

Piedmont Triad Regional Transportation Demand Management Initiative

Goals, Objectives, and Work Program



Strengthening Mobility in Our Communities
A Transportation Demand Management Initiative for the Piedmont Triad

Effective July 1, 2024, through June 30, 2025

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Piedmont Triad Regional TDM Initiative

FY 25 TDM Goals, Objectives, and Work Program

March 26, 2024

INTRODUCTION

As the Piedmont Triad Regional TDM Initiative enters its fourth year the participants are excited about the accomplishments, the addition of new partners and the success our activities have experienced. The expected outcomes of the Regional TDM Initiative are to:

- ✓ Reduce vehicle miles traveled;
- ✓ Reduce transportation related CO₂ and particulate emissions; and
- ✓ Make walking, biking, carpooling, vanpooling and public transportation preferred mobility options.

The Regional Vanpool Program has new vehicles in its fleet and the number of participants remains strong. The members of the Universities and Colleges Work Group are actively engaged in a public transportation promotion campaign. Significant process on the RidetheTriad.org website and the Transit to Trails map is LIVE. RidetheTriad.org is designed to be a comprehensive resource for all mobility options in the Piedmont Triad. The hope is that all participants will provide information for the web site and link to it from numerous web pages and other digital platforms. PART Express added a new route to the Piedmont Triad International Airport. Greensboro Transit Authority and LINK are conducting transit system studies. This past year the TDM Council was established and is meeting quarterly. The organizational structure is detailed in Figure 1.

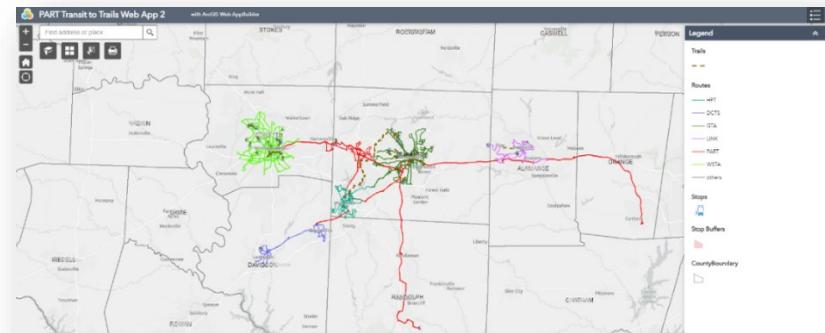
The program is supported by PART's regional vehicle rental tax, vanpool participant payments, aid from several cities directly to the vanpool program, payments from transit agencies for call center support and the NCDOT-TDM Transportation Demand Management Grant. The program supports five full employees and a portion of two other employees. Five additional PART employees actively contribute to the program's success as well as the 20 partner agencies and organizations.



