



# 2023 Transportation Justice Bus Connectivity Analysis

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Prepared by the staff of the  
Wilmington Area Planning Council

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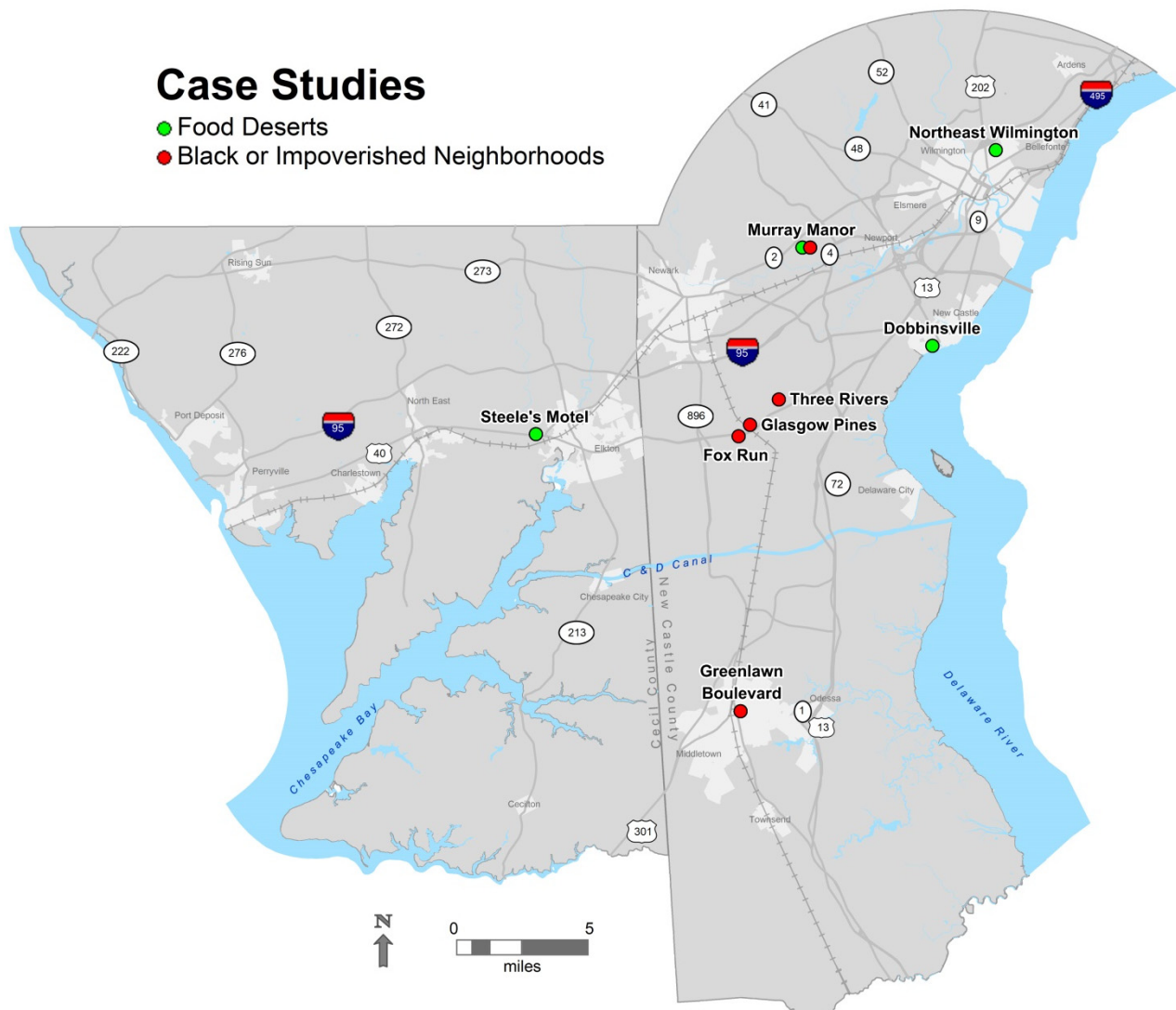
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## Executive Summary

This report provides case studies on several neighborhoods in the WILMAPCO region that were identified in the 2019 Transportation Justice Plan<sup>1</sup> as food deserts with poor transit connectivity to supermarkets or concentrations of Black or impoverished populations with poor transit connectivity to employment centers with many entry-level jobs. These neighborhoods are shown on the map below. Each case study includes recommendations for improvements to the bus network and/or pedestrian connections to existing bus stops that would enhance transit access to supermarkets and entry-level jobs. Housing units are then considered connected to destinations they can reach within a 30-minute door-to-door transit trip, including no more than 10 minutes total walking. Criteria for the selected case studies and thresholds for connectivity improvements are detailed in the Methodology section.



<sup>1</sup> <http://www.wilmapco.org/tj/>

The charts below summarize the estimated connectivity improvements analyzed in this report. Separate rows are included to show data for each Census block group (BG) and each recommendation within each case study. If the most impactful recommendations are implemented, about 1,500 more households in food deserts will have good transit connectivity to grocery stores, and more than 2,300 households in Black and impoverished neighborhoods will have good transit connectivity to entry level job centers.

Food Deserts		Connectivity by transit to grocery store(s)				
		% of housing units		# of housing units		
		Current	After	Current	After	Change
<b>Case Study</b>	<b>Recommendation</b>					
Murray Manor	Periodic DART Route 6 Deviation	5%	93%	42	795	753
BG north of Murray Manor	Periodic DART Route 6 Deviation	81%	100%	260	321	61
BG east of Murray Manor	Periodic DART Route 6 Deviation	64%	82%	672	866	194
Murray Manor	New paths from Old Capitol Trail to Kirkwood Highway	5%	9%	42	78	36
Murray Manor	New path from neighborhood west to Del. Park Kirkwood Lot	5%	17%	42	142	100
Murray Manor	New ped. bridge over railroad	5%	37%	42	315	273
Dobbinsville	DART Route 15 Extension [BG includes other neighborhoods; 100% improvement for Dobbinsville]	42%	62%	242	355	113
Steele's Motel	Bus Stop Access Improvements [Safety improvement; data for motel only]	100%	100%	20	20	0
Northeast Wilmington	Open Grocery in Miller Road Commons	14%	83%	76	450	374
Northeast Wilmington	Periodic or Permanent DART Route 25 Deviation	14%	64%	76	347	271
<b>Total of Most Impactful Recommendations for Each Block Group:</b>		<b>39%</b>	<b>83%</b>	<b>1312</b>	<b>2807</b>	<b>1495</b>

Black or Impoverished Neighborhoods		Housing Units Connected	Entry-Level Job Access	
			Before	After
<b>Case Study</b>	<b>Recommendation</b>			
Murray Manor	Periodic DART Route 6 Deviation	820	0	5,000 - 10,000
Murray Manor	Path from Old Capitol Trail to Kirkwood Highway	75	0	5,000 - 10,000
Murray Manor	Path to Delaware Park Kirkwood Lot	150	0	10,000+
Murray Manor	Pedestrian bridge over railroad	580	0	10,000+
Middletown	Janvier/Franklin Drive Pedestrian Connections	150	0 - 500	1,000 - 5,000
Three Rivers	Path through Wellington Woods Park	225	0 - 500	5,000 - 10,000
Three Rivers	Pedestrian Connections	400	0 - 500	5,000 - 10,000
Glasgow Pines	DART Route 64 Re-route	600	0 - 500	5,000 - 10,000
Fox Run	New DART Route 53 Stops	400	0	5,000 - 10,000
<b>Total of Most Impactful Recommendations for Each Block Group: 2370 housing units with improved job access</b>				



