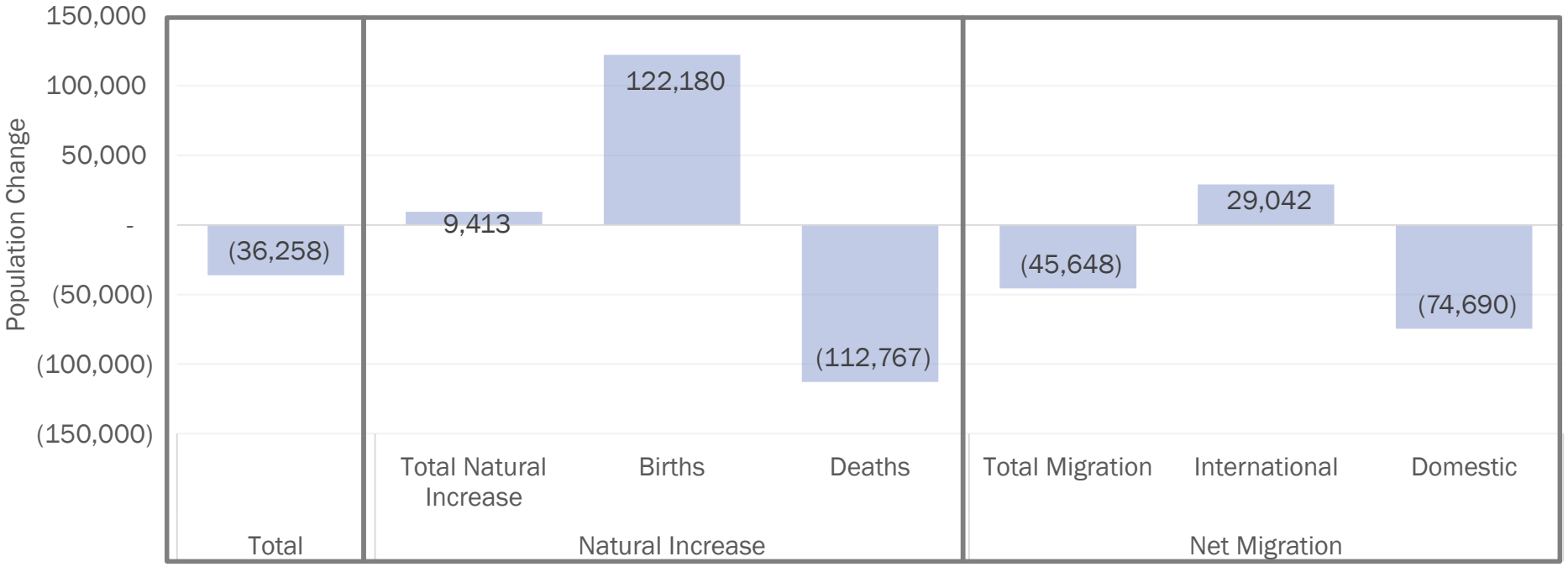


Source: US Census Bureau; Esri; 4ward Planning Inc., 2019

Population Patterns: Cuyahoga County, 2010 to 2019

According to data provided by the U.S. Census Bureau, from 2010 to 2019, the number of deaths has remained higher than the number of births, resulting in net negative natural population decreases. Although the County gained approximately 29,000 residents over the past eight years due to international migration, it lost approximately 74,690 residents due to domestic migration, resulting in overall negative total net migration. Typically, employment, housing, or personal reasons are the top reason why Americans move to a new community.

Cumulative Population Change, April 1, 2010 to July 1, 2018

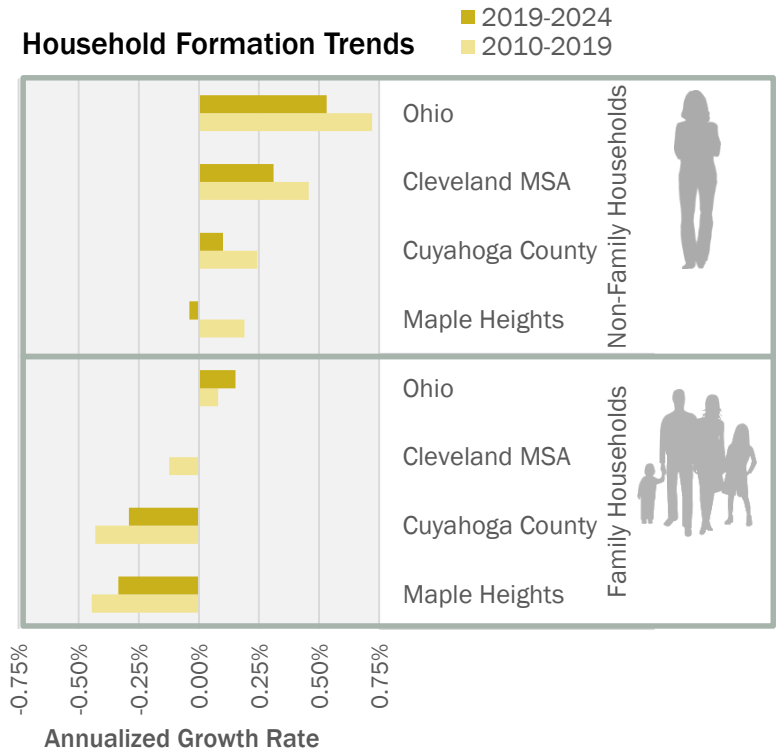


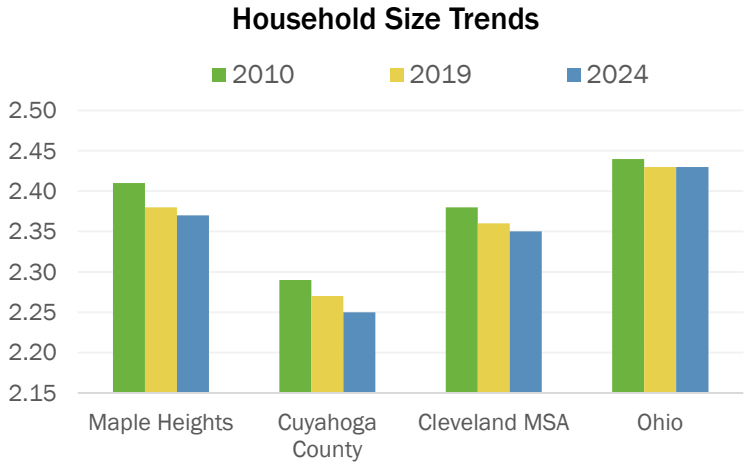
Source: US Census, Estimates of the Components of Resident Population Change: April 1, 2010 to July 1, 2019; 4ward Planning Inc., 2019

Household Formation

As illustrated in the chart to the right, over the next five years, the rates of non-family household formation (top right) in all geographies is expected to be relatively flat but positive, while the rates of family household growth is expected to also be relatively flat but negative (bottom right).

As illustrated below, average household size in Maple Heights (2.38 persons) is slightly higher than that within the County (2.27 persons). Average household size is expected to decline but remain relatively stable in the Cleveland metro area over the next five years.