RidetheTriad.org



University and College Transit Promotion

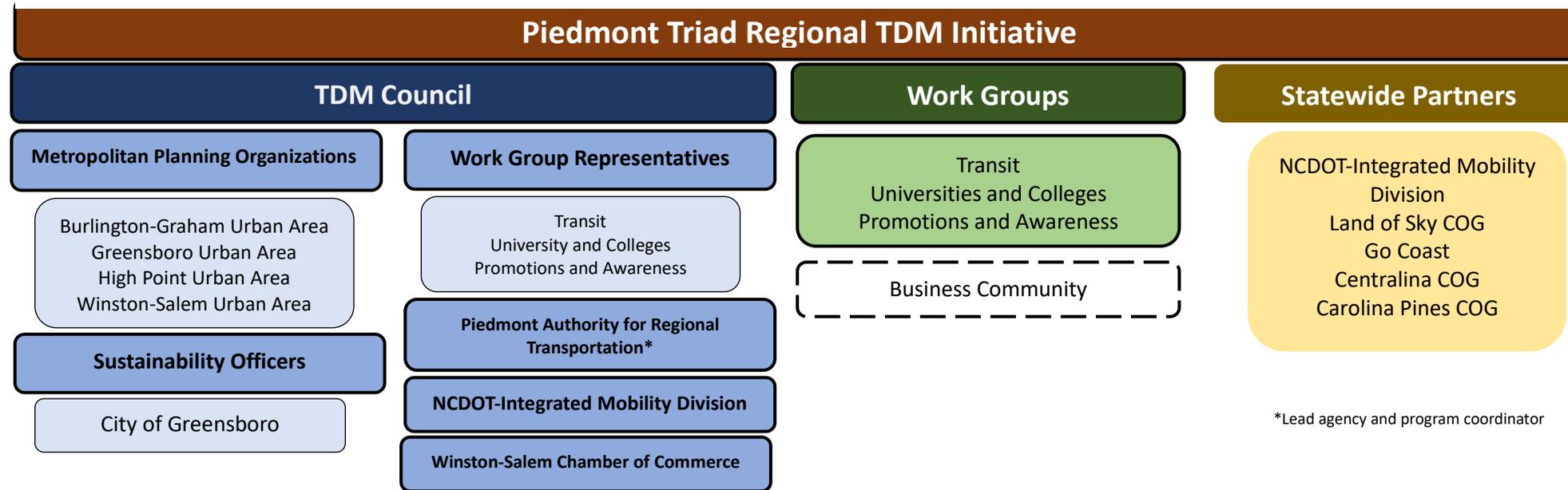


Transit to Trails Map



New van for Regional Vanpool Program

Figure 1



Established TDM Program Activities

Below are the current activities that make up the regional TDM program.

Program Administration and Planning

The Regional TDM Initiative partners meet on a quarterly basis. They establish the annual work program, monitor progress, and participate in completing program objectives as needed. PART is the primary program administrator. They facilitate quarterly council meetings and work group committee meetings, draft the work program, and write and administer grants. PART’s Mobility Manager and planning staff are responsible for guiding the program’s direction, researching best practices, compiling, and analyzing data and participating in state and national TDM activities. PART has five people dedicating time to program administration and planning.

Regional Vanpool Program

The City Councils in Greensboro, High Point and Winston-Salem adopted a Memorandum of Agreement in July 2000 committing their support of the Regional Vanpool Program. Vanpools must originate in or travel to a PART member county. Other program guidelines and qualifications are detailed on PART’s website. Maintenance of the fleet and increasing participation in the vanpool program remains a primary objective. PART has two staff members dedicated to this effort.

Regional Call Center

The Regional Call Center was established in 2015. The idea was proposed in a 2008 Regional Seamless Mobility Study. The call center handles calls related to regional mobility and inquiries about PART Express, High Point Transit, Davidson County Transportation Services, vanpool, carpool, Amtrak, PTIA and UMO Digital Faring account management. This includes route and fare information, current service questions, schedules, access to and from and passenger accommodations and complaints. The call center is looking to the future hoping to manage call center functions for other agencies and support proposed microtransit / on-demand services across the region. With multiple mobility providers across in Piedmont Triad, a regional call center could provide efficient communications and consistent information for everyone. PART has three staff members dedicated to call center operations.

Promotion and Marketing of Non-SOV Travel and Modes

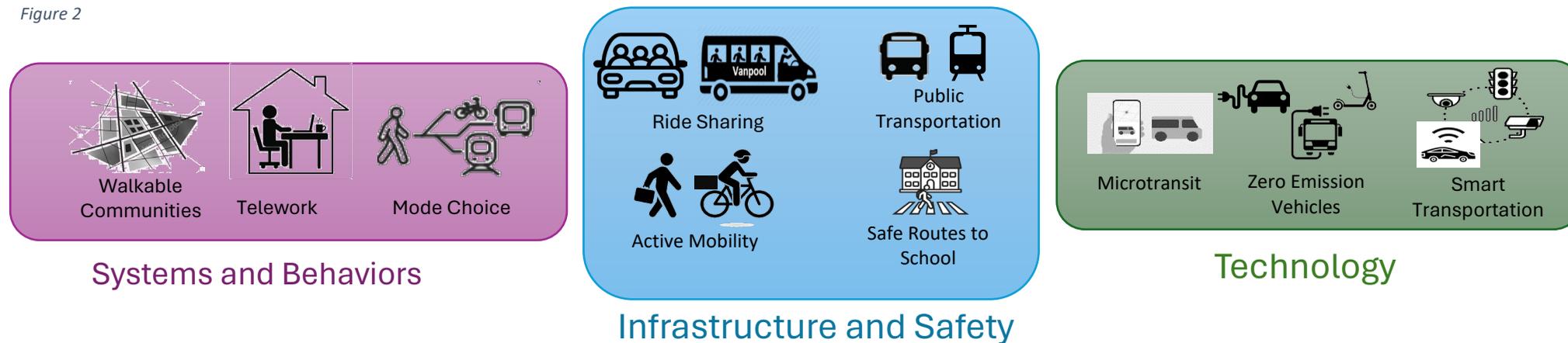
Since 2008 PART and the area’s MPOs have actively promoted non-SOV modes. Outreach efforts have included numerous forms of communication, including billboards, TV commercials, social media, web pages, and videos. Over the years these promotional efforts have included joint promotions and bus advertising procurements. PART has one staff person dedicating time to this effort aided by the Marketing Work Group which consists of marketing and communications staff from partner agencies.