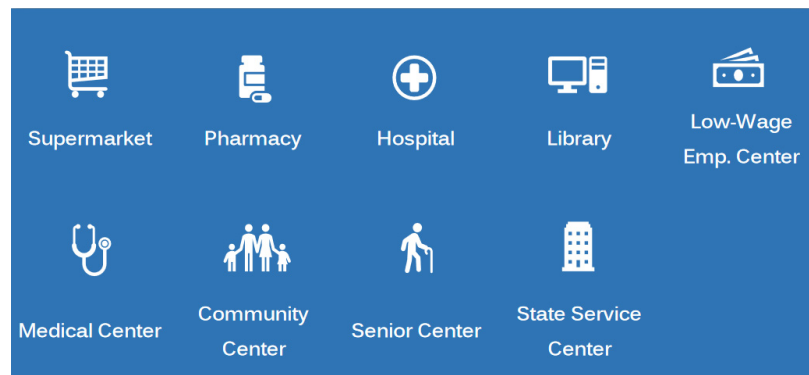
## Introduction

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WILMAPCO's 2019 Transportation Justice Plan identified key social inequities in the Wilmington region's transportation system. The report examined the fairness and inclusivity of the existing and planned system, and recommendations were made to overcome observed barriers and inequities. With regard to equity in bus connectivity, those recommendations included conducting a study that would examine reducing transportation costs in unaffordable impoverished neighborhoods, improving fixed-route bus performance from Black and impoverished neighborhoods to employment centers, and improving food access within WILMAPCO-defined food deserts. The report also recommended utilizing its connectivity analysis, as described below, in future studies as practicable.

## Methodology

As part of the 2019 Transportation Justice Plan, WILMAPCO and the University of Delaware's Center for Applied Demography and Survey Research (CADSR) developed a connectivity analysis, which measures connectivity to nine destination types from every housing unit in the region for walking, bicycling, transit, and car trips. Neighborhoods (Census block groups) were classed based on their collective level of housing unit connectivity to at least one destination for each destination type and for each mode of transportation.



As shown in the graphic above, nine key destination types were identified. These were places our Transportation Justice Work Group felt were important for people (especially from EJ and/or MC<sup>2</sup> communities) to be able to reach. Geographic Information System (GIS) data were developed for each destination type – pinpointing all supermarkets, pharmacies, hospitals, etc. Most of these data were derived from existing data on file at CADSR, while other files were built through web-browsing in 2018. WILMAPCO supplied the locations of low-wage employment centers, based on aerial photos and maps of areas with many jobs in industries with the lowest prevailing wages.

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<sup>2</sup> Mobility Challenged (MC) neighborhoods are defined in the 2019 TJ Plan as concentrations of seniors, people with disabilities, and/or households without motor vehicles.

Connectivity to these destinations was measured on four travel modes – walking, biking, public transit, and by car. A housing unit was marked “connected” to a destination type by walking or biking when a person could reach at least one of the destinations (of that type) within an easy 10-minute walk or ride. Connected housing units on public transit had to reach destinations on a 30-minute door-to-door (home to destination) peak hour, fixed- route bus trip. No more than 10 minutes of that trip could be spent walking along an easy route. Car connected housing units were those within a 15-minute car ride, along any road, between the housing unit and destination.

In 2022, WILMAPCO and CADSR refined this analysis with a focus on food deserts with poor transit connectivity to supermarkets, as well as Black and impoverished neighborhoods with poor transit connectivity to employment centers with many entry-level jobs. This refined analysis was expanded to allow bus transfers within the 30-minute transit trip threshold.

Entry-level jobs were identified as having wages below the New Castle County median, using data from CADSR, the US Census Bureau, commercial entities, the State of Delaware, and municipalities to identify job types. These jobs were in industries such as restaurants, retail, childcare, senior services, manufacturing, specialized labor, and many others. These included some larger employment locations that may on average have higher paying jobs but have jobs at all pay levels, such as hospitals. Clusters were located within ¼ mile of the road network and ranged from having about 130 jobs to over 11,000 jobs.

This report identifies several neighborhoods that fit these criteria as case studies and provides recommendations to improve each neighborhood’s connectivity. Some recommendations may require capital projects, such as property acquisition for bus stops or path construction. For food deserts, the case studies measure success by the increase in the percentage of households that would then be connected by transit to supermarkets. For Black and impoverished neighborhoods, success is measured by the increase in the number of entry-level jobs that the neighborhood would then be connected to by transit. A neighborhood’s connectivity to entry-level jobs is classed as follows:

Entry-level Job Bus Connectivity

0 = none

1 – 500 = very low

1001 – 5000 = low

5001 – 10,000 = medium

10,000+ = high

## Food Deserts to Supermarkets

### Case Studies

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#### Murray Manor

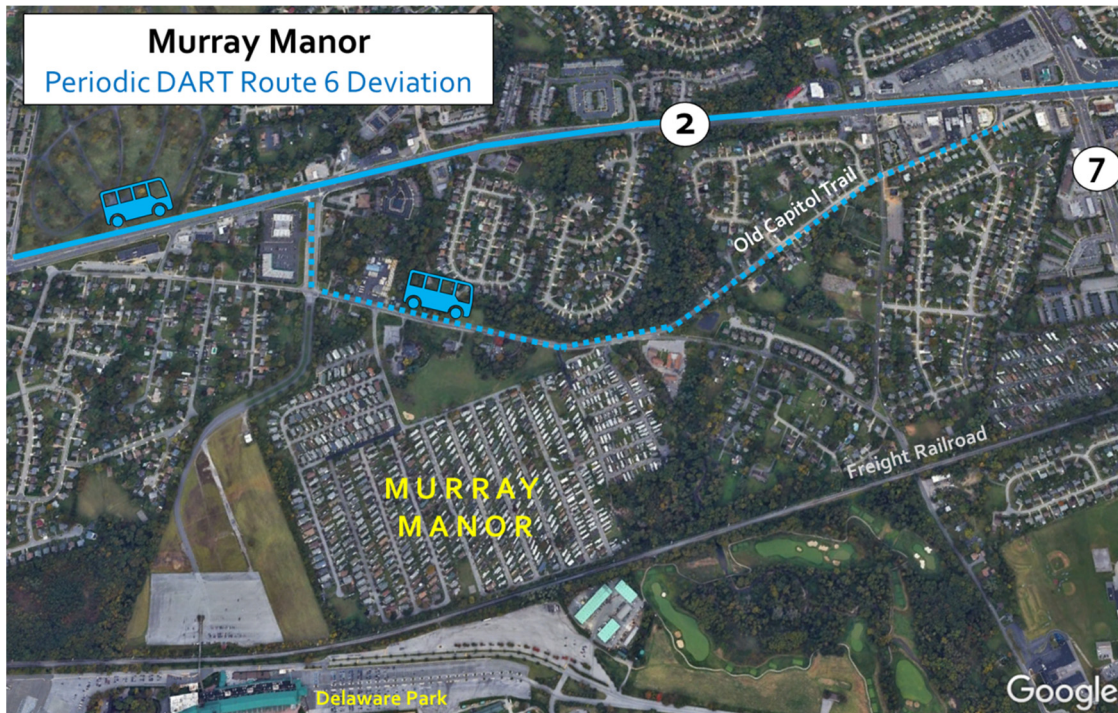
Murray Manor is a manufactured home community located between Old Capitol Trail and Delaware Park Boulevard, just southwest of Marshallton. It makes up the majority of a block group containing nearly 800 mobile homes and about 70 single family homes. This block group was identified as a food desert and is the least served by transit of all food deserts in New Castle County. Two entrances to the community are to the north at Old Capitol Trail and Joyce Drive, but it is bordered on the south by a railroad, impeding access to Delaware Park Boulevard.

