



Stafford County, Virginia Transportation

A GIS Review of the Park and Ride Facilities in Stafford County

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Overview

- Stafford County P&R Project Goals
- Stafford County Commuting
 - Where do Stafford County Commuters work?
 - Omnibus, Vanpools, Carpooling
 - Current Stafford County Park and Ride Facilities
- Data
 - Data Resources
 - Data and Analysis Limitations
- Methodology
 - Stafford County Traffic Volume
 - Drive Time to the Staffordboro Park and Ride
- Stafford County Commuting Population
 - Stafford Commuting Population By P&R Cost Allocation
 - 2035 Projected Commuting Population
 - Residential Units to Be Built
- Recommendations and Future Work

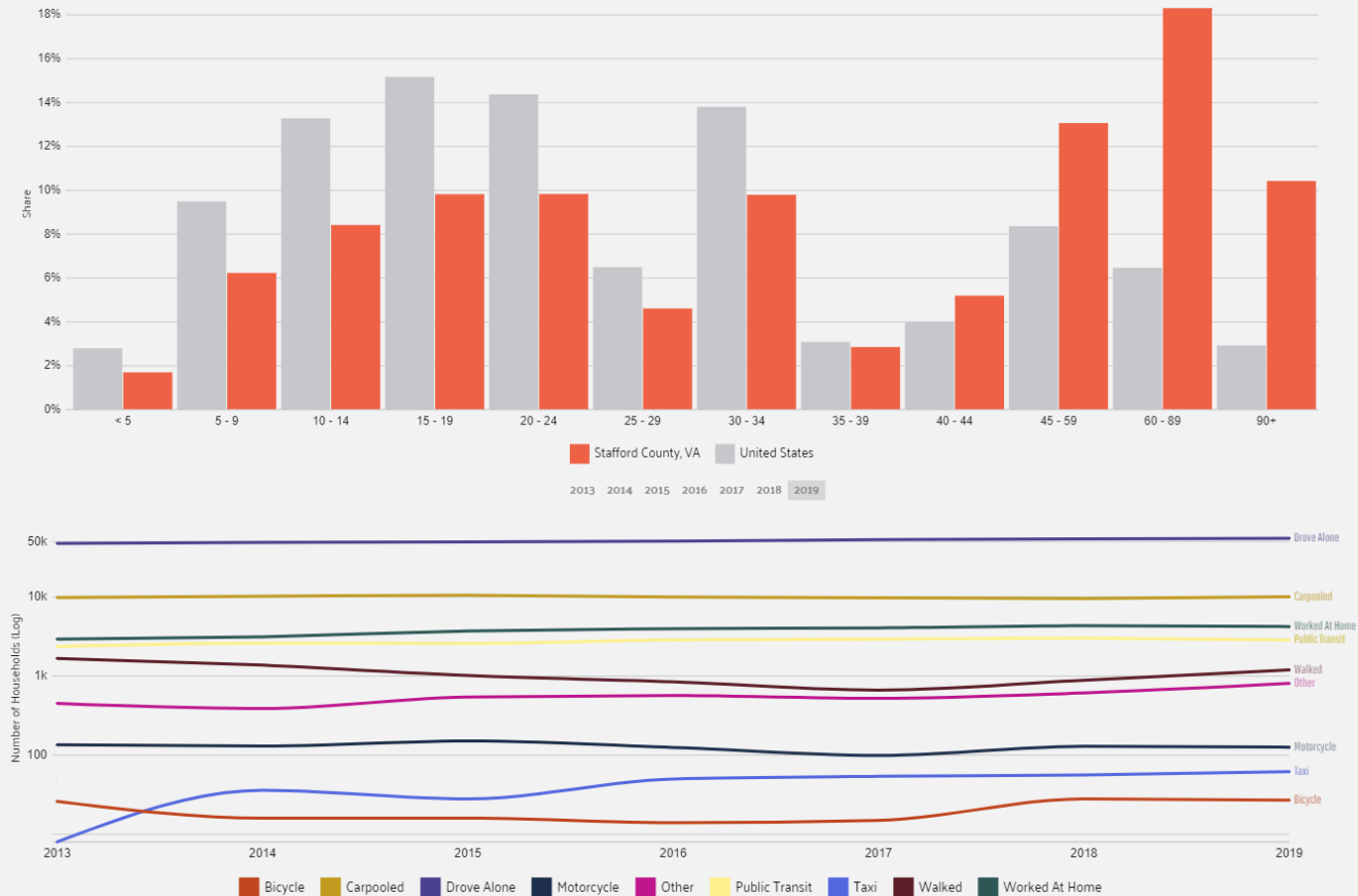


Stafford County P&R Project Goals

- Overview of the current P&R facilities and support the Stafford County commuting population
- Projecting needs in 2035
 - Will the four current P&R facilities support Stafford County's growing population?
 - Will the four current P&R facilities need to be expanded to support Stafford County's growing population?
 - Will Stafford County need an additional P&R facility to support the growing population?
 - If there is a need for an additional P&R facility, where will it be most effective?