New TDM Initiatives

Our outcomes have been updated to reflect the past and future of the program. The updated program outcomes provide for re-definition of what TDM can be in the Piedmont Triad. Our current and future efforts will focus on areas identified in Figure 2.

Systems and Behaviors: All our communities in the Piedmont Triad are striving to become more walkable and embracing non-single occupancy modes of transportation. Embracing walkable communities requires a different development pattern from familiar suburban neighborhood design. A wider variety of housing, neighborhood oriented commercial development and greater density are required to support walking, biking, scooters, and public transportation. TDM efforts focus on convincing people to change their mindset about how they travel. As one walks out the door, successful TDM programs offer the community a convenient, efficient, and clear set of transportation choices. Instead of asking the question, “Where are my car keys,” the question could be, “It’s a beautiful day today, should I walk, take the bus, or bike to work.”

Figure 2



FY 25 Regional TDM Work Program

Infrastructure and Safety: Establishing a transportation infrastructure that supports variety of mobility options requires multiple disciplines and political will. A successful TDM program brings these disciplines and the political will together. TDM works to strengthen every mode to ensure it is convenient and efficient, then strives to make everyone aware of the choices. Bike lanes, marked and signalized pedestrian crossings, bus priority lanes, traffic safety measures all contribute to TDM efforts.

Technology: In the future our TDM efforts will need to address smart cars, microtransit and traffic control systems. How will this change our infrastructure development? When and how will driverless vehicle impact travel? Transitioning to electric vehicles will necessitate change also. What will be TDM's role?

At the end of the plan is a list of specific TDM strategies that can be implemented. Those being deployed in the Piedmont Triad are identified. Together with our goals and areas of focus they guide the development of new objectives and programs.

New objectives and programs identified for next year focus on:

- Exploring the possibility of re-branding the vanpool program to provide a more regional focus.
- Supporting Commute Friendly NC as a Piedmont Triad branded program.
- Enhanced data analytics to support TDM strategies, show positive results and educate the public.
- Identification of areas that are Transportation Disadvantaged, in Persistent Poverty and Socially Vulnerable.
- Developing campaigns designed to meet the needs of areas identified as Transportation Disadvantaged, Socially Vulnerable and in Persistent Poverty.

FY 25 REGIONAL TDM INITIATIVES

The FY 25 work program follows the structure outlined by NCDOT-IMD TDM Grant. PART applies for and administers the grant on behalf of the region. The regional partners have developed and endorsed the work program. NCDOT's 2021VMT Reduction Study provides a comprehensive list of TDM strategies and their impacts on vehicle miles traveled (VMT). The Regional TDM partners use this list to document strategies currently in place, locally and regionally. Then gaps and ideas for expanding TDM strategies in the region are discussed. This process and the objectives outlined in the NCDOT-IMD TDM Grant informed the collective thoughts of the regional TDM partners which led to the development of the FY 25 Work Program.

During FY 25 the Regional TDM Initiative partners will focus on the following four goals and associated objectives.

Goal #1

Strengthen integration of TDM Strategies at the regional level while supporting local initiatives: Cooperation and coordination remain strong. Each year regional TDM integration becomes more apparent, highlighted by a common AVL system for transit system, the Triad Travel Counts household survey, bus ad purchases, transit ridership survey, and RidetheTriad.org. This year emphasis will be made to include chambers of commerce and citizen advocacy groups on our partner list. Emphasis will be placed on documenting our success and the impact our TDM efforts have.