DART Route 6 runs nearby on Kirkwood Highway, and it provides access to a variety of facilities, including supermarkets. However, the nearest bus stop to the farthest homes in Murray Manor is a 17-minute walk. As a result, only 5% of homes in this block group are connected by transit to supermarkets. The block groups just north and east of Murray Manor are 81% and 64% connected, respectively.

The most impactful solution is to provide a new bus connection on Old Capitol Trail. This could take the form of a new micro-transit route, or a periodic deviation of DART Route 6. In the latter scenario, for a limited number of trips per day, DART Route 6 would turn right on Delaware Park Drive, left on Old Capitol Trail, and continue back onto Kirkwood Highway, as well as the same route in reverse, as shown on the map on the following page. Stops at Joyce Drive would improve the block group's connectivity from 5% to 93%, connecting nearly all homes by transit to supermarkets. The block groups to the north and east would become 100% and 82% connected, respectively.



This school bus depot on Old Capitol Trail, directly across from the entrance to Murray Manor, suggests that the road has sufficient capacity and right-of-way for buses. In the second photo, the entrance to Murray Manor at Old Capitol Trail and Joyce Drive has sufficient space to install a bus stop. This recommendation may require purchase of right-of-way to install bus pads and bus stops.



We explored new infrastructure solutions, including a path connection between Old Capitol Trail and Kirkwood Highway, a path from the neighborhood to the Delaware Park Kirkwood Lot, and a pedestrian bridge over the railroad, but these only showed modest improvements in connectivity to supermarkets. (These pedestrian connections would improve connectivity to entry-level jobs, as described on page 14.) The DART Route 6 deviation would be far more impactful with relatively minimal costs. Further study would be required to determine the schedule of the deviation, necessary improvements to Old Capitol Trail to fit a bus, shelters and stops, and how it would impact communities adjacent to Kirkwood Highway.



## Dobbinville

Dobbinville is a neighborhood on the west end of the City of New Castle. This is a small, densely populated neighborhood centered on 7<sup>th</sup> Street, which connects it to the city's historic core, about a half mile to the east. A mid-block crossing with a pedestrian refuge island connects the two halves of the neighborhood that are bisected by 7<sup>th</sup> Street. While the rest of the city is well connected by transit to supermarkets, Dobbinville's 113 housing units lack access.



DART Route 15 currently travels south on Washington Street through New Castle, then turns east on 7<sup>th</sup> Street. An extension of Route 15 could instead turn west on 7<sup>th</sup> Street, stop in the center of Dobbinville, then turn around just west of Dobbinville to continue east on 7<sup>th</sup> Street, following its current route. This extension would add about five minutes of travel time to the route, but it would connect all 113 housing units in the neighborhood by transit to supermarkets, eliminating their current 7-minute (0.3 mile) walk to the nearest stop at 7<sup>th</sup> and Washington Streets. This extension would require a location for the bus to turn around, which could be constructed in the field just west of Dobbinville, which is owned by the City of New Castle. This recommendation may require property acquisition or coordination with the City of New Castle to construct the turnaround area.

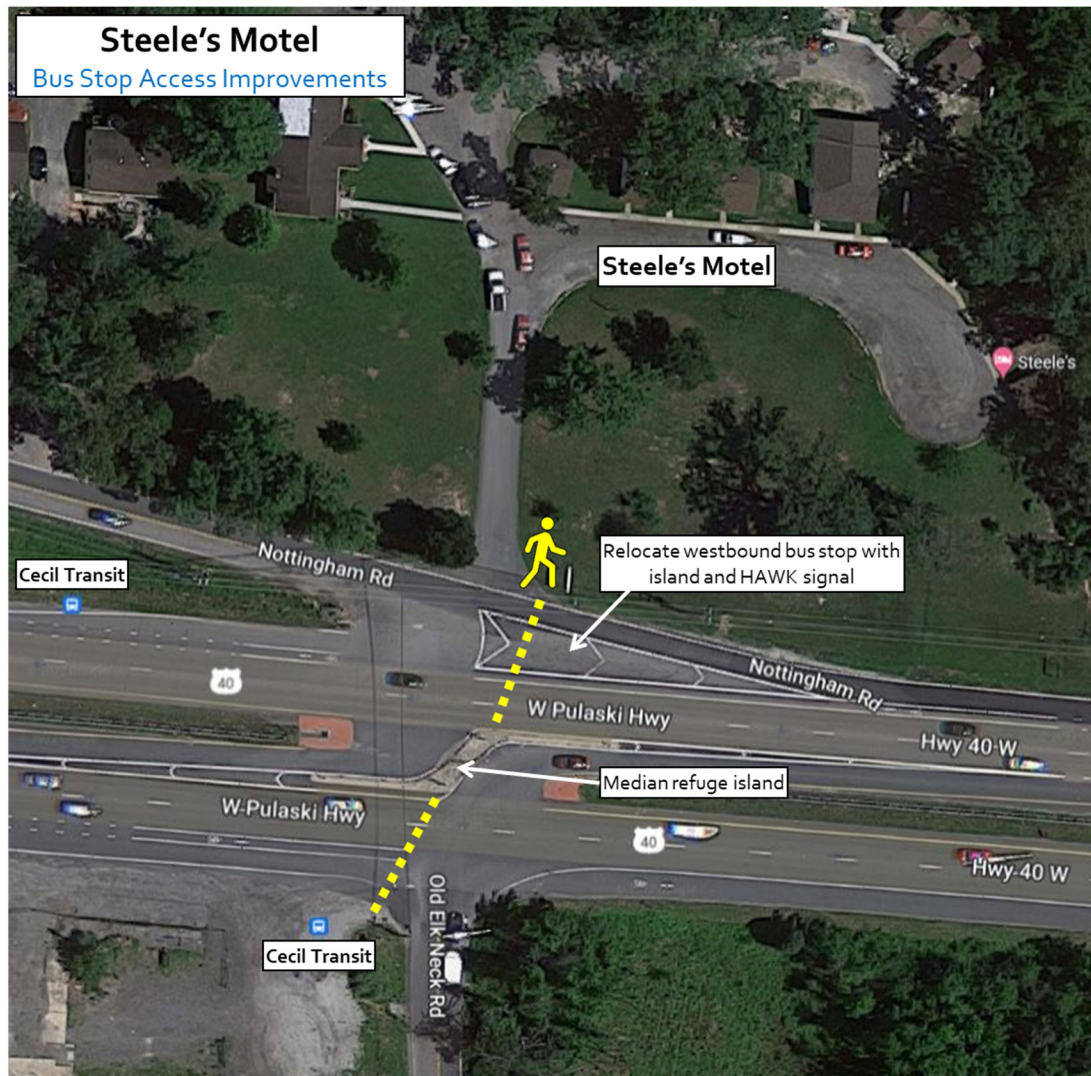
The City of New Castle Transportation Plan (2022) does not propose any bus route changes, but it does propose a mixed-use path on the south side of 7<sup>th</sup> Street from Clark Street to Washington Street. This stretch currently lacks a sidewalk on the south side, so it would improve the current walk from Dobbinville to the nearest bus stop.