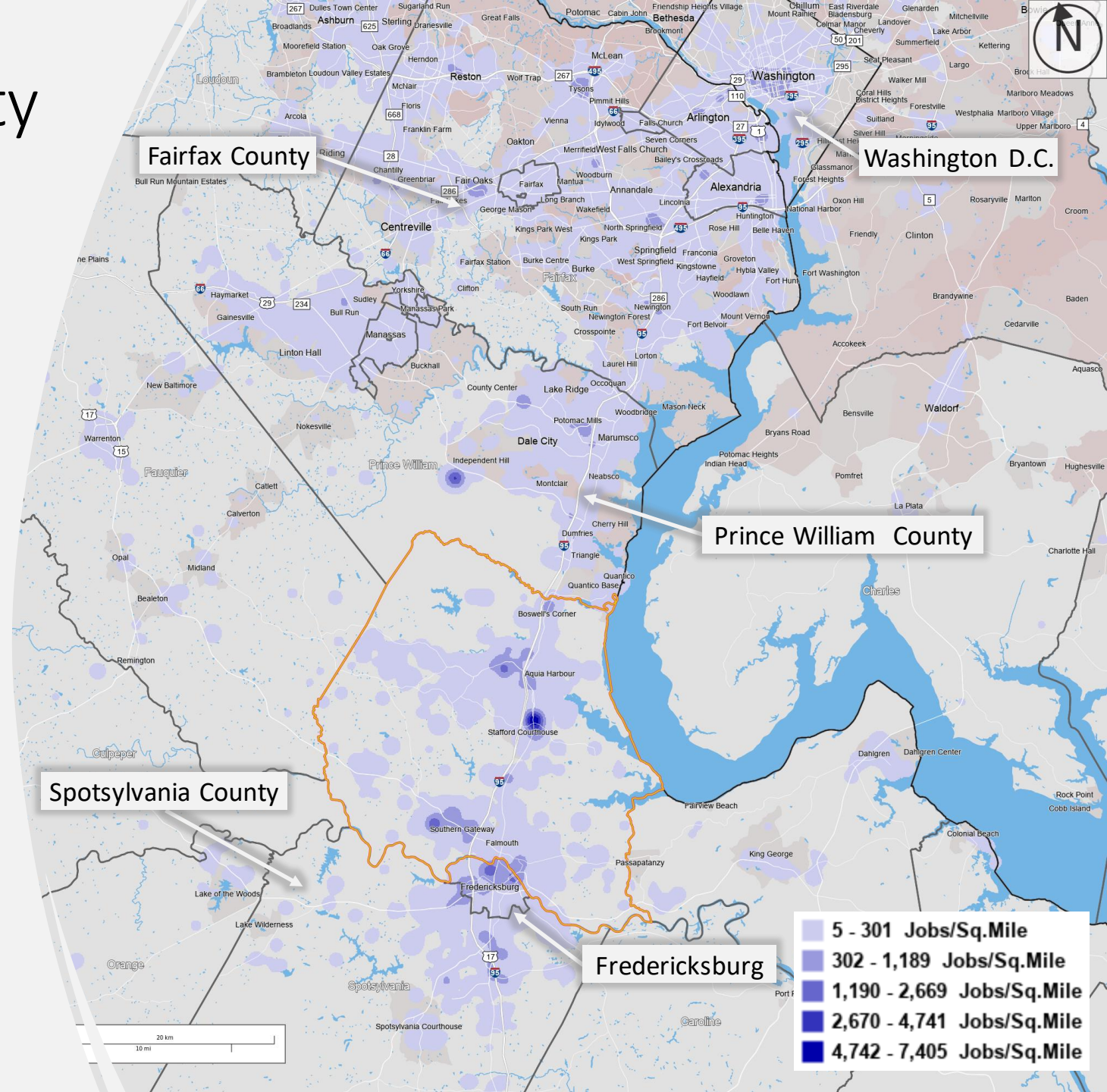
Stafford County Commuting

- Interstate 95 between Springfield, VA and Fredericksburg, VA has the worst traffic in the country according to a 2017 study by INRIX
- Approximately 37,000 residents commute out of Stafford every day for work
- Over 71% commute alone in a vehicle with an average commute time of 39 minutes
- Over 9% of commuters in Stafford County, VA have "super commutes" in excess of 90 minutes.



Where do Stafford County Commuters work?

- Fairfax County, VA - 8,523
- Prince William County, VA - 5,753
- Fredericksburg city, VA - 3,463
- District of Columbia, DC - 3,306
- Spotsylvania County, VA - 3,252
- Arlington County, VA - 1,495
- Alexandria city, VA - 1,130
- Loudoun County, VA - 1,104
- Henrico County, VA - 696
- Prince George's County, MD - 600
- Work Elsewhere - 8,388
- Total Out-Commuters - 37,710



OmniRide, Vanpools, Carpooling

- Two OmniRide routes available at the Staffordboro P&R
 - Route 543 (Washington D.C.) five M-F departures
 - Route 942 (Pentagon) six M-F departures
- Vanpools ,Carpools and Slugging available at all P&Rs
- Government employees eligible for paid public transit through the Mass Transportation Benefit Program
- GWRide Connect Program



Bus Route	Departure Times
Route 543 (Washington D.C.)	4:23, 5:03, 5:43, 6:18, 7:28
Route 942 (Pentagon)	4:28, 5:23, 6:03, 6:23, 6:43, 7:03

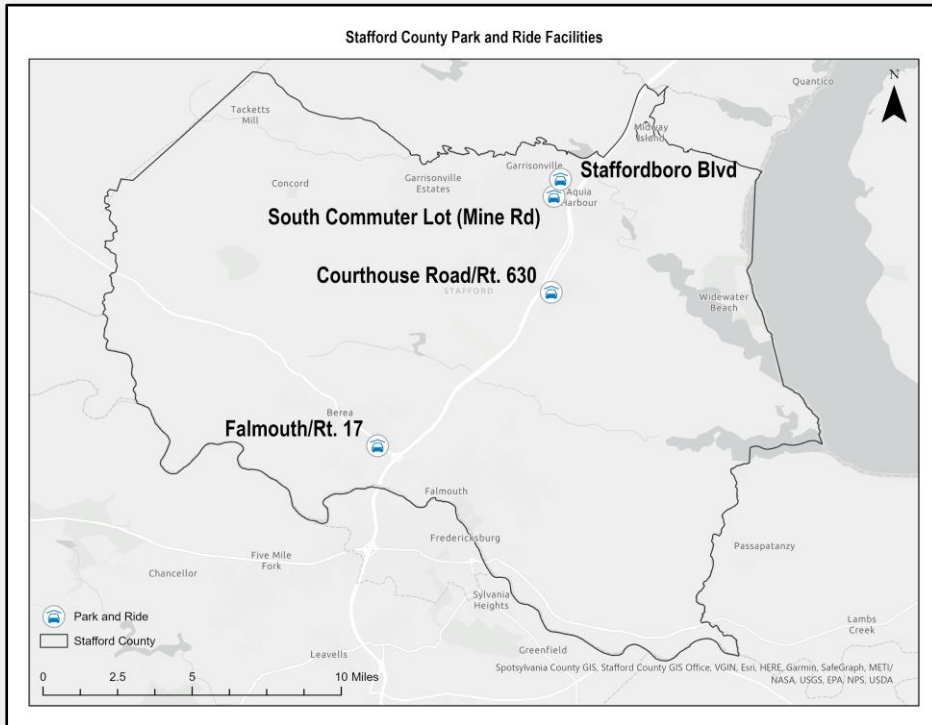
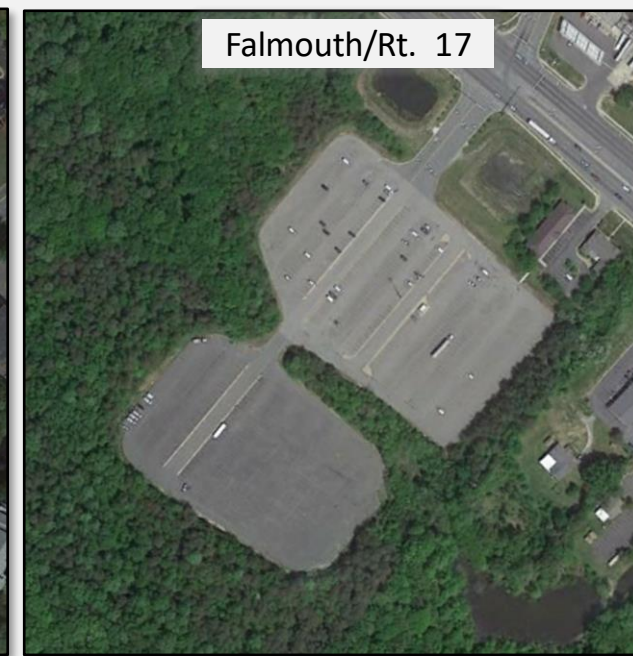