Goal #1 Objectives

- ✓ Hold quarterly partner meetings and work group meetings as needed.
- ✓ Promote RidetheTriad.org as a single source for information about transit, biking, walking, trail, greenway, etc. opportunities across the region.

FY 25 Regional TDM Work Program

- ✓ Document local initiatives as part of our regional success.
- ✓ Expand call center participation and prepare for microtransit services within the Piedmont Triad.
- ✓ Expand partnership to include more Chambers of Commerce and community transit, bike, and pedestrian advocacy groups.

Goal #2

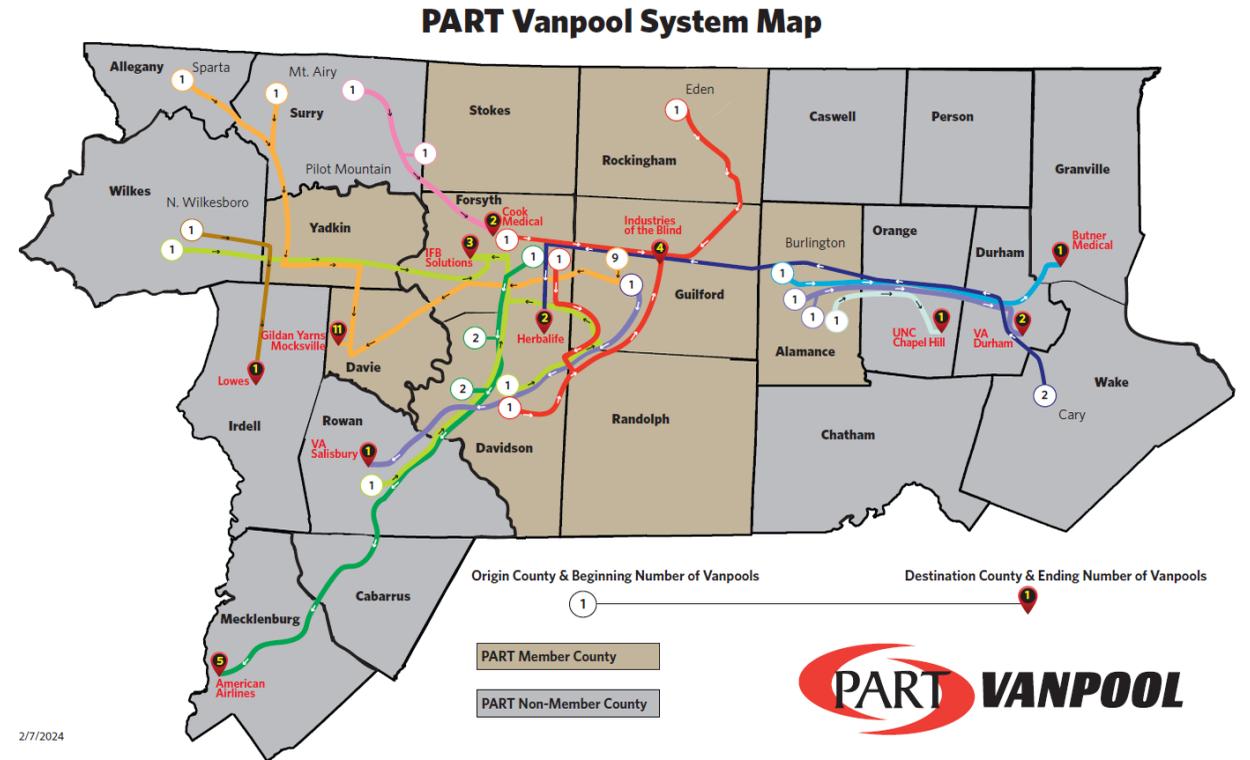
Increase participation in our regional vanpool program: Re-tooling of resources to focus on promoting the vanpool program has been in place for two years. The efforts paid off by increasing the vanpool fleet from 12 to 24 in the first year and growing to 33 through January 2024. The plan is to continue promoting the program through direct contact and events. Continuous evaluation of success will inform strategies for promoting the program.