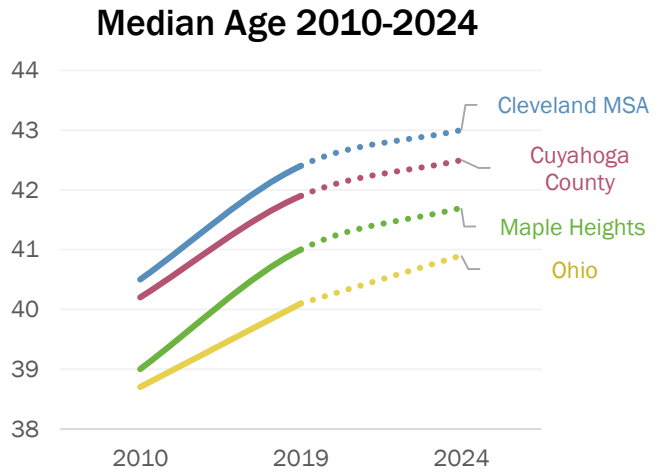
Households by Geography

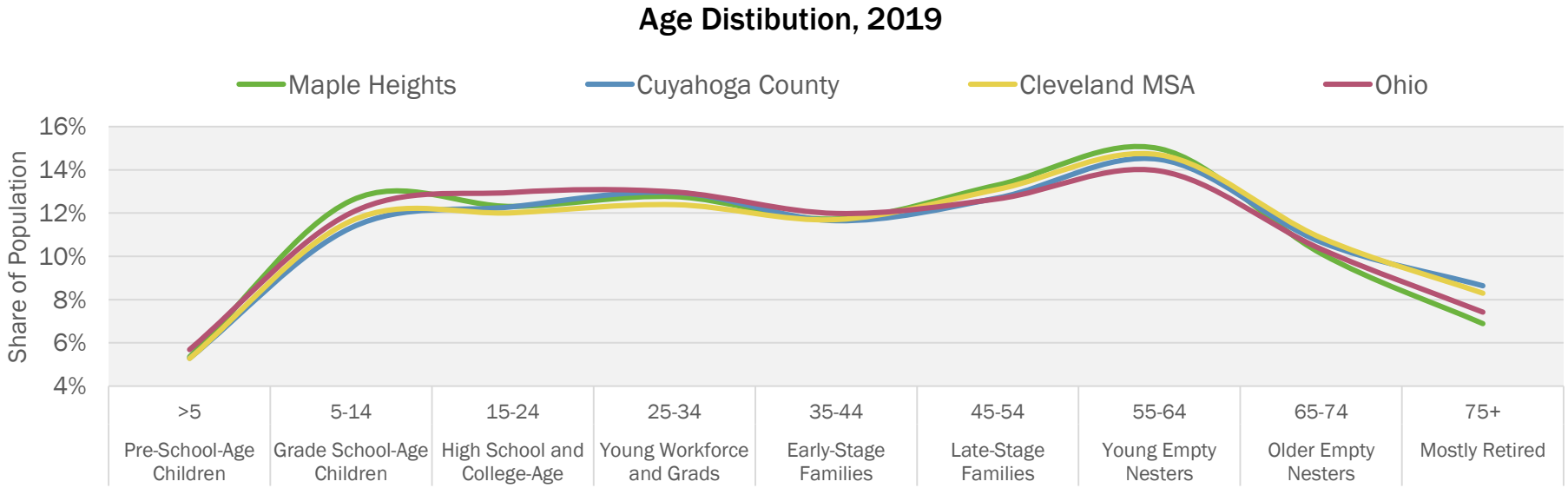
	2000	2010	2019 (Estimated)	2024 (Forecasted)	Net Change (2019-2024)
Maple Heights	10,476	9,506	9,323	9,219	-104
Cuyahoga County	571,457	544,331	536,816	533,482	-3,334
Cleveland MSA	853,165	854,355	861,491	866,560	5,069
Ohio	4,445,773	4,603,621	4,729,729	4,798,373	68,644

Sources: US Census Bureau; Esri; 4ward Planning Inc., 2019

Age Distribution

As illustrated in the chart to the right, the estimated 2019 median age in Maple Heights (41 years) is slightly lower than the median age identified within the MSA (42 years). Although the median age in all geographies is expected to increase through 2024, the median age in Maple Heights will remain slightly lower than those within the MSA. An increasingly aging population will greatly affect many sectors of the City's economy including healthcare, housing, and recreation, as well as its workforce.



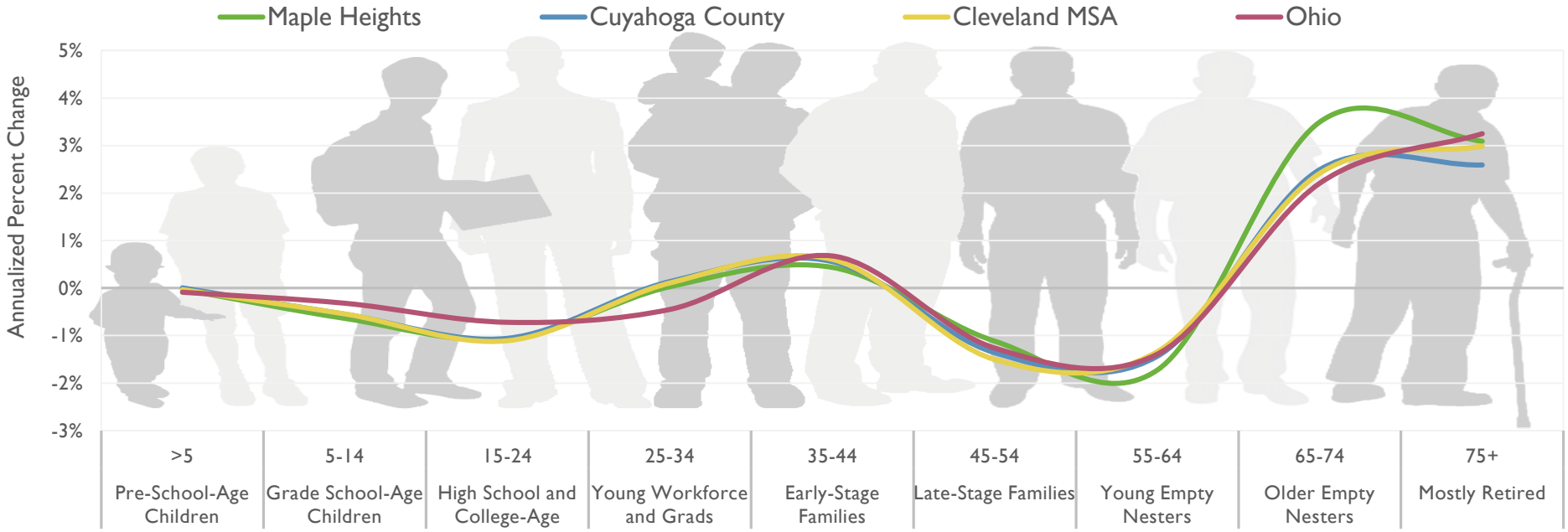


Source: Esri; 4ward Planning Inc., 2019

Age Cohort Growth Patterns

Through 2024, all geographies are expected to experience an increasing share in the number of residents ages 65 and older, who are partially represented by the baby boom generation (those born between 1946 and 1964). Population growth is also anticipated, albeit to a lesser degree, among early-stage families or residents ages 35 to 44, who are partially represented by the millennial generation (those born between 1981 and 1996). As shown in more detail on the following slide, the shifting and aging of the region's population will present opportunities for new housing types, as early-stage families seek to purchase homes (whether existing or newly built) and older empty nesters downsize from single-family housing to multi-family rental units.

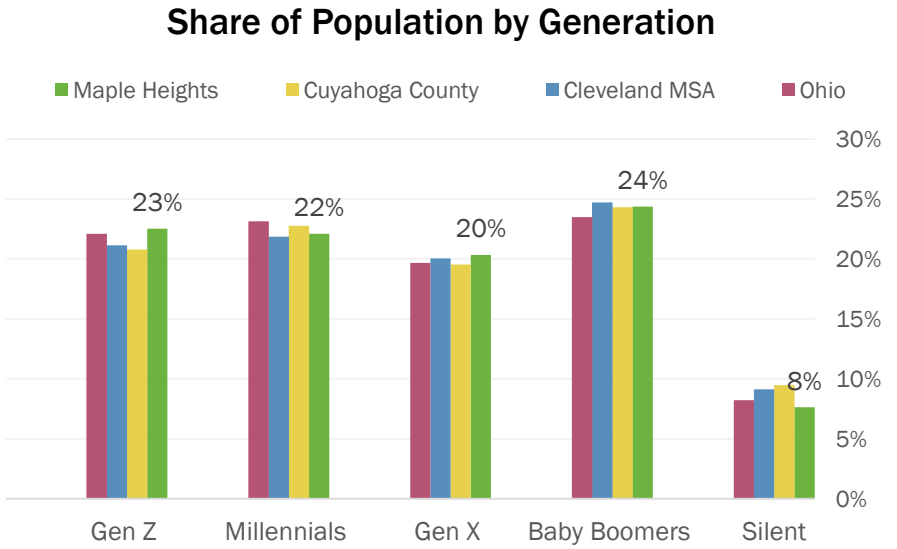
Annualized Age Distribution Change, 2019-2024



Source: US Census Bureau; Esri; 4ward Planning Inc., 2019

Market Trends by Generation

According to Esri, Baby Boomers represent 24 percent of Maple Heights residents, a share comparable with the County and MSA. According to an Emerging Trends in Real Estate survey published by Urban Land Institute (ULI),Baby Boomers are continuing to work into their traditional retirement years (due to financial necessity or by choice). If they do leave their suburban home, it is to relocate where their children live or possibly to urban core of own metro area.