Park and Ride Facility	GWRide Daily Vanpools
Staffordboro Blvd.	21
South Commuter Lot (Mine Rd)	5
Courthouse Road/Rt. 630	12
Falmouth/Rt. 17	14



Current Stafford County Park and Ride Facilities

Park and Ride Facility	Parking Spaces	Physical Size
Staffordboro Blvd.	1863	63,200 sq meters
South Commuter Lot (Mine Rd)	750	23,700 sq meters
Courthouse Road/Rt. 630	1100	36,600 sq meters
Falmouth/Rt. 17	1034	37,500 sq meters



Data

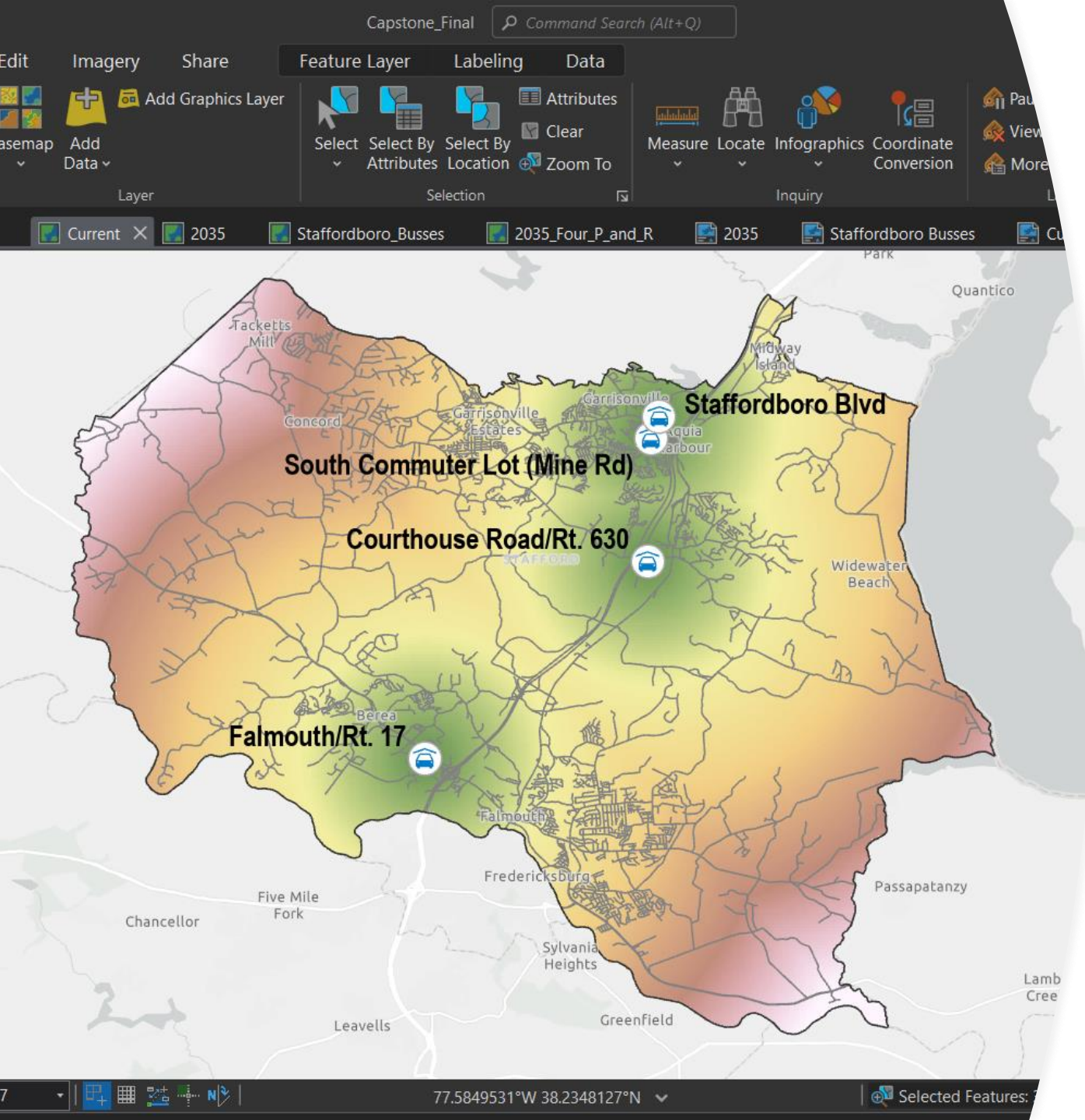
- **Stafford County Data**
 - Stafford County Boundary
 - Stafford County Roads
 - Stafford County Zoning Data
 - Stafford County Census Tracts
 - Comprehensive Plan Five-Year Update
- **Virginia Department of Transportation**
 - Traffic Volume Data
 - Virginia Park and Ride Facilities
 - Facility Size Information
- **Data USA, Stafford County, VA**
 - Commuter/Transportation data
- **US Census Data**
 - Commuter Data by Sex and Age
- **OmniRide**
 - Stafford Routes
 - Ridership Data
- **Weldon Cooper Center for Public Service, University of Virginia**
 - Population data
 - Population estimate data
- **Virginia Railway Express**
 - Train Utilization Trends