## Steele's Motel

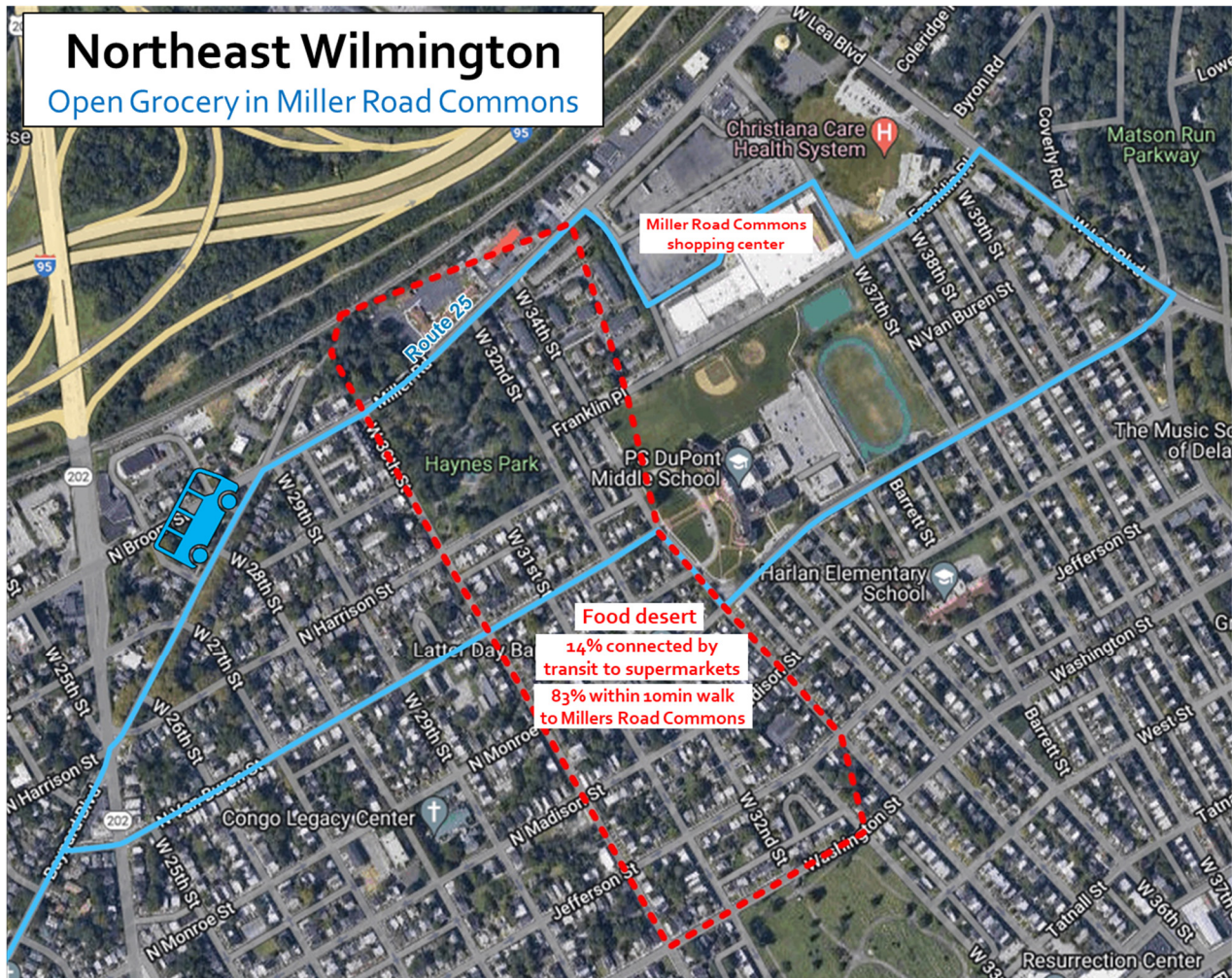
Steele's Motel is located on the north side of US-40 just west of Elkton, and it was identified as a food desert. All 20 units in the motel are within a short walking distance (less than five minutes) to bus stops for Cecil Transit's Cross County route. The door-to-door transit trip from the motel to multiple grocery stores (including the Elkton Acme and North East Food Lion) is less than 30 minutes. However, pedestrian access to bus stops in both directions is unsafe. Walking from the motel to the westbound stop requires crossing Nottingham Road, which begins right in front of the motel and connects to US-40, and crossing and waiting in an unkempt grassy area between US-40 and Nottingham Road. Walking from the motel to the eastbound stop requires crossing the entirety of US-40 and Nottingham Road, which includes 10 lanes and shoulders, and there is no stop, crosswalk, or any type of pedestrian infrastructure. Safer pedestrian access to both bus stops is recommended, which may include a crosswalk across Nottingham Road, a HAWK (high intensity activated crosswalk) signal across US-40, and a redesigned median with a pedestrian refuge area. Moving the westbound stop closer to the motel entrance and adding a concrete island with a bus shelter is also recommended.