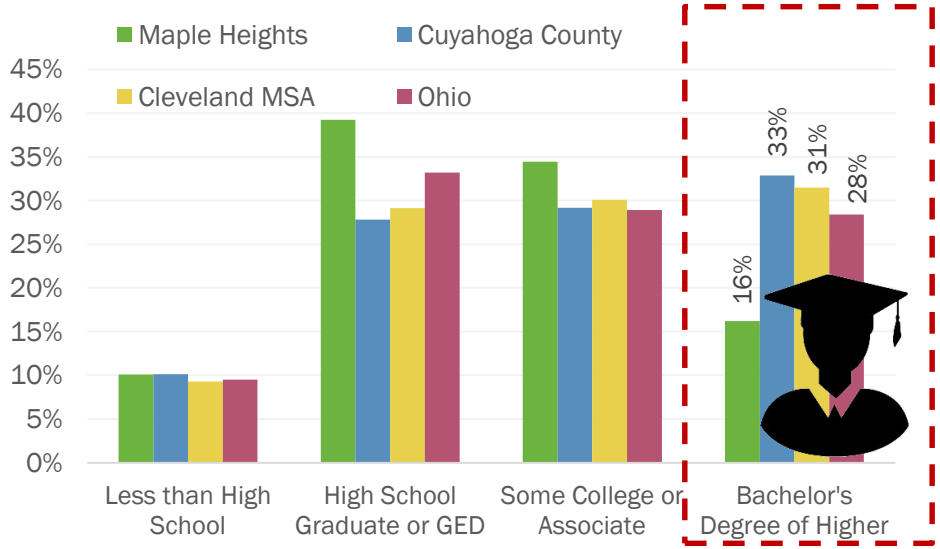
Generation	Year Born (Age in 2019)	What we thought we knew	What we need to know
Silent	1928-1945 (73-90 years)	NA	NA
Baby Boomers	1946-1964 (54-72 years)	Will retire early to mild climates and enjoy the wealth they accumulated in their peak earning years	Continue to work due to financial necessity or by choice If they do leave suburban home, it is to relocate where their children live or possibly to urban core of own metro area
Gen X	1965-1980 (38-53 years)	Bigger houses in the suburbs and a steady climb up the corporate ladder	Rocked by the great financial crisis, leading to lower rates of homeownership, more focus on work/life balance Will be less financially ready for retirement than previous generations
Millennials	1981-1996 (22-37 years)	Users of the sharing economy; love urban living; financial conditions and choice will keep them in major urban cities	Are increasingly forming households and having kids Looking at select suburbs and secondary markets for quality of life and cost
Gen Z	1997-2015 (6-21 years)	Tech savvy from birth; will have grown up in the sharing/gig economy; will converge on the urban core and solidify all other millennial trends	NA

Source: Emerging Trends in Real Estate survey

Educational Attainment & Income

The chart below comparatively illustrates estimated 2019 educational attainment across all four geographies. Educational attainment is relatively low in Maple Heights, where just 16 percent of adult residents 25 and older hold a bachelor's degree or higher level of education (compared to 33 percent in Cuyahoga County). Since median household income is often correlated with educational attainment, it is not surprising that 2019 median household income within Maple Heights ($39,840) is also lower than those within the County ($48,994) and MSA ($54,092). The median household income in Maple Heights is expected to remain relatively low over the next five years, growing to $44,385 by 2024 (2.3 percent per year).

Educational Attainment (% of Adult Population) 2019

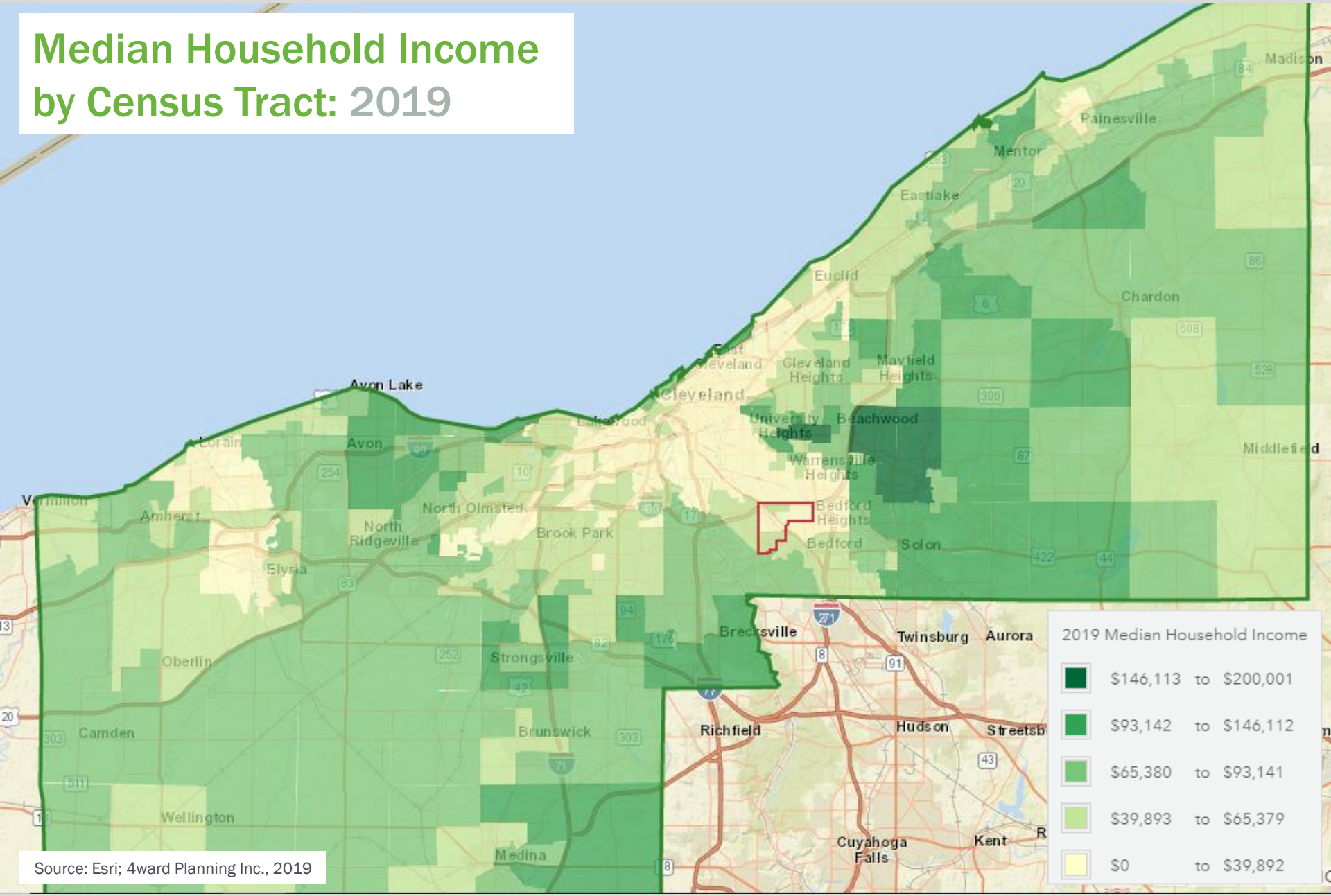


Median Household Income 2019-2024

	2019	2024	2019-2024	% Change
Maple Heights	$39,840	$44,385	$4,545	2.3%
Cuyahoga County	$48,994	$55,699	$6,705	2.7%
Cleveland MSA	$54,092	$61,502	$7,410	2.7%
Ohio	$54,966	$61,801	$6,835	2.5%

Source: Esri; 4ward Planning Inc., 2019

Median Household Income by Census Tract: 2019

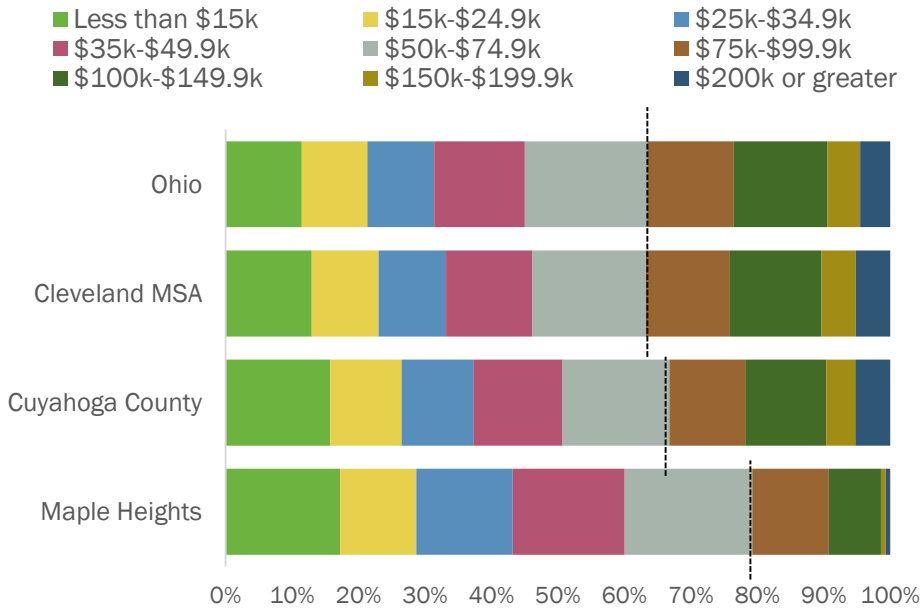


Source: Esri; 4ward Planning Inc., 2019

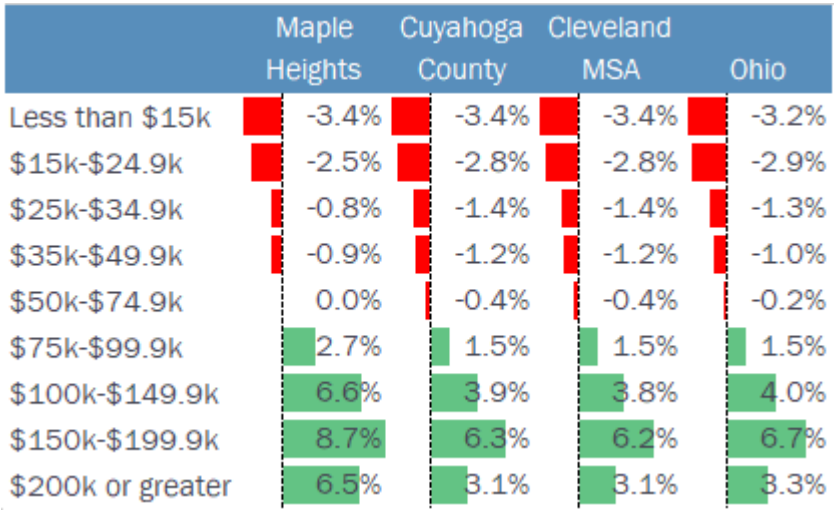
Income Distribution

As illustrated in the chart below (left), in 2019, approximately 21 percent of households in Maple Heights earned more than $75,000 per year, compared to approximately 37 percent within the MSA, overall. As shown in the chart below (right), Esri expects that households earning more than $75,000 per year will grow the fastest in all four geographies over the next five years.