Data and Analysis Limitations

- **Commuter data from U. S. Census Bureau reporting**
 - Dependent on voluntary input
 - Data has consistent error across commuting groups
- **Park and Ride Use data**
 - Limited information collected by VDOT on daily use
 - Limited formal tracking of van pools and car pooling
- **Population projection**
 - Utilized county wide population projection and applied it across the census tracts
 - Assumes the population will grow at the exact same rate across the Stafford County
 - Assumes consistent age distribution and number of workers in Stafford County
 - Assumption that commuting needs will remain consistent as remote work becomes more prevalent
- **Regional influences**
 - The study was conducted only considering Stafford County
 - Does not include commuters who may travel from outside the county to use P&Rs inside Stafford County
 - Assumes the Virginia Railway Express use will remain low in the future





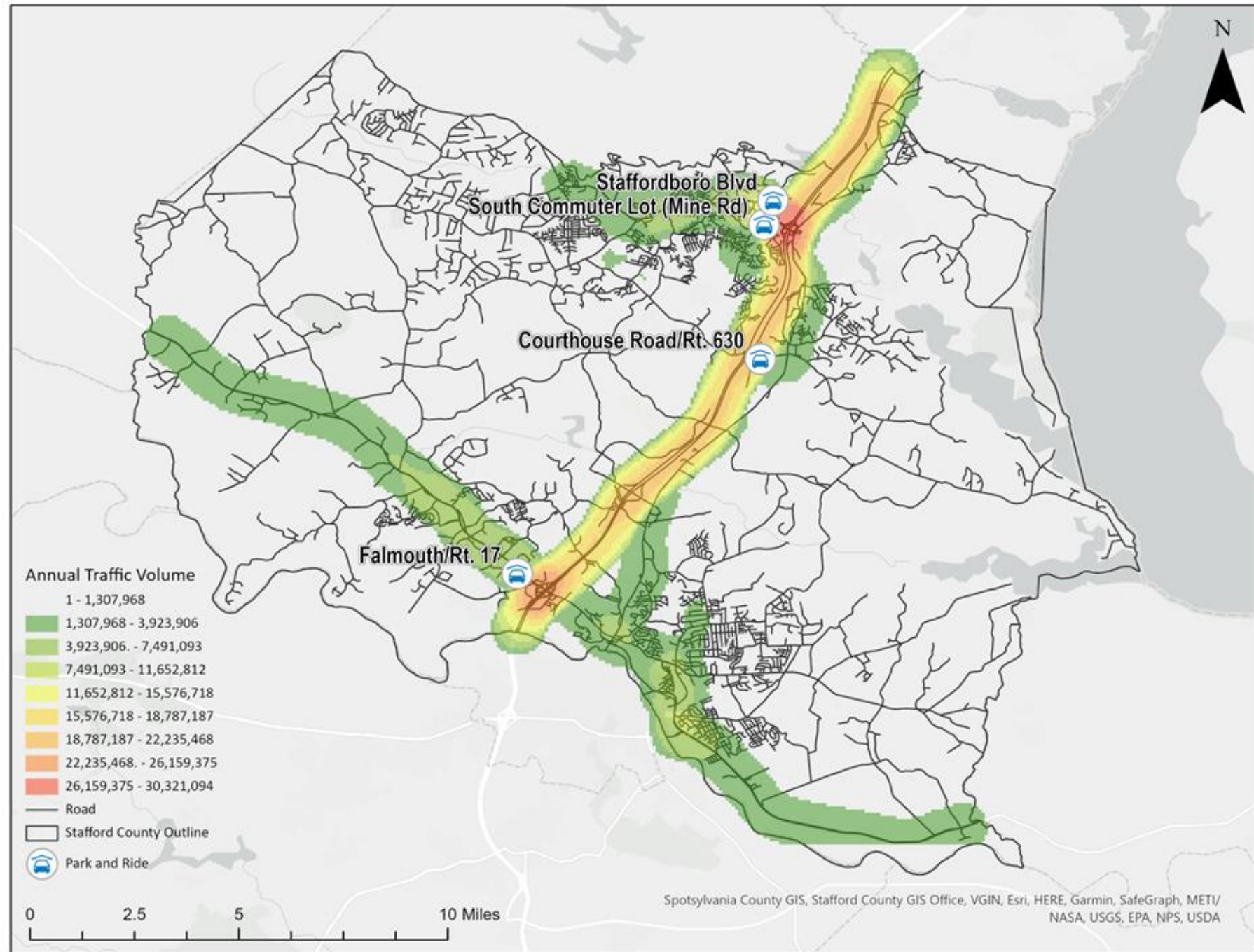
Methodology

- Describe Existing Stafford Park and Ride Facilities
- Identify and collect necessary data
- Allocate commuters to each park and ride facility to estimate the number who may use the P&R currently
- Identify the drive time to the Staffordboro P&R for commuters who use the Omnibus service
- Traffic Density in Stafford County
- Identify locations where Stafford County commuters work
- Project commuting population through 2035
- Refine population projection using current residential units under construction in Stafford County
- Combine the data to make an assessment