## Northeast Wilmington

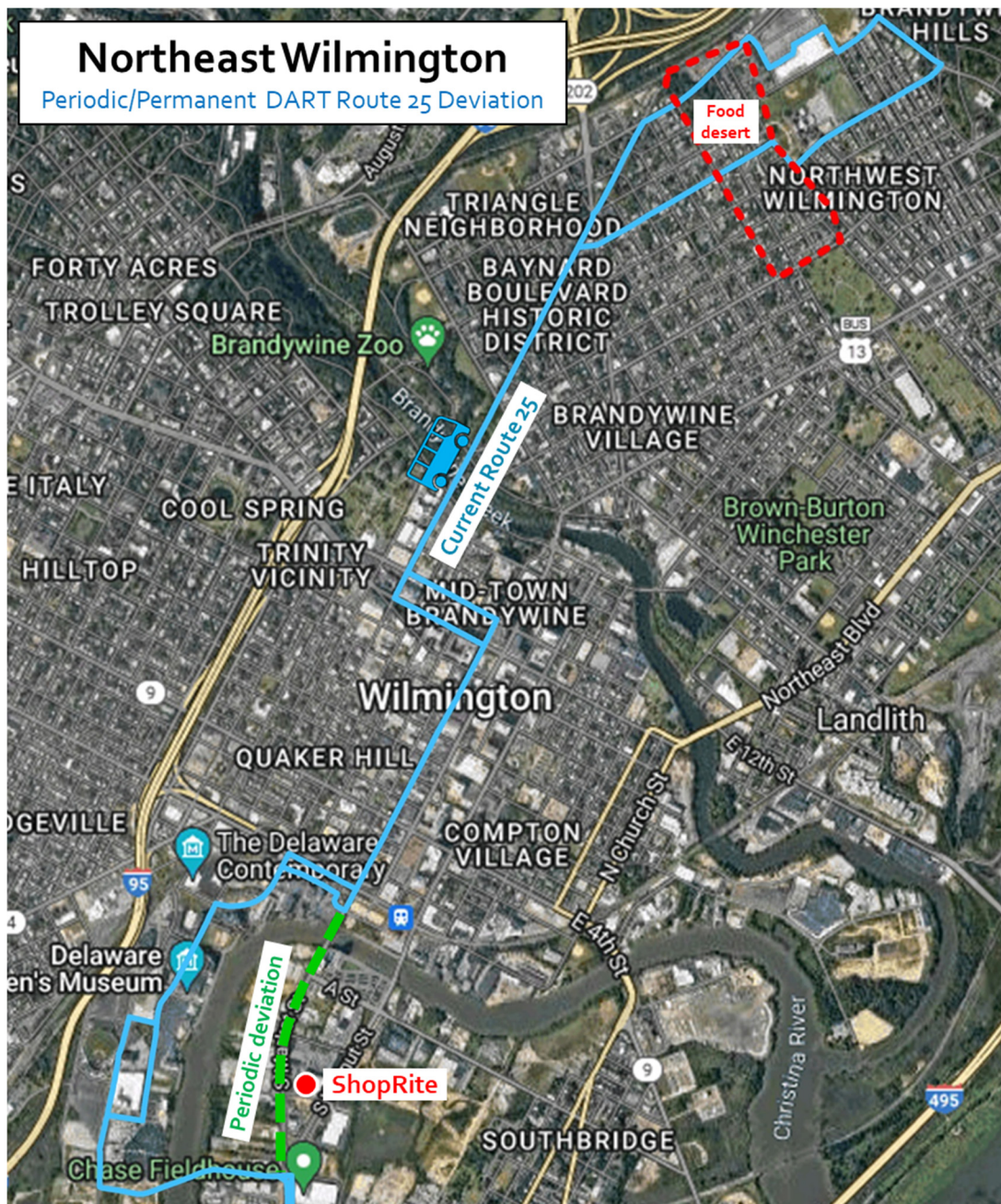
This block group in Northeast Wilmington was identified as a food desert, and only 14% of its housing units are connected by transit to supermarkets. This block group is adjacent to the Miller Road Commons shopping center. An ideal solution is to establish a small grocery store in the shopping center. 83% of housing units in this block group are within a 10-minute walk of the shopping center, so a grocery store in this location would not require a transit trip to be accessible to this community.





DART Route 25 loops through this block group. After passing through downtown Wilmington, it serves Riverfront West, then crosses the Margaret Rose Henry Bridge into South Wilmington. A periodic or permanent deviation of Route 25 could instead bypass Riverfront West and continue straight south on Market Street, with a stop directly in front of ShopRite. This would shorten the Route 25 trip from Northeast Wilmington to ShopRite by about 8 minutes. As a result, an additional 50% (271) of housing units in this block group would be connected by transit to a supermarket.

This deviation would negatively impact a very small number of riders. As of fall 2021, the Route 25 bus stops in Riverfront West served at most 15 daily riders on weekdays and 5 on Saturdays, with no service on Sundays. These stops are no more than a half mile walk to access stops on the proposed deviation.





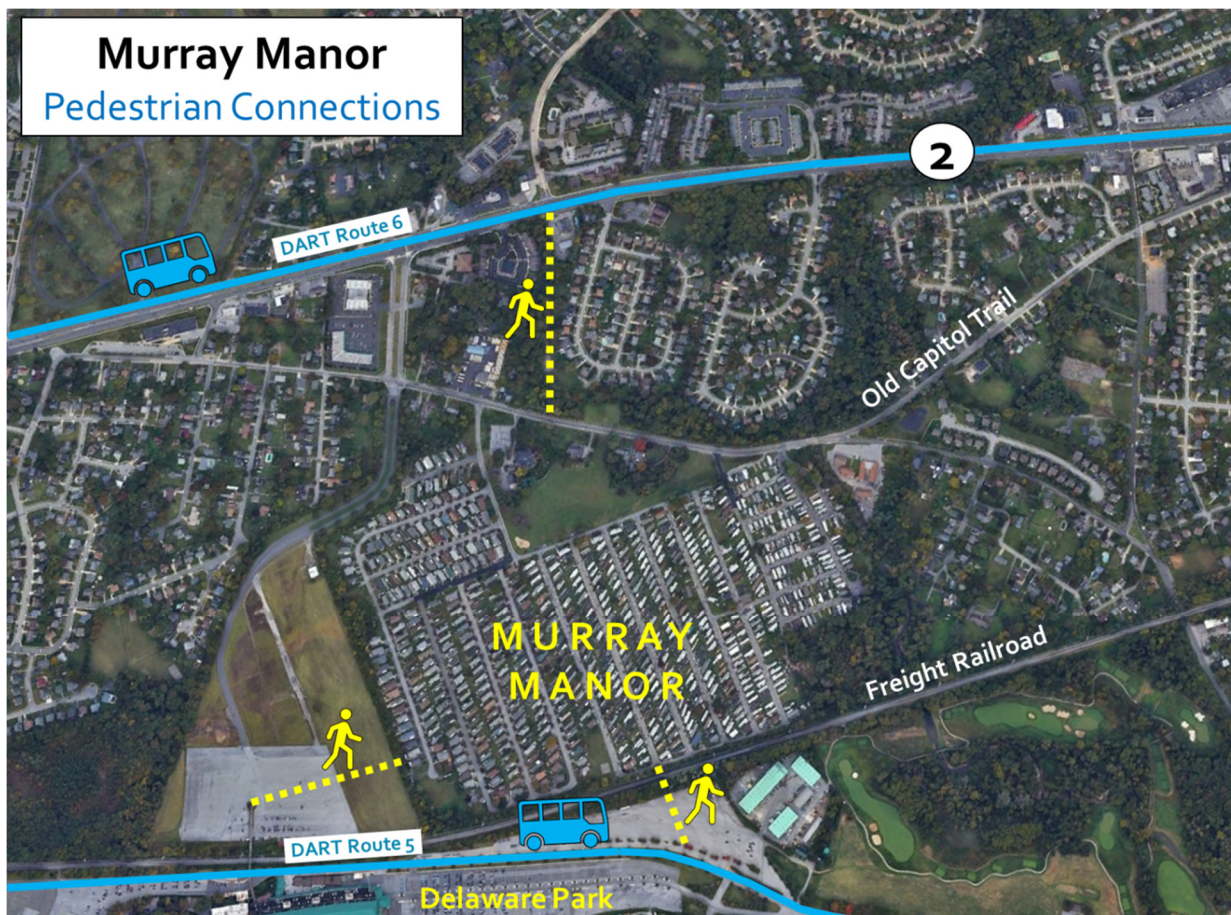
## Black and Impoverished Neighborhoods to Entry-Level Jobs

### Case Studies

#### Murray Manor

In addition to being a food desert, Murray Manor was identified as a low-income concentration in the 2019 Transportation Justice Plan. From nearby Kirkwood Highway, DART Route 6 currently provides access to 5,000 to 10,000 jobs within a 30-minute door-to-door transit trip. However, the walk from much of Murray Manor to bus stops on Kirkwood Highway makes this a longer commute for most residents. A periodic deviation of DART Route 6 on Old Capitol Trail, as shown on page 8, would shorten that commute to 30 minutes or less for about an additional 820 housing units in Murray Manor. The roughly 200 housing units that currently can make that commute would have an even shorter trip.