Income Distribution, 2019



Annualized Percent Household Income Change, 2019-2024



Sources: US Census Bureau; Esri; 4ward Planning Inc., 2019

Tapestry Segments: An Overview

Esri's Tapestry Segmentation process classifies U.S. residential neighborhoods into 65 unique segments based on demographic variables such as age, income, home value, occupation, household type, education, and other consumer behavior, demographic, and socio-economic characteristics.

According to Esri, companies, agencies, and organizations have used segmentation to divide and group consumer markets to more precisely target their best customers and prospects. This targeting method is, purportedly, superior to using "scattershot" methods that might attract preferred groups. Segmentation explains customer diversity, simplifies marketing campaigns, describes lifestyles and life-stages, and incorporates a wide range of data.

Segmentation systems operate on the theory that people with similar tastes, lifestyles, and behaviors seek others with the same tastes - "like seeks like." These behaviors can be measured, predicted, and targeted. Esri's Tapestry Segmentation system combines the "who" of lifestyle demography with the "where" of local neighborhood geography to create a model of various lifestyle classifications or segments of actual neighborhoods with addresses - distinct behavioral market segments.

Source: Esri; 4ward Planning Inc., 2019

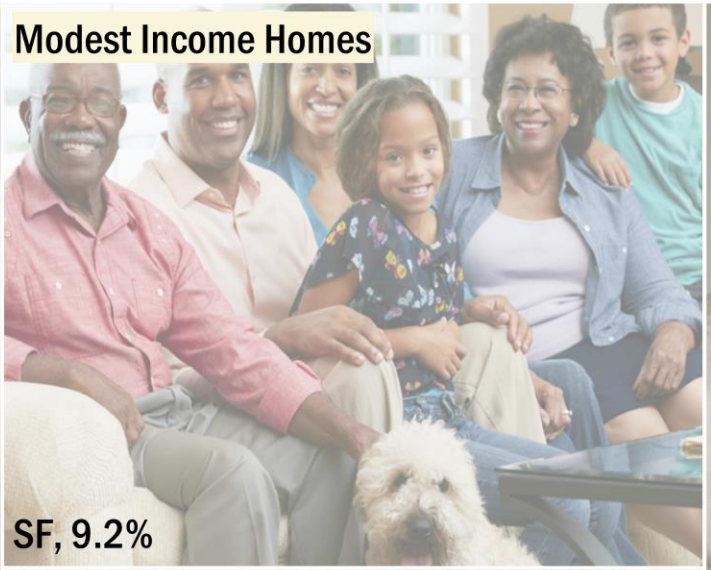
Top 20 Tapestries

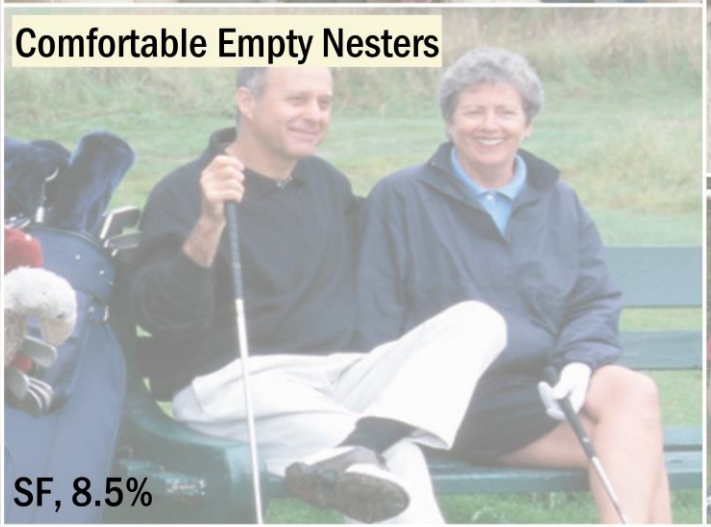
The chart below compares the top 20 Tapestry Segments by share of total households within each geography, along with key socio-economic metrics (median age, household size, etc.). Approximately 24 percent of households in the Cuyahoga County have some preference for multi-family housing (with 31 percent preferring rental housing).

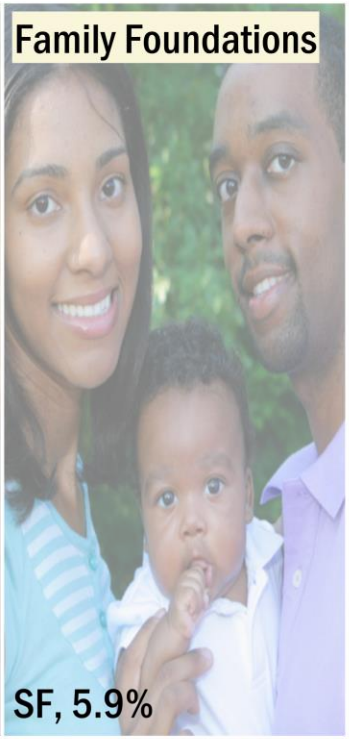
			Share of Households				Key Characteristics					
Tapestry Segment	Household Type	Housing Type	Maple Heights	Cuyahoga County	Cleveland MSA	Ohio	Median Age	Average HH Size	Median HH Income	Median Net Worth	% Home Owners	% Renters
Rustbelt Traditions	Married Couples	SF	11.4%	12.3%	11.7%	6.8%	39.2	2.5	$53,100	$107,100	80%	20%
Modest Income Homes	Singles	SF	7.9%	9.2%	5.8%	2.7%	37.2	2.6	$24,600	$13,100	61%	39%
Comfortable Empty Nesters	Married Couples	SF	0.0%	8.5%	9.4%	5.6%	48.2	2.5	$76,900	$312,400	88%	12%
Traditional Living	Married Couples	SF	9.6%	6.0%	5.4%	6.9%	35.7	2.5	$40,400	$38,300	76%	24%
Family Foundations	Singles	SF	65.4%	5.9%	3.7%	1.4%	39.8	2.7	$44,400	$70,100	74%	27%
Hardscrabble Road	Singles	SF	0.0%	5.7%	4.6%	4.5%	32.5	2.7	$29,300	$13,100	59%	41%
Midlife Constants	Married Couples w/No Kids	SF	5.7%	5.6%	5.5%	5.1%	47.2	2.3	$54,400	$150,300	76%	24%
Old and Newcomers	Singles	SF; Multi-Units	0.0%	3.8%	3.5%	2.9%	39.5	2.1	$45,900	$38,100	43%	57%
Savvy Suburbanites	Married Couples	SF	0.0%	3.6%	5.0%	3.0%	45.3	2.9	$111,900	$526,800	91%	9%
Set to Impress	Singles	Multi-Unit Rentals; SF	0.0%	3.5%	2.5%	1.9%	34.1	2.1	$34,600	$13,000	32%	68%
City Commons	Single Parents	Multi-Unit Rentals; SF	0.0%	3.2%	2.2%	1.8%	28.6	2.7	$18,500	$10,000	33%	67%
Social Security Set	Singles	Multi-Unit Rentals	0.0%	3.2%	2.2%	1.3%	45.9	1.7	$18,000	$10,300	12%	88%
In Style	Married Couples w/No Kids	SF	0.0%	3.2%	2.4%	2.4%	42.2	2.4	$75,600	$174,600	66%	34%
Golden Years	Singles	SF; Multi-Units	0.0%	2.8%	2.1%	1.0%	52.6	2.1	$75,400	$199,900	41%	59%
Retirement Communities	Singles	Multi-Units; SF	0.0%	2.6%	2.0%	1.8%	54.2	1.9	$42,200	$58,800	31%	69%
Emerald City	Singles	SF; Multi-Units	0.0%	2.2%	1.4%	1.3%	37.7	2.1	$62,100	$61,600	47%	54%
Exurbanites	Married Couples	SF	0.0%	2.1%	2.2%	1.3%	51.3	2.5	$107,400	$520,300	83%	17%
Top Tier	Married Couples	SF	0.0%	2.0%	1.5%	0.8%	47.5	2.8	$177,800	$581,000	90%	10%
Front Porches	Married Couples	SF; Multi-Units	0.0%	1.3%	1.4%	0.7%	35.1	2.6	$45,500	$30,400	48%	52%
Bright Young Professionals	Married Couples	SF; Multi-Units	0.0%	1.2%	1.3%	1.9%	33.2	2.4	$55,700	$40,000	40%	60%
Share with Multifamily Preference			**0%**	**24%**	**19%**	**15%**						
Share with Renting Preference			**26%**	**31%**	**25%**	**19%**						