*Methodology Continued in Appendix A

Stafford County Traffic Volume

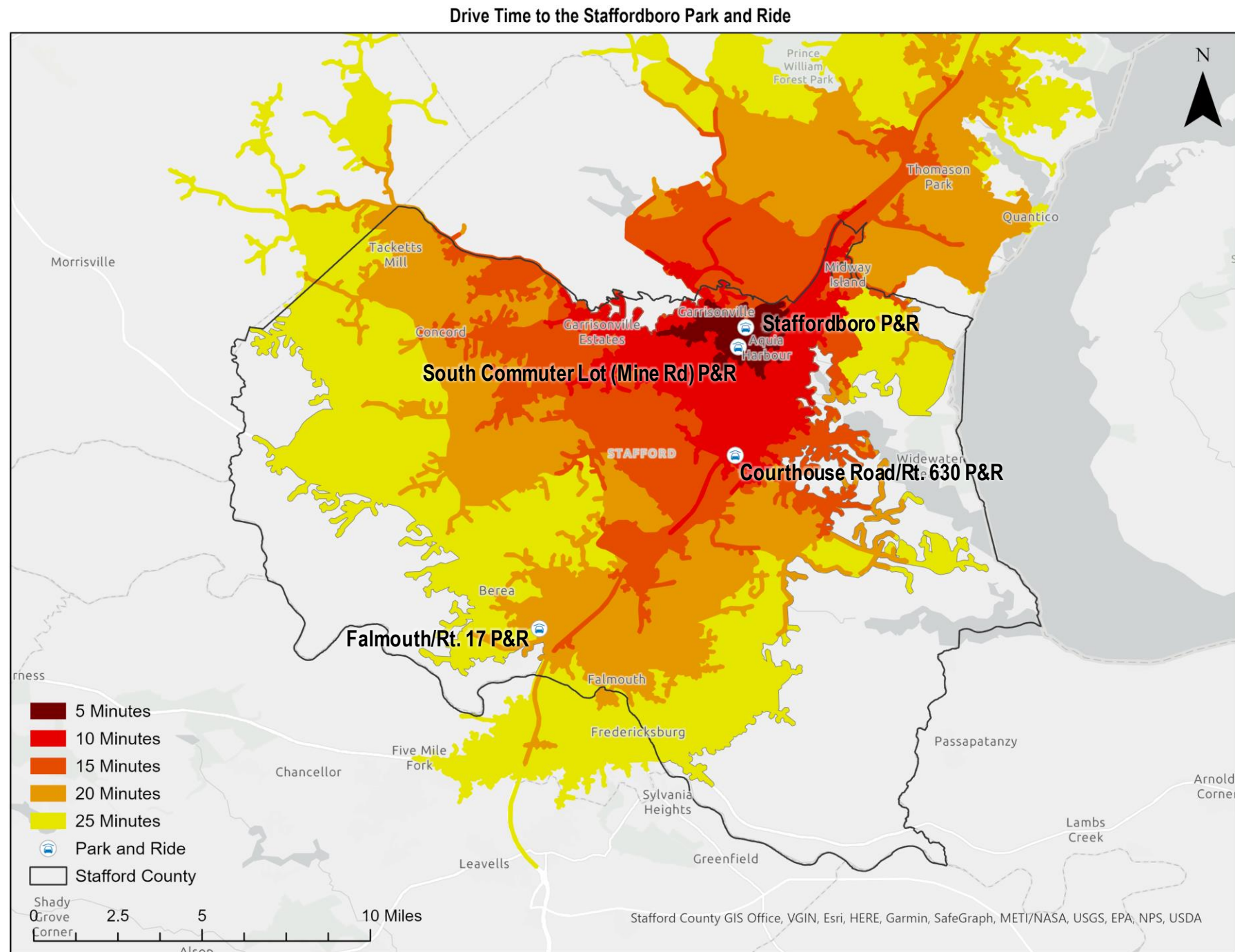
- Traffic Volume collected by VDOT
- Densest traffic along Interstate 95, Route 1, Route 17, and Rout 610/Garrisonville
- Interstate 95 on/off ramps at Route 17 and Route 610/Garrisonville are extensively used, experiencing the heaviest traffic in Stafford County



Drive Time to the Staffordboro Park and Ride

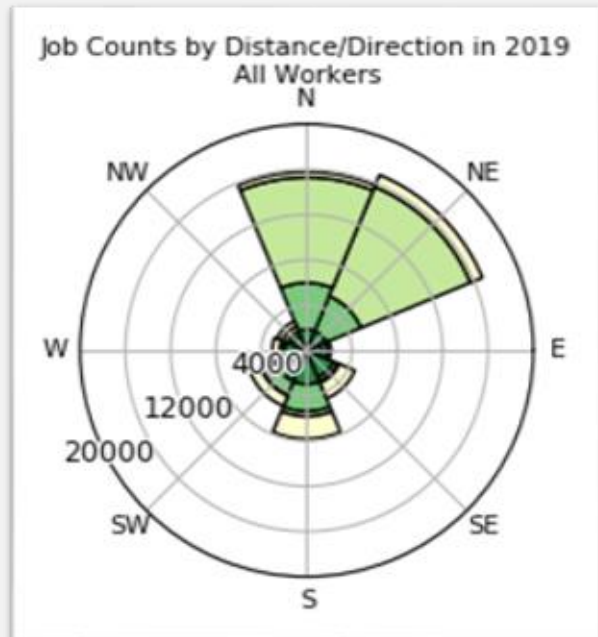
- Approximate drive time to the Staffordboro, the only P&R with bus routes available
- Ridership data provided by Omnibus shows a consistent increase in ridership in 2022

Quarter	Quarterly Ridership
Nov-Dec 2019	4,784
Jan-Mar 2020	20,983
Apr-Jun 2020	589
Jul-Sep 2020	7,451
Oct-Dec 2020	7,565
Jan-Mar 2021	8,220
Apr-Jun 2021	16,713
Jul-Sep 2021	22,120
Oct-Dec 2021	21,131
Jan-Mar 2022	21,839
Apr-Jun 2022	32,219
Jul-Sep 2022	35,663