Alternatively, a new path between Old Capitol Trail and Kirkwood Highway, as shown below, would shorten the walk from Murray Manor to DART Route 6. However, this path would be about 600 to 700 meters long and place most residents beyond the 10-minute walk threshold. This path would connect about 75 housing units to 5,000 to 10,000 jobs within a 30-minute trip.



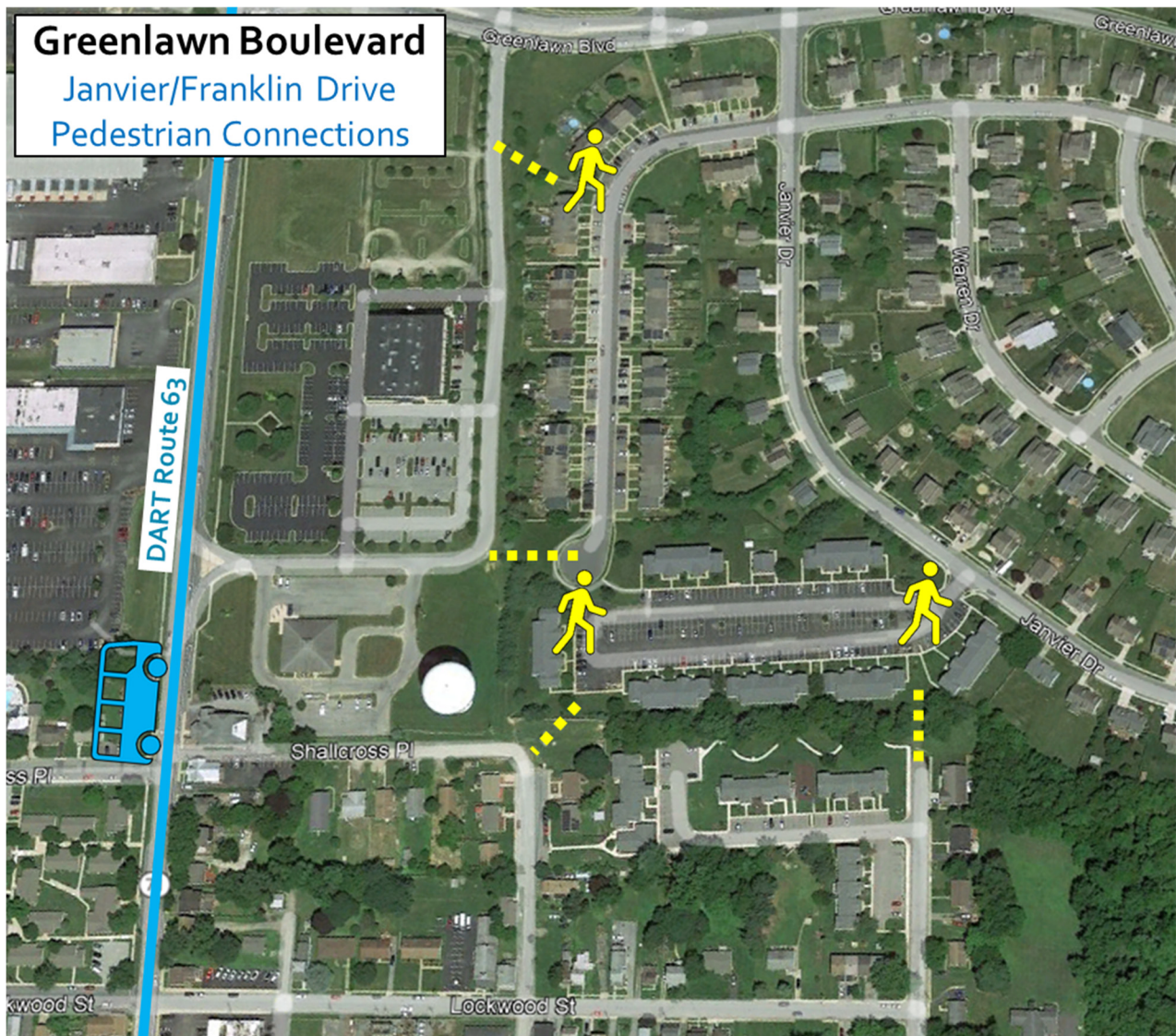


DART Route 5 serves the nearby Delaware Park Racetrack and Casino on Delaware Park Boulevard, but it is separated from Murray Manor by a freight railroad, with no direct pedestrian connection.

A connection west from Murray Manor to the Delaware Park Kirkwood Lot, which has its own pedestrian bridge over the railroad, would place roughly 150 housing units within a 10-minute walk of DART Route 5. A new pedestrian bridge, from Ash Street in Murray Manor to Delaware Park Boulevard, would place roughly 580 housing units within a 10-minute walk. Both recommendations, shown on the map on the previous page, would connect these housing units to over 10,000 jobs that they could not otherwise access by transit.

## Greenlawn Boulevard

In Middletown, DART Route 63 provides access to 1000 to 5000 entry-level jobs. Just east of North Broad Street, off of Greenlawn Boulevard, there are about 150 housing units that can currently access less than 500 jobs in a 30-minute door-to-door transit trip. The entrance of the neighborhood, at Greenlawn Boulevard and Janvier Drive, is about a 5-minute walk to the nearest Route 63 stop on Broad Street in either direction, leaving many homes beyond the 10-minute walk threshold. Creating more direct pedestrian connections from this neighborhood to Broad Street, as shown in the map below, would significantly shorten the walk to these bus stops and place all housing units in the neighborhood within access to 1000 to 5000 entry-level jobs.



The pedestrian connections shown in the map above go through grass with visible goat paths, showing that there is desire for formalizing these connections with sidewalks or trails.