Source: Esri; 4ward Planning Inc., 2019

Top Six Tapestries by Household Share: Cuyahoga County







Source: Esri; 4ward Planning Inc., 2019

Labor and Industry Trends

Key Findings: Labor & Industry Analysis

Declining unemployment and participation rates

Although the unemployment rate in Maple Heights has been declining since 2010, it may be because the unemployed are no longer looking for work and dropping out of the labor force altogether. According to data provided by the U.S. Bureau of Labor Statistics and the American Community Survey, participation rates in both the County and MSA have generally been declining over the past decade. The fact that people in their prime working age are leaving the local labor force is likely due to a skills-to-qualifications mismatch or a lack of living wage jobs, given educational attainment levels (generally, absent a college degree, living wage employment is more difficult to secure).

Employment dominated by Health Care and Social Assistance

Based on employment data provided by the U.S. Census Bureau and employment projection data provided by the Ohio Department of Job and Family Service, the Health Care and Social Assistance sector is the County's largest industry by both share of total employment (20 percent) and rate of growth (1.4 percent per year). The healthcare sector will continue to be the largest generator of jobs for the foreseeable future.

An influx of low-wage jobs through 2026

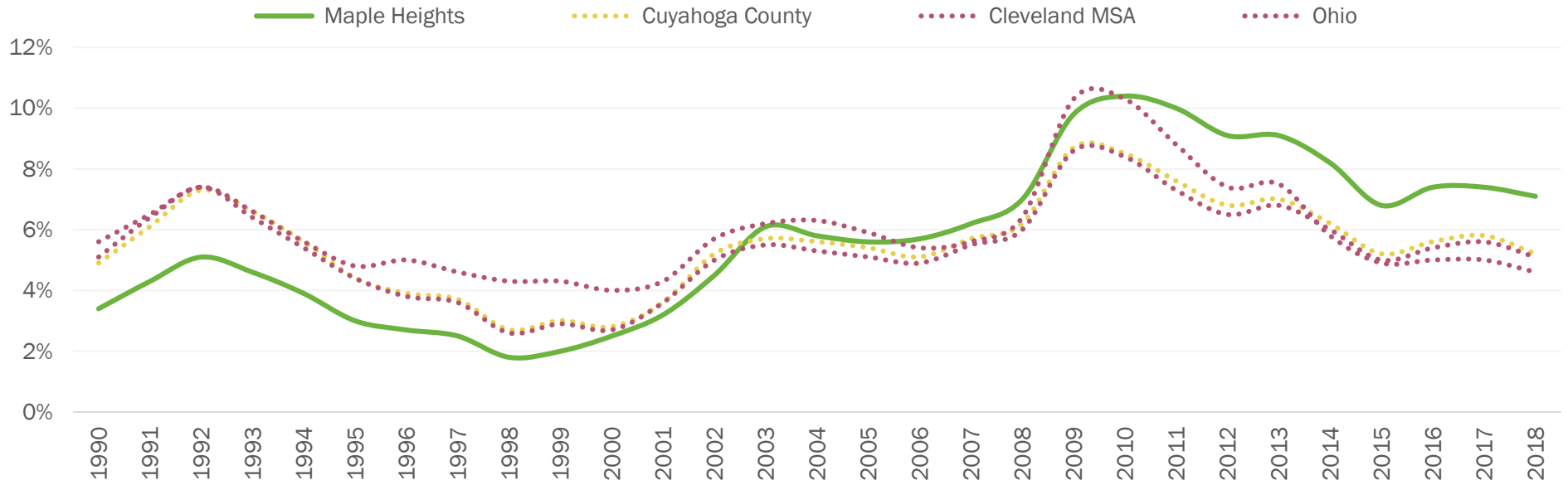
According to the Ohio Department of Job and Family Services, while the occupations that provide the greatest number of near-term annual job openings in the Cleveland MSA typically require little formal education, they also provide relatively-low wages. For example, combined food prep server occupations, which require on-the-job training but no formal education, are expected to grow by 5,200 jobs per year in the MSA through 2026. As of March 2018, these occupations earn a median wage of just $9.47 per hour in the MSA.

Methodology: Labor and Industry Trends

4ward Planning performed a cursory (high level) labor and industry analysis for Cuyahoga County, the Cleveland MSA and, for comparative purposes, Ohio, to include current and projected industry and occupational employment information provided by the Ohio Department of Job and Family Services. The examination of projected industry employment data provides necessary insight into the types and quantity of commercial, retail and entertainment-retail land uses which might be in demand over the coming years. 4ward Planning analyzed and presented key industry metric projections (e.g., employment growth and occupations by education requirements) through 2024 for the County and, for comparative purposes, Ohio. 4ward Planning highlighted the top occupations by growth that do not require a four-year degree.

Unemployment Rate Trends

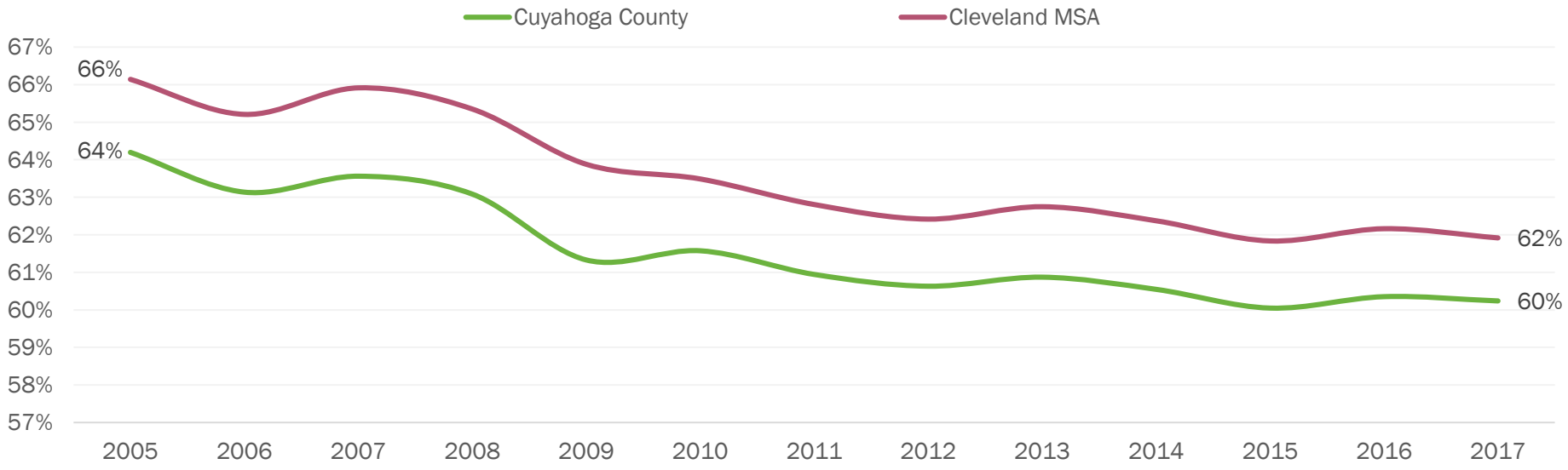
The chart below compares average annual unemployment rates across all geographies, according to data provided by the U.S. Bureau of Labor Statistics (BLS). As of May 2019, Maple Heights's average unemployment rate (5.8 percent) was higher than that found within the County (4.1 percent), and the MSA (4.7 percent). Although the average unemployment rate in Maple Heights rose to 11.6 percent in 2010 (during the economic crisis), over the past decade, average unemployment rates in Maple Heights have remained declining, albeit remaining consistently higher than those within the County and MSA – characteristic of a weaker economy. Declining unemployment rates in all geographies suggests that demand for local housing options will, likely, rise, as a growing share of newly hired workers seeks to secure housing near their place of employment – a favorable trend for potential mixed-use, infill redevelopment in Maple Heights, as well as for construction jobs.



Source: U.S. Bureau of Labor Statistics

Participation Rate Trends

One of the reasons why the unemployment rate might fall in a given area is because the unemployed are no longer looking for work and dropping out of the labor force altogether. A labor force participation rate measures the percentage of adults 16 years and over who are in the labor force as either employed or unemployed, but actively seeking employment. According to data provided by BLS and the American Community Survey, the county's labor force participation rate was 60 percent in 2017 (slightly lower than the average labor force participation rate (63 percent) identified for the nation). As illustrated below, while participation rates in both the County and MSA have generally been declining over the past decade. The fact that people in their prime working age are leaving the local labor force is likely due to skills-to-qualifications mismatch and/or the real and/or perceived lack of living wage employment by area job searchers.