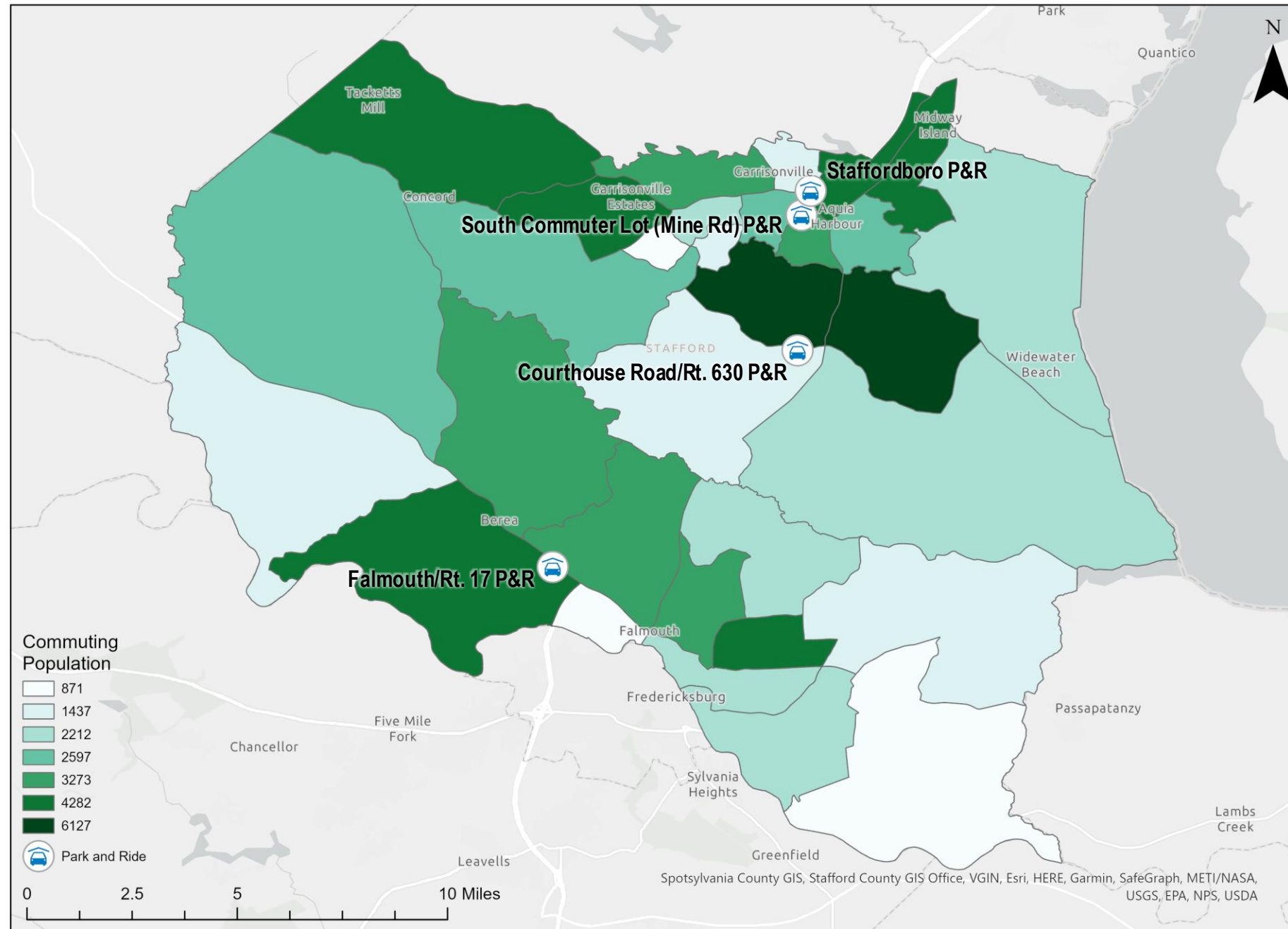


Stafford County Commuting Population

- Commuting population by census tract
- Circle graph of Stafford County Commuters show the majority commute north and northeast to work



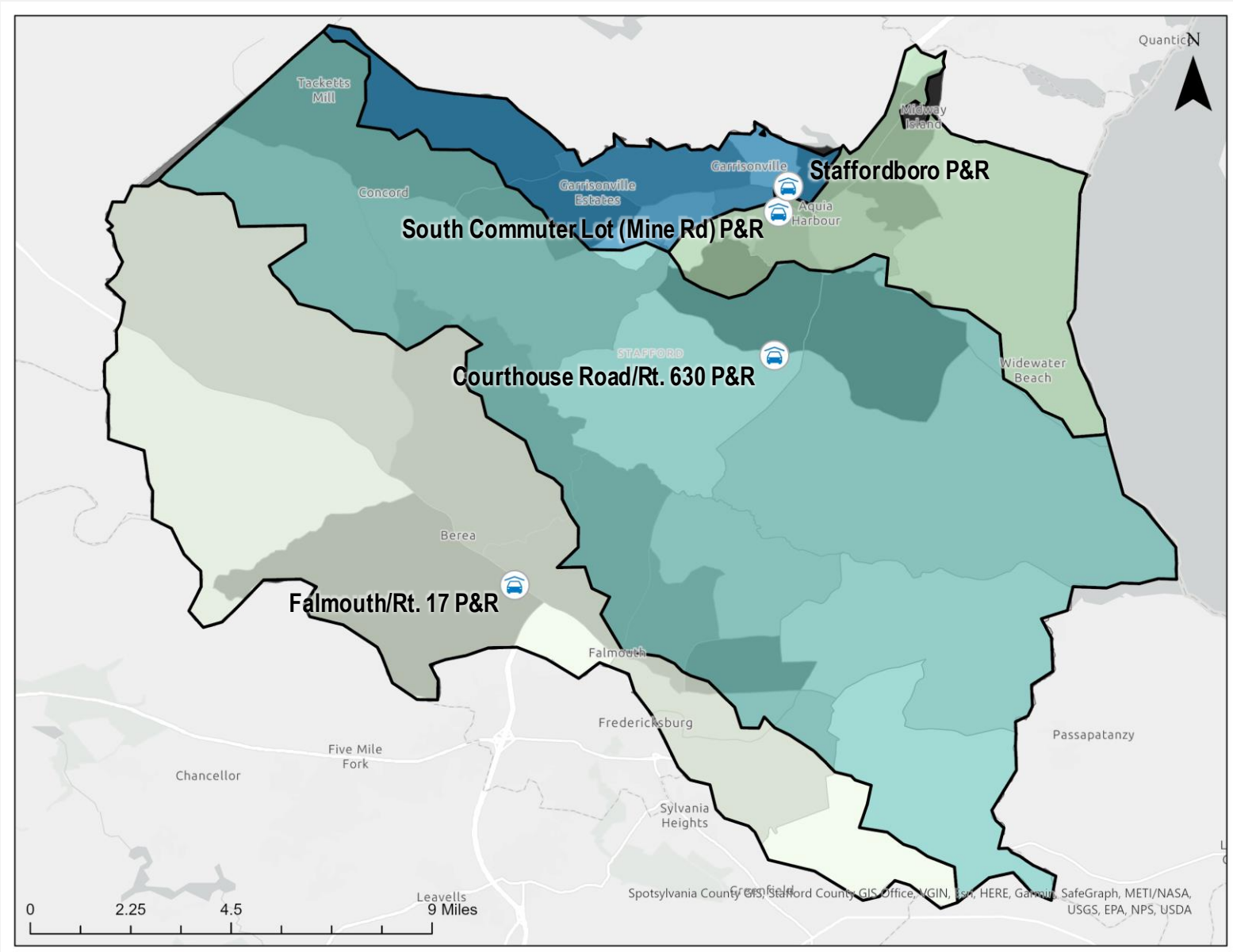
Stafford County Commuting Population by Census Tract