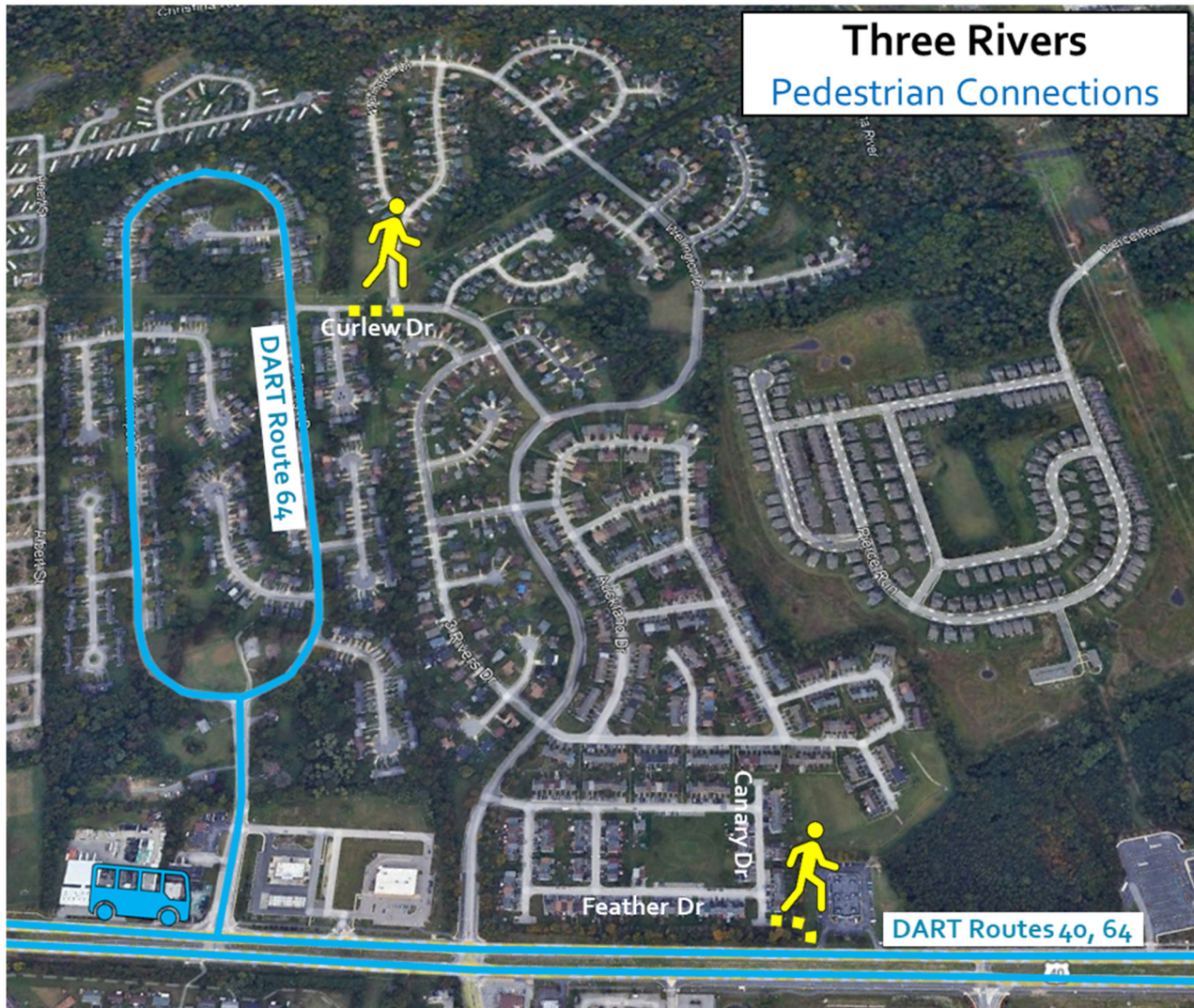
Above, a goat path between Janvier Court and Shallcross Place shows the desire for a more direct connection to Broad Street. Below, this sidewalk ends between some houses on Franklin Drive and could be extended to shorten the walk to Broad Street by way of Greenlawn Boulevard.





## Three Rivers

In this community on the north side of US-40 in Bear, we identified two potential pedestrian connections. The first goes through Wellington Woods Park. This park has no trails, and its sidewalk along Danbury Drive is overgrown and may need repair or replacement. A trail connection through the park, connecting a gap in Curlew Drive, would bring 225 housing units that currently have very low or no accessibility to over 5000 jobs within a 30-minute transit ride, via DART Route 64 which currently loops through the neighborhood on Kemper and Flamingo Drives.



The second pedestrian connection would connect the end of Canary Drive, near Feather Drive, to a bus stop on US-40 serving DART Routes 40 and 64. Goat paths heading directly east and then south to US-40 show the desire for a formal pedestrian connection, which would bring 400 housing units with currently very low or no accessibility to over 5000 jobs within a 30-minute transit ride.





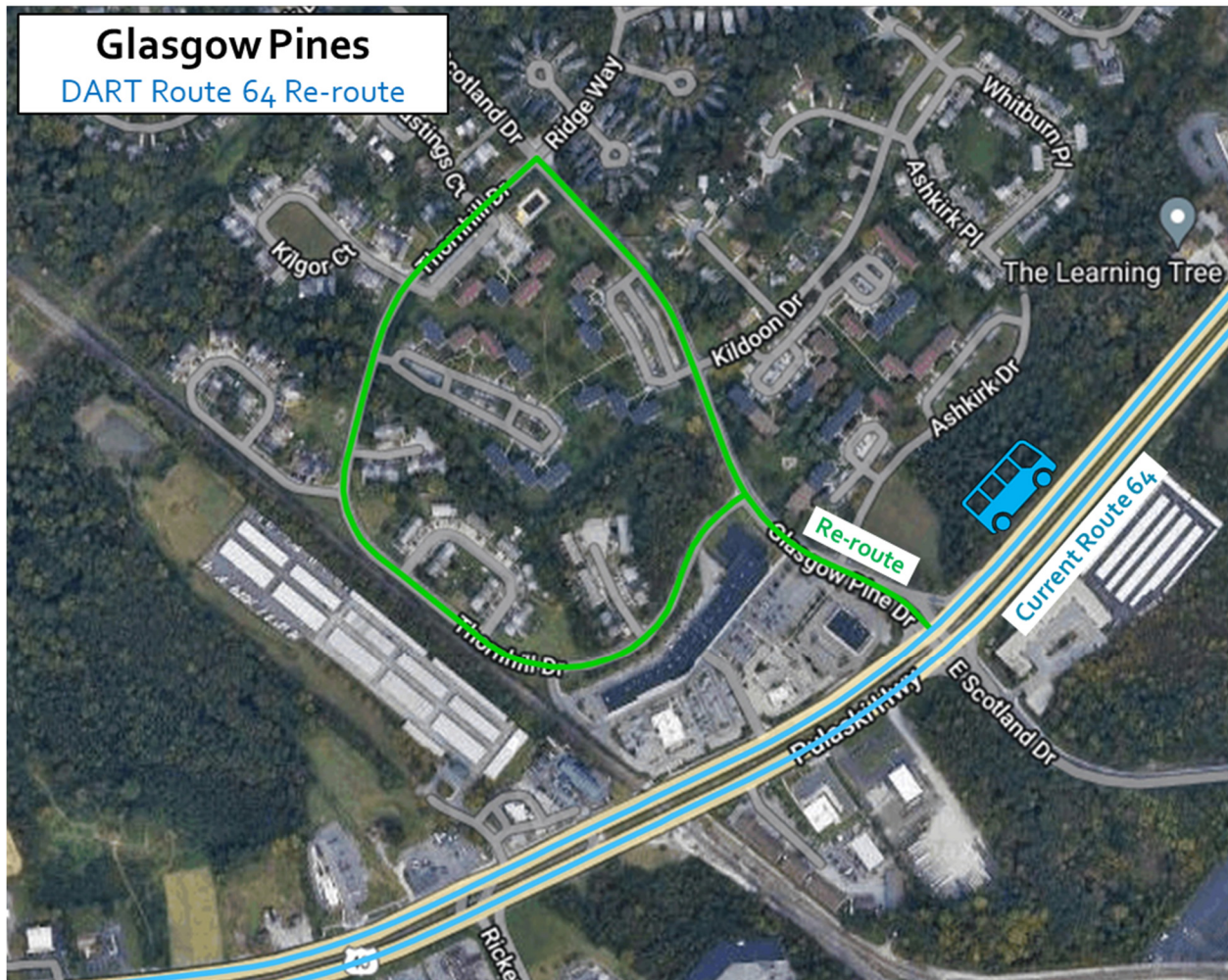
Above, an opening in Wellington Woods Park would benefit from a trail connecting both sides of Curlew Drive, and the park's sidewalk along Danbury Drive is in need of improvement. Below, a goat path begins next to a fence near Feather and Canary Drives and turns south towards US-40.