Source: U.S. Bureau of Labor Statistics

Employment by Industry

Based on employment data provided by the U.S. Census Bureau and employment projection data provided by the Ohio Department of Job and Family Service, the Health Care and Social Assistance sector is the County's largest industry by both share of total employment (20 percent) and rate of growth (1.4 percent per year).

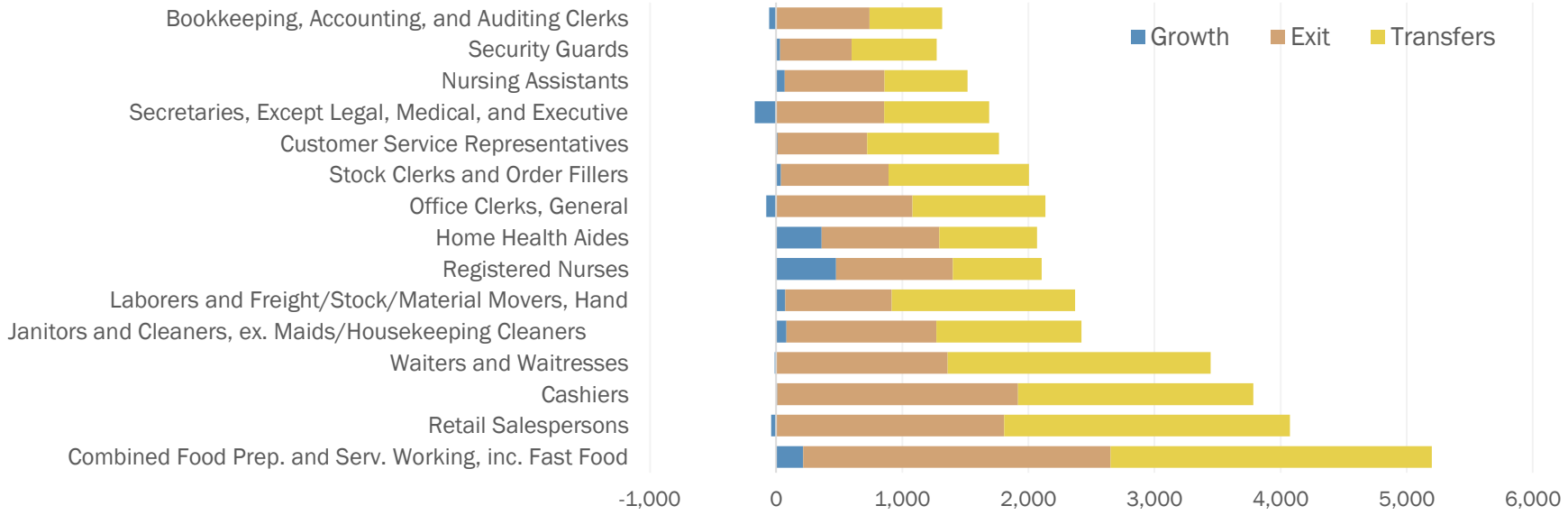
Industry	Total Employment (2018)			Total Employment Share (2018)			% Annualized Change (2018-2026)	
	Cuyahoga County	Cleveland MSA	Ohio	Cuyahoga County	Cleveland MSA	Ohio	Cleveland MSA	Ohio
Health Care and Social Assistance	144,963	183,980	851,810	20.1%	18.0%	16.2%	1.4%	1.7%
Manufacturing	70,215	121,701	696,221	9.7%	11.9%	13.3%	-0.6%	-0.6%
Retail Trade	66,850	99,981	553,526	9.3%	9.8%	10.6%	0.1%	0.2%
Accommodation and Food Services	55,650	88,245	475,180	7.7%	8.6%	9.1%	0.1%	0.0%
Educational Services	50,759	74,834	422,922	7.0%	7.3%	8.1%	0.1%	0.6%
Administration & Support, Waste Management and	50,570	67,260	323,345	7.0%	6.6%	6.2%	0.6%	0.8%
Professional, Scientific, and Technical Services	48,661	59,308	266,657	6.8%	5.8%	5.1%	0.6%	0.4%
Finance and Insurance	38,590	48,987	226,567	5.4%	4.8%	4.3%	0.0%	0.6%
Wholesale Trade	36,957	52,542	231,364	5.1%	5.1%	4.4%	0.0%	0.0%
Transportation and Warehousing	23,623	30,196	209,611	3.3%	3.0%	4.0%	0.0%	0.6%
Management of Companies and Enterprises	22,507	31,733	147,722	3.1%	3.1%	2.8%	0.9%	1.0%
Construction	21,294	37,695	220,451	3.0%	3.7%	4.2%	0.6%	1.0%
Other Services (except Public Administration)	20,667	30,688	156,256	2.9%	3.0%	3.0%	0.1%	0.1%
Public Administration	20,383	30,902	160,118	2.8%	3.0%	3.1%	0.0%	0.0%
Arts, Entertainment, and Recreation	15,873	22,303	96,239	2.2%	2.2%	1.8%	0.5%	0.6%
Information	15,559	17,737	86,079	2.2%	1.7%	1.6%	-1.1%	-0.7%
Real Estate and Rental and Leasing	13,736	15,631	62,847	1.9%	1.5%	1.2%	0.9%	0.6%
Utilities	3,095	5,000	28,535	0.4%	0.5%	0.5%	0.1%	-0.1%
Mining, Quarrying, and Oil and Gas Extraction	370	620	11,930	0.1%	0.1%	0.2%	-0.1%	0.6%
Agriculture, Forestry, Fishing and Hunting	193	2,539	16,036	0.0%	0.2%	0.3%	-0.5%	-0.1%
Total	720,514	1,021,881	5,243,416	100.0%	100.0%	100.0%	0.3%	0.4%

Source: U.S. Census Bureau, Center for Economic Studies, LEHD; Ohio Department of Job and Family Services, Industry Employment Projection Report: 2016-2026

Top 15 Occupations by Job Growth: Cleveland MSA, 2016 - 2026

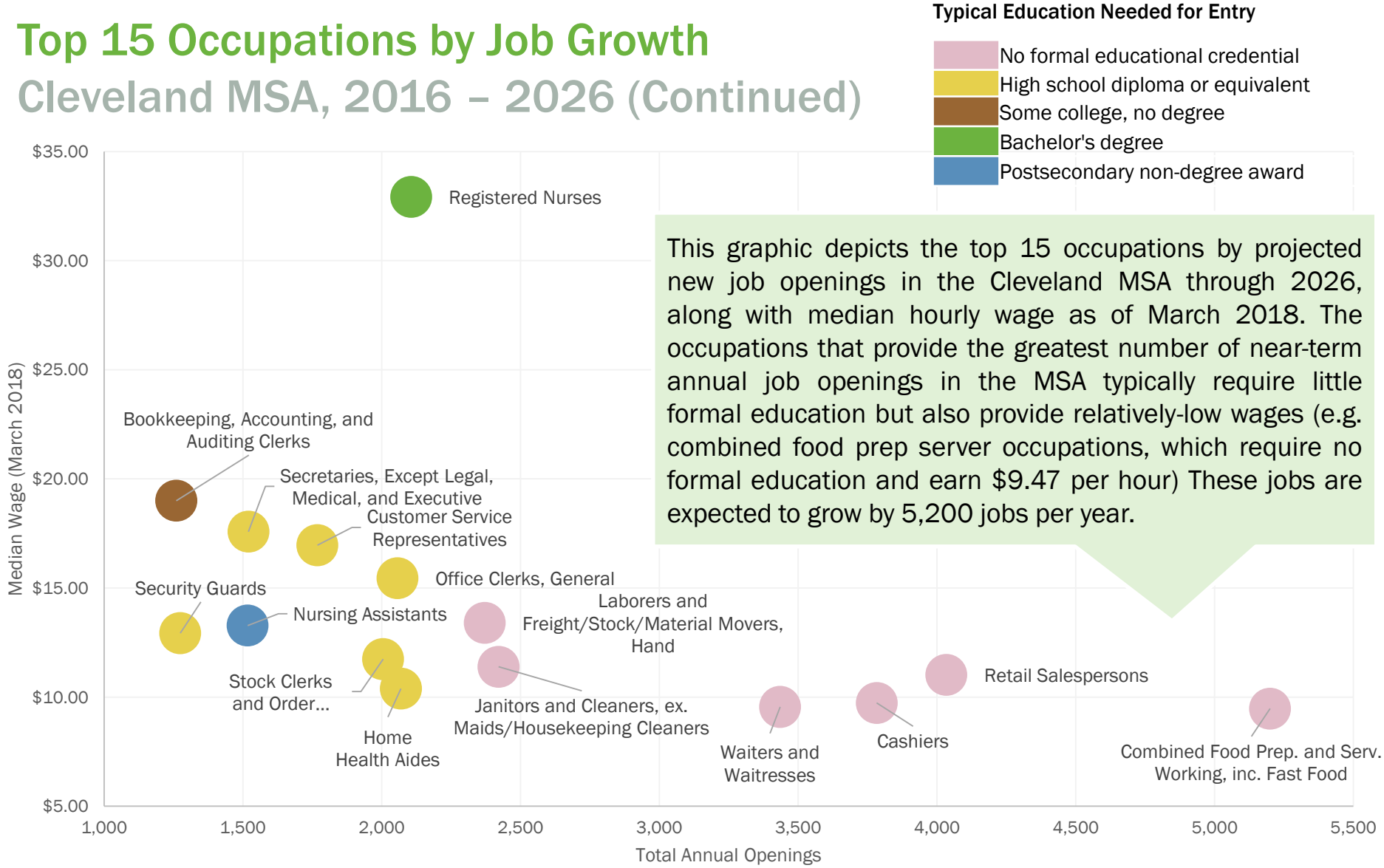
The chart below presents the top 10 occupations by projected total employment demand (including job growth, replacement, and transfers) from 2016 to 2026 within the Cleveland MSA, according to the Ohio Department of Job and Family Services. Demand due to employment growth measures the numerical change in projected number of job gains or losses, while demand due to exits measure the projected number of workers leaving an occupation and exiting the workforce entirely and demand due to transfers are the projected number of workers leaving an occupation and transferring to a different occupation. In general, while the top 10 occupations in demand (presented in more detail on the following page) typically do not have educational barriers to job entry (e.g. on-the-job training) they provide relatively low median annual wages.