Stafford Commuting Population By P&R Cost Allocation

- The underlying census tract layer identifies areas of dense population in each P&R allocation area
- Stafford County is divided into four areas based on cost distance analysis from each P&R Facility

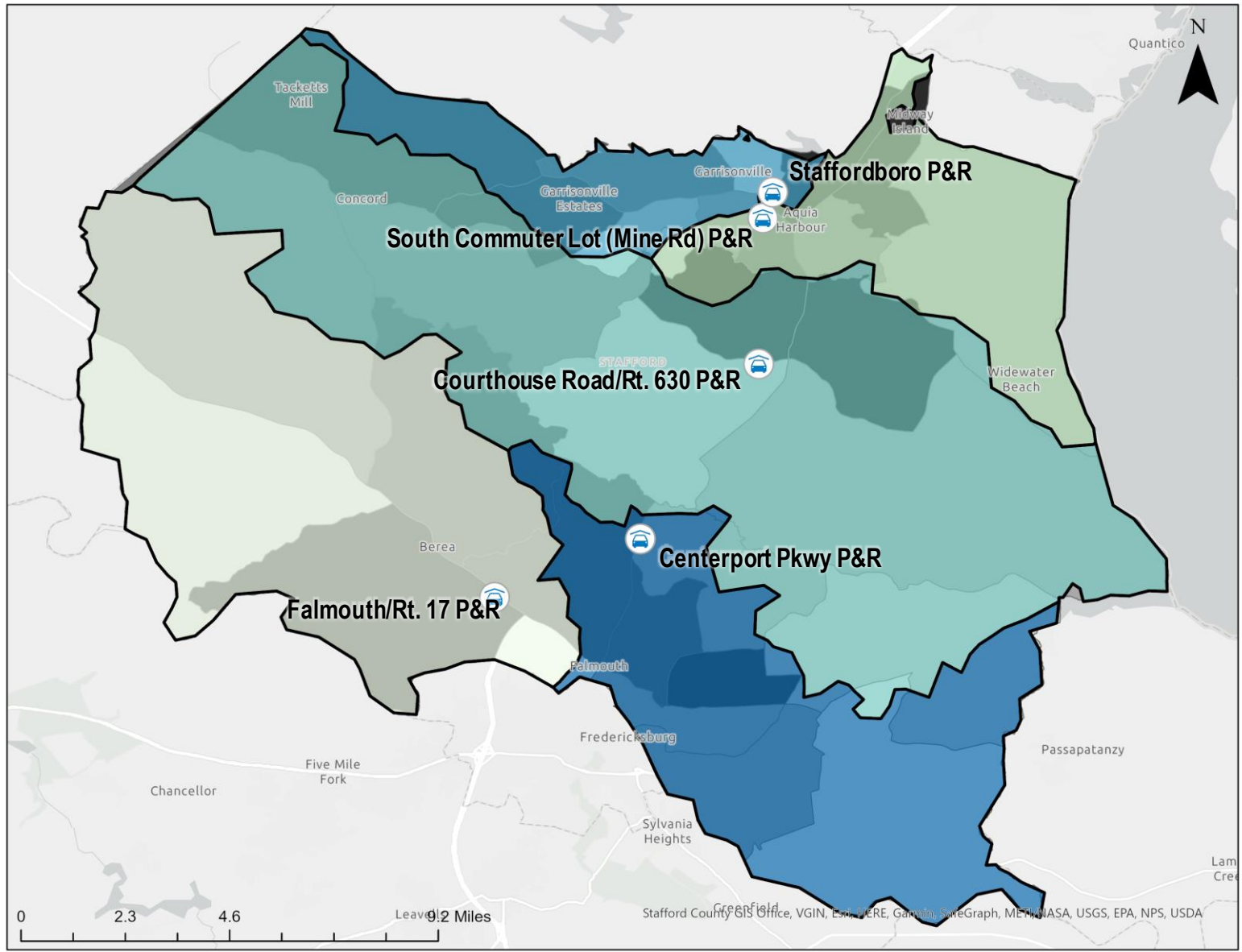
Park and Ride Facility	Number of Commuters
Staffordboro Blvd.	12,941
South Commuter Lot (Mine Rd)	16,099
Courthouse Road/Rt. 630	33,408
Falmouth/Rt. 17	13,310



2035 Projected Commuting Population

- The underlying census tract layer identifies areas of dense population in each P&R allocation area
- Cost allocation areas for Stafford County including prospective fifth P&R near Centerport Pkwy