## Glasgow Pines

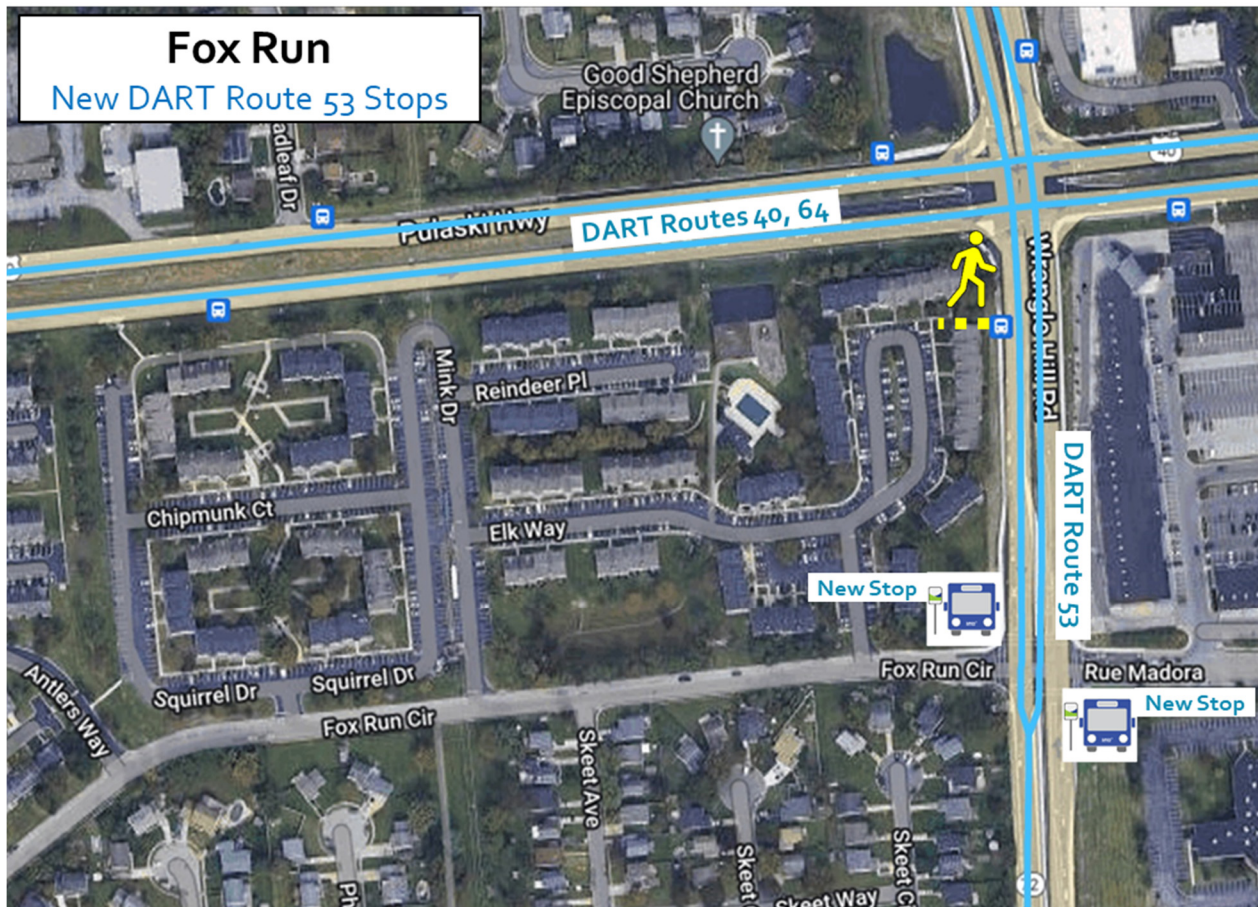
Glasgow Pines is a suburban community in Bear on the north side of US-40, about a mile west of Three Rivers. This development contains about 1100 housing units, 325 of which have medium to high connectivity to entry-level jobs via DART Routes 40 and 64. However, about 775 units have very low or no connectivity due to being set a further distance from US-40. A re-route of DART Route 64 through this community, looping on Scotland Drive and Thornhill Drive, would improve connectivity for about 600 housing units to over 5000 jobs. This loop would increase travel time by about five minutes.





## Fox Run

Close to Glasgow Pines, in the Fox Run community near the intersection of US-40 and Wrangle Hill Road, we discovered a pedestrian connection to the southbound DART Route 53 bus stop near that intersection, which is an opening in the fence from Woodchuck Place straight to the bus stop. DART Route 53 primarily serves the Newark Transit Hub and the Wrangle Hill Park and Ride. However, even if this pedestrian connection is formalized, walking to this stop can take more than 10 minutes for many homes in this community, and walking to the nearest northbound stop can take more than 15 minutes, including crossing both Wrangle Hill Road and US-40. The addition of bus stops for DART Route 53, at the intersection of Fox Run Circle/Rue Madora and Wrangle Hill Road, would provide a 30-minute door-to-door transit trip to over 5000 jobs for nearly 400 additional housing units in the community. The proposed northbound stop at Rue Madora would eliminate the need to cross US-40, significantly improving the safety of accessing jobs in and beyond Newark.



## Next Steps

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The bus route and stop changes proposed in this report can be implemented through further study and coordination with the Delaware Transit Corporation (DTC). If DTC determines any of the proposed changes to be feasible, they can be presented to local residents for further feedback and refinement.

In addition, DTC is beginning development of a statewide transit study, DART Reimagined, to evaluate the current DART system and examine rider activity and need. The study will identify opportunities to reconfigure the bus network, and transit recommendations proposed in this report may be considered as part of that process. Some transit recommendations would need to be pursued as part of a larger capital project involving land acquisition.

The pedestrian connections proposed in this report may be implemented by a variety of agencies, depending on location, including municipalities, counties, DelDOT, MDOT, and DNREC. Some pedestrian connections may require easements or property acquisition. Funding for these recommendations can be pursued through several mechanisms, including DelDOT's Capital Transportation Program, the Recreational Trails Program, MDOT SHA funding programs (Fund 33, Fund 79, and Fund 88), and the Transportation Alternatives Program, which includes Safe Routes to School.

WILMAPCO, in coordination with DelDOT or MDOT SHA, administers the Safe Routes to School program in this region. This program can provide limited funding for walkability improvements near schools, including working with staff, faculty, and students to determine the best improvements to meet each school's needs.

WILMAPCO also organizes Walkable Community Workshops (WCWs). WCWs are interactive events that bring together residents, elected officials, advocates, public agency staff, public health practitioners, educators, planners and engineers to focus attention on making a community more walkable. WCWs are not a funding resource, but they can be used to further refine pedestrian recommendations through public feedback.