Projected Top Growth Occupations: Cleveland MSA, 2016-2026



Source: Ohio Department of Labor and Industry, Center for Workforce Information & Analysis

Top 15 Occupations by Job Growth
Cleveland MSA, 2016 – 2026 (Continued)



Source: Ohio Department of Job and Family Services, Industry Employment Projection Report: 2016-2026

Economic Impact Analysis

ECONOMIC AND REAL ESTATE ANALYSIS FOR SUSTAINABLE LAND USE OUTCOMES ™

4WARD PLANNING™

Key Findings: Economic Impact Analysis

4,550 total permanent jobs

Including direct, indirect and induced impacts, the Amazon' fulfillment center in North Randall supports approximately 4,550 total permanent jobs within Cuyahoga County. In addition to the non-store retail sector, the top three industries impacted by indirect and induced employment are the real estate, warehousing and storage, and employment services sectors.

$232.8 million in labor income

Labor income includes all forms of employment income, including employee compensation (wages and benefits), and proprietor income. Including direct, indirect and induced impacts, the Amazon' fulfillment center in North Randall supports approximately $232.8 million in labor income in 2019. Over five years of operation (from 2019 to 2023), the center is projected to generate over $1.1 billion in labor income.

$968.1 million in economic output

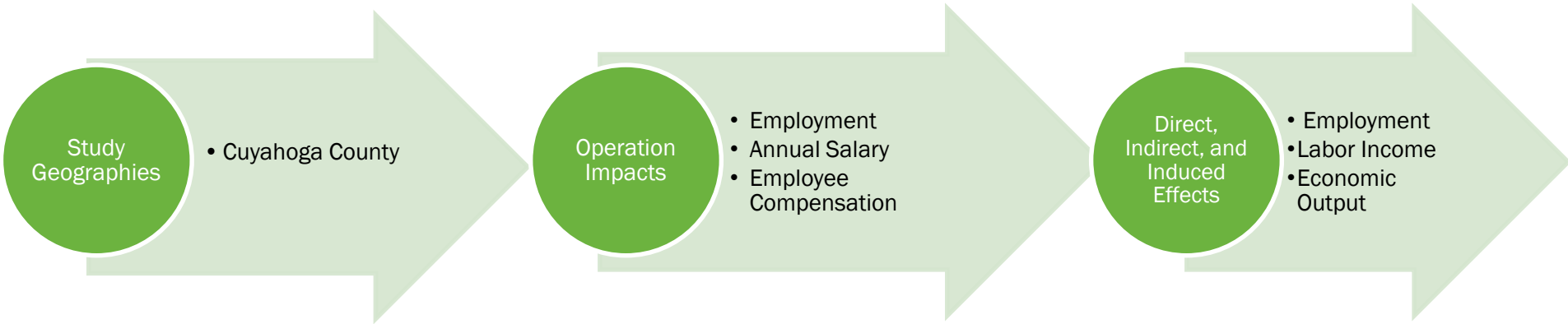
Including direct, indirect and induced impacts, the Amazon' fulfillment center in North Randall supports over $968.1 million in economic output within Cuyahoga County. Over five years of operation (from 2019 to 2023), the center is projected to generate over $4.8 billion in economic output within the county.

Local Area Investment and Employment Opportunities

While not all of the above identified investment and employment opportunities will occur in or directly benefit the Southgate Maple Heights area, local residents (whether they be job seekers or prospective entrepreneurs) and existing businesses should have opportunity to participate in a portion of economic value created by the Amazon fulfillment center.

Methodology: Economic Impact Analysis

In October 2018, Amazon opened a new fulfillment center in North Randall, on the site of the formerly blighted Randall Park Mall. 4ward Planning performed an economic impact analysis associated with the recently opened center in order to identify the ripple effect on area job creation and new business investment, such that local area residents may benefit from this ripple effect (direct, indirect and induced impacts). Specifically, 4ward Planning utilized IMPLAN, the most widely used input-output economic analysis modeling application, to identify the industries within Cuyahoga County (and, ostensibly, within reach of Maple Heights residents) which will likely see an increase in employment and new investment opportunities, as a result of the Amazon fulfillment center.



Methodology: Employee Assumptions

The 855,000-square-foot North Randall fulfillment facility currently employs approximately 2,000 full-time associates, and up to 1,500 additional seasonal workers during the holiday season. It is assumed that approximately 90 percent of total full-time jobs are warehouse labor jobs (1,900 jobs), which are typically entry-level and involve picking, packing, and shipping customer orders, organizing shipments and loading truck. It is assumed that the remaining 10 percent of total full-time jobs (100 jobs) are management staff jobs, which include operation, finance, human resource staff. For purposes of analysis, seasonal warehouse labor staff are assumed to work four weeks in December (holiday season). As defined by IMPLAN, a job that lasts 12 months equals one job, two jobs that last six months also equal one job, three jobs that last four months equal one job, etc. A center that supports 1,500 seasonal jobs for a one-month period would be considered to support 125 jobs as measured in IMPLAN. As summarized below, a total of 2,125 (2,000 full-time employees plus 125 seasonal employees) jobs was inputted into the corresponding sector by industry (sector 407 Retail-Non-store Businesses). More information on salary and employee compensation assumptions are provided on the following page.

Amazon's North Randall Fulfillment Center: IMPLAN Employee Assumptions

	Employee Year Equivalent	Est. Avg. Annual Salary	Cumulative Annual Earnings	Cumulative Employee Compensation (IMPLAN Calc.)
Management Staff	100	$71,000	$7,100,000	$8,366,553
Warehouse Team Member (Full-Time @ $15 per hour)	1,900	$31,200	$59,280,000	$69,854,829
Warehouse Team Member (Seasonal, Full-Time @ $15 per hour)	125	$2,400	$300,000	$353,516
	2,125		$66,680,000	$78,574,898

Source: IMPLAN, 4ward Planning, 2019

Methodology: Employee Compensation Assumptions

The table to the right presents advertised job description data provided by Amazon for its North Randall center. Since salary data was not provided by Amazon, average salary data by job title was estimated from data provided by Indeed.com for the Cleveland metro area. As presented in the table below, to the right, the average annual salary for management level positions at Amazon is estimated at $71,000.

In 2018, Amazon began paying all US employees, including part-time, seasonal, and temporary workers, a minimum of $15 an hour. As presented in the table on the preceding page, if full-time warehouse team member staff earn a minimum of $15 per hour and work 52 weeks per year at 40 hours a week, they earn a minimum average salary of $31,200 per year. If full-time seasonal warehouse team member staff work just four weeks per year at $15 per hour and 40 hours per week, they earn approximately $2,400 per year.

Employee compensation in IMPLAN is the total payroll cost of employees, which includes wages and salaries, all benefits (e.g., health, retirement) and payroll taxes (both sides of social security, unemployment insurance taxes, etc.). As presented in the table on the preceding page, IMPLAN's converter by industry was used to convert salary to employee compensation. Since near-term wage increases are unknown, employee compensation is held constant through 2023 and represent conservative estimates.

A sale that does not happen through a traditional physical retail space (e.g. online, direct marketing, vending machine, etc.) is known as non-store retailing. Since Amazon sells from its website and not via a retail storefront, it is considered a non-Store Retailer. Accordingly, all direct impacts are analyzed in IMPLAN within sector 407 Retail-Non-store Businesses.