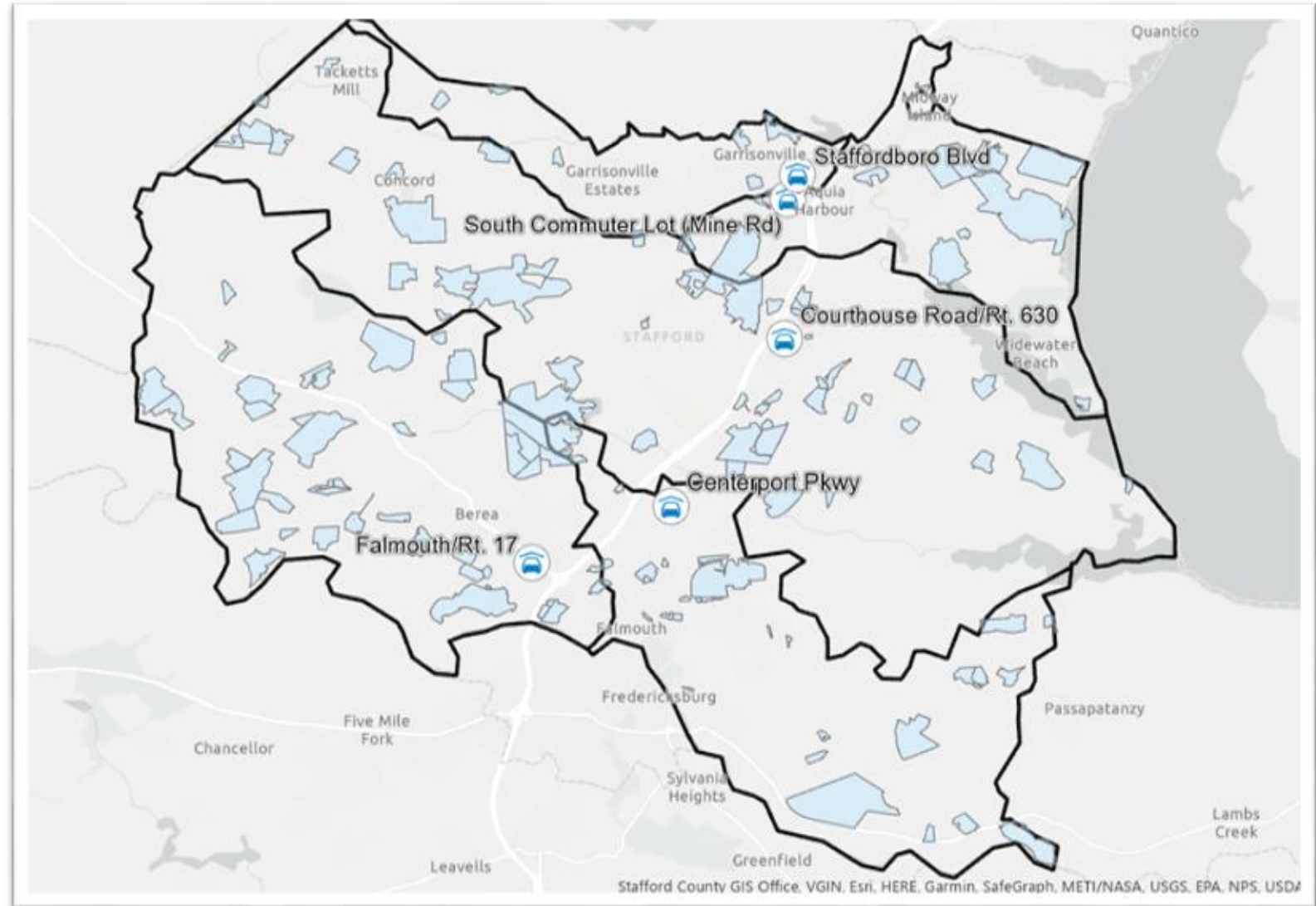
Park and Ride Facility	Number of Commuters
Staffordboro Blvd.	12,064
South Commuter Lot (Mine Rd)	14,156
Courthouse Road/Rt. 630	21,780
Falmouth/Rt. 17	9,890
Centerport Pkwy	14,318



Residential Units to Be Built

- New subdivisions that are currently under construction
- Available residential units include single family homes, townhomes, and apartments
- Stafford County residential units have an average of three residents

Park and Ride Facility	Units to be Built
Staffordboro Blvd.	576
South Commuter Lot (Mine Rd)	1,098
Courthouse Road/Rt. 630	2,372
Falmouth/Rt. 17	2,079
Centerport Pkwy	1,035



Recommendations and Future Work

- **Recommendations**
 - Stafford County Will likely benefit from an additional P&R by 2035
 - Access to Interstate 95 and projected growth identify Centerport Parkway is a favorable location
- **Stafford County Comprehensive Plan Five Year Update**
 - Identifies Centerport Parkway area as a possible location for expansion
 - Expansion of existing P&Rs may be challenging due to adjacent infrastructure and road volume capacity
- **Future Data Collection**
 - Identify daily average use of existing park and ride facilities
 - Offer electronic survey to commuters to gain more information on commuting preferences
 - Identify new locations for potential OmniRide bus routes
- **Understand Stafford County Working Trends**
 - Stafford County has committed to bringing workers into the county, how will this affect commuting?
 - Will expansion of remote work reduce the commuting needs in Stafford County?
 - Will the rising age of Stafford County residents remove enough residents from the workforce to change commuting needs?
- **Regional Impacts**
 - How will VDOT improvements on Interstate 95 affect Stafford County commuting?
 - How will adjacent cities and counties affect Stafford County Commuting?
 - Will rail become more prevalent in the future?



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Appendix A (Continuation of Methodology)

- Describe Existing Stafford Park and Ride Facilities
 - Identify Size and capacity of each facility
 - Identify commuting options at each facility
- Identify and collect necessary data
- Allocate commuters to each park and ride facility to estimate the number who may use the P&R currently
 - Identify commuters using commuting data from the U.S. Census ACS 5-year survey at the Census tract level
 - Euclidian Allocation
 - Cost Allocation
 - Summarize commuting population into P&R allocation areas
- Identify the drive time to the Staffordboro P&R for commuters who use the Omnibus service
 - Generate drive time areas at multiple intervals
 - Locate areas with longest drive time to reach the Staffordboro P&R
- Traffic Density in Stafford County
 - VDOT traffic data from 2018, 2019, 2020
 - Identify the Average Daily Traffic Volume
 - Locate the areas with significant volume, and areas with low traffic volume
- Identify locations where Stafford County commuters work
 - U.S. Census ACS data Identifies the work areas with the highest concentration of Stafford County workers
 - Are all these areas currently served by bus, van pool, or carpool?
- Project commuting population through 2035
 - Weldon Cooper Center projected increase in population through by 2035 is 21%
 - Apply this growth across all census tracts
- Refine population projection using current residential units under construction in Stafford County
 - Identify the number of residential units currently under construction
 - Summarize them by the P&R Allocation areas
 - Identify the areas with the most growth, indicates need for expanded commuting options
- Combine the data to make an assessment
 - Maintain the current P&Rs with no improvements?
 - Improve the existing P&Rs
 - Construct a new P&R