Advertised Job Titles and Estimated Salary: Amazon North Randall

Job Title	Est. Salary
Area Manager	$51,000
Finance Manager	$88,000
Onsite Medical Representative	$106,000
Operations Manager	$60,000
Regional Loss Prevention Manager	$50,000
Senior HR Assistant	$74,000
Transportation Area Manager	$65,000
Workers' Compensation Manager	$77,000
Warehouse Team Member	NA
Average Management Staff Salary	$71,000

Source: Amazon.jobs, Indeed.com 4ward Planning, 2019

Analysis: Amazon North Randall Fulfillment Center

As seen in the table below (and in more detail on the following slides), including direct, indirect and induced impacts, the Amazon' fulfillment center in North Randall supports approximately 4,550 total permanent jobs, $232.8 million in labor income, and $968.1 million in economic output in Cuyahoga County. Over five years of operation, the center is expected to continue supporting approximately 4,550 total permanent jobs annually, generating over $1.1 billion in labor income and $4.8 billion in output from 2019 to 2023. In addition to the non-store retailers sector, the top three industry sectors impacted by indirect and induced employment are the real estate, warehousing and storage and employment services, while the real estate, wholesale trade, and management of companies and enterprises sectors represent the top tree largest industries impacted by indirect and induced output.

Direct, Indirect, and Induced Effects of Amazon North Randall Fulfillment Center (Annual, 2019)

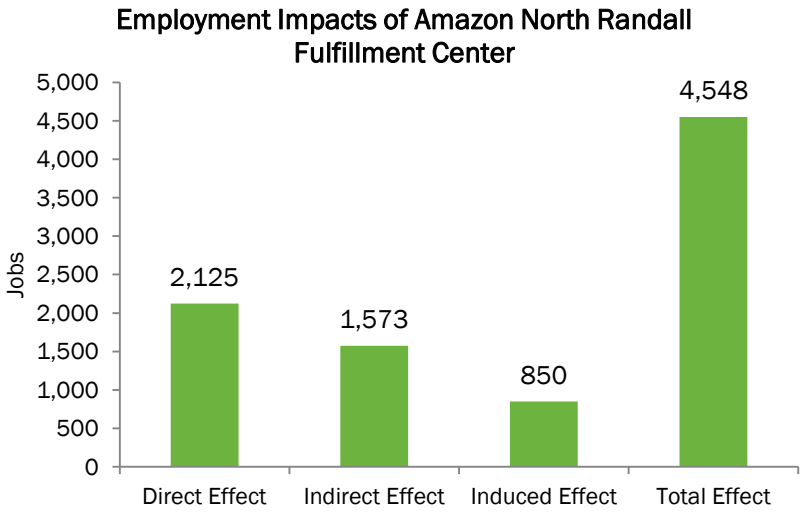
Impact	Employment	Labor Income (Millions)	Output (Millions)
Direct	2,125	$100.6	$566.9
Indirect	1,573	$90.7	$281.9
Induced	850	$41.5	$119.3
Total	4,548	$232.8	$968.1

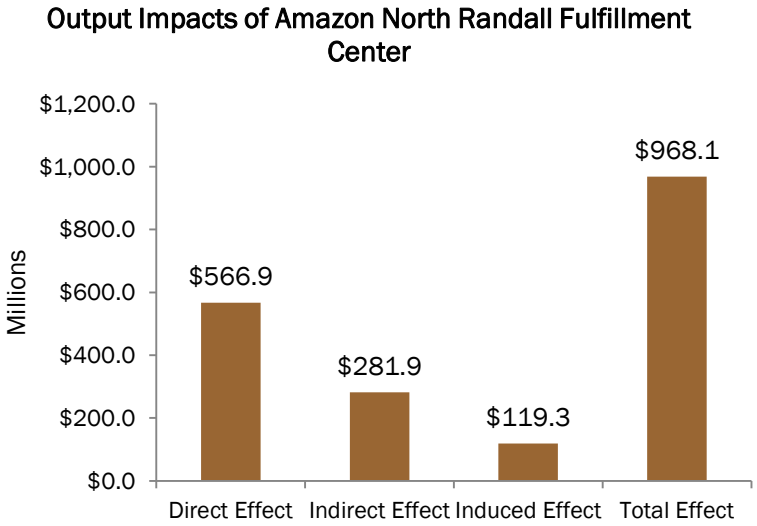
Direct, Indirect, and Induced Effects of Amazon North Randall Fulfillment Center (5 years of Operation, 2019-2023)

Impact	Employment (Annual)	Labor Income (Millions)	Output (Millions)
Direct	2,125	$503.0	$2,834.7
Indirect	1,573	$453.6	$1,409.4
Induced	850	$207.3	$596.6
Total	4,548	$1,163.8	$4,840.7

Source: IMPLAN, 4ward Planning, 2019

Analysis: Annual Operations (2019)





Direct, Indirect, and Induced Effects of Amazon North Randall Fulfillment Center

	Employment	Labor Income (Millions)	Output (Millions)
Direct Effect	2,125	$100.6	$566.9
Indirect Effect	1,573	$90.7	$281.9
Induced Effect	850	$41.5	$119.3
Total Effect	4,548	$232.8	$968.1

Top Five Industries by Indirect and Induced Employment

Retail - Nonstore retailers	2,138
Real estate	309
Warehousing and storage	124
Employment services	116
Wholesale trade	78

Top Five Industries by Indirect and Induced Output

Retail - Nonstore retailers	$568,908,296
Real estate	$81,205,210
Wholesale trade	$18,491,889
Management of companies and enterprises	$16,927,081
Monetary authorities and depository credit intermediation	$13,333,347

Source: IMPLAN, 4ward Planning, 2019

APPENDIX

Glossary of Terms: Socio-Economic

Employment by Industry: The industry is the type of activity that occurs at a person's place of work. Industries are classified through the North American Industry Classification System (NAICS), the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.

Empty-Nester Household: A household in which one or more parents live after the children have left home, typically represented by ages 55 through 74.

Family: A family is a group of two or more people (one of whom is the householder) related by birth, marriage, or adoption and residing together; all such people are considered members of one family.

Growth Rates: The chart below outlines how 4ward Planning defines growth rates. For example, flat growth reflects an annualized rate of change between -0.75 and 0.75 percent.

Household: A household consists of all the people who occupy a housing unit. A house, apartment, or other group of rooms or a single room, is regarded as a housing unit when occupied or intended for occupancy as a separate living quarter. The count of households excludes group quarters and institutions.

Household Population: Household population, as compared to total population, excludes persons living in dormitories, penal facilities, hospitals, and other institutional settings.

Non-Family Household: A non-family household consists of a householder living alone (a one-person household) or a householder sharing the home exclusively with people to whom he/she is not related.

Strong Positive Growth	Greater than	1.50%			annually
Modest Positive Growth	Between	1.50%	and	0.75%	annually
Flat Growth	Between	0.75%	and	-0.75%	annually
Modest Negative Growth	Between	-0.75%	and	-1.50%	annually
Strong Negative Growth	Less than	-1.50%			annually

Source: US Census Bureau

Glossary of Terms: Economic Impact Analysis

Measures of Economic Impact

Economic Output: The total value of industry production, or total sales for an industry. For retail and wholesale sectors, output equals gross margin.

Labor Income: All forms of employment income, including employee compensation (wages + benefits), and proprietor income.

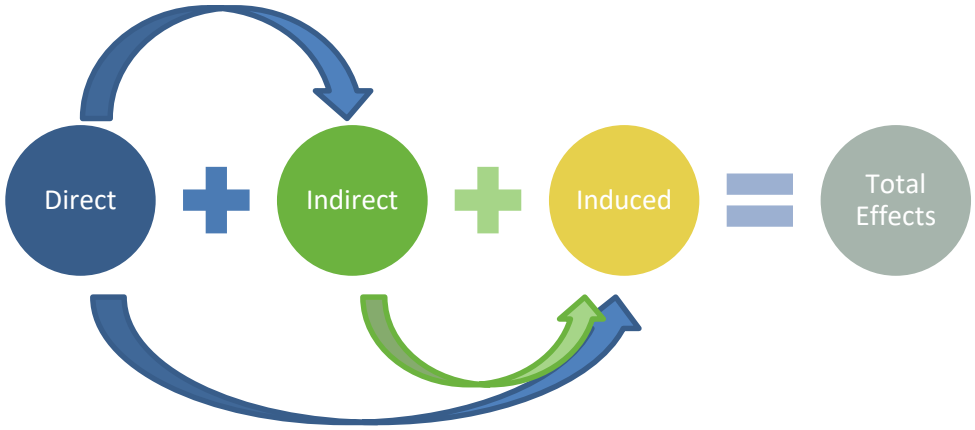
Employment: Either full-time or part time depending on industry norms. In this analysis, employment is place-of-work based, not residence based.

Components of Economic Impact

Direct Effect: A series of production changes or expenditures made by producers and consumers as a result of an economic activity.

Indirect Effect: The impact of industry-to-industry purchases resulting from a change in final demand.

Induced Effect: The impact of increased household spending stemming from the direct and indirect effects.



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