Goal #2 Objectives

- ✓ Explore re-branding the vanpool program to provide a more regional focus.
- ✓ Develop a recognition program for Vanpool Program participants.
- ✓ Update list of targeted employers.
- ✓ Contact new employers each quarter and maintain a database tracking contacts and outreach mediums.
- ✓ Explore opportunities to form vanpools for non-traditional purposes including job training and education.
- ✓ Coordinate and give presentations to local community organizations, economic development entities, chamber of commerce organizations, municipal partners, trade associations, etc.
- ✓ Hold events at businesses and companies to promote the vanpool program.
- ✓ Implement a LinkedIn campaign about vanpooling targeting decision makers in Triad companies.

Goal #3

Promote all forms of non-SOV travel: Objectives under this goal include numerous promotional and marketing activities. The most impactful will be the promotion and continued development of the RidetheTriad.org web page. RidetheTriad.org will be a single source for information about transit, biking, walking, trails, greenway etc. opportunities across the region. Opportunities will be highlighted on the web page and details will be provided through links to the multiple MPO, parks and recreation, city, and county webpages across the region as well as NCDOT web pages. In addition, the Piedmont Triad will begin to support Commute Friendly NC. Social media campaigns will be implemented to encourage registration on the STRNC platform and promote Triad’s mobile and smartcard faring system. These services provide online convenience for people wanting to carpool, vanpool and take transit. The regional call center provides traveling information with a focus on public transportation. New to the promotional initiatives are efforts to reach out to people in Transportation Disadvantaged areas, those identified as Socially Vulnerable and in Persistent Poverty. The challenge will be developing campaigns tailored to these disenfranchised populations.



2/7/2024

Goal #3 Objectives

- ✓ Re-initiate coordination of transit employee passes across the region. Expand transit pass program as a city and county government employee benefit.
- ✓ Develop campaigns tailored to meet the needs of areas identified as Transportation Disadvantaged, Socially Vulnerable and In Persistent Poverty.
- ✓ Support Commute Friendly NC as a Piedmont Triad branded program. Initiate a pilot program with Greater Winston-Salem Chamber.
- ✓ Increase visibility of regional vanpool program on city and county websites.
- ✓ Conduct campaigns encouraging registration in the STRNC platform.
- ✓ Conduct campaigns promoting Triad’s Mobile and Smartcard faring system.
- ✓ Conduct campaigns promoting local and national events and activities such as Bike Month, Year of the Trails, Get on Board etc.
- ✓ Maintain and update RidetheTriad.org web page, as needed.
- ✓ Promote the Transit to Trails map. Design, produce and install identification signs at Transit to Trails bus stops and trail heads.
- ✓ Conduct campaign promoting public transportation connections to AMTRAK/NCDOT Rail stations and the Piedmont Triad International Airport.



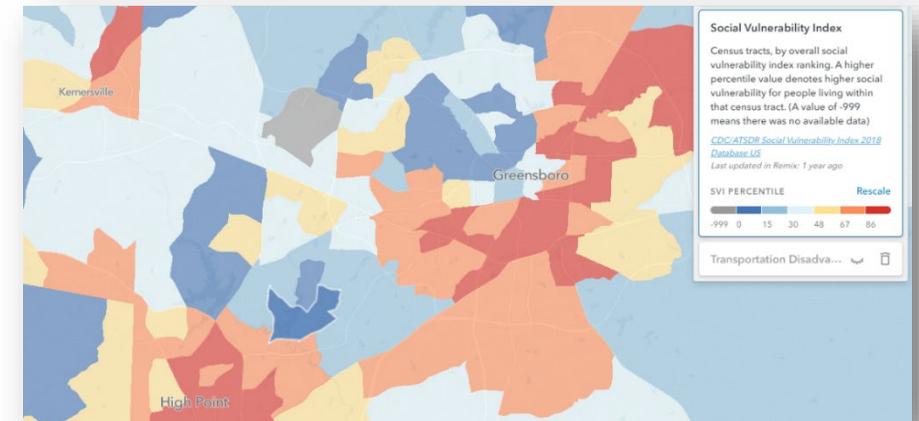
Transit promotions in Hispanic.

Goal #4

Enhanced Data Analytics: Efforts will be made to provide regional travel data from existing sources. The region recently conducted a Household Travel Survey. PART maintains the regional travel demand model for the four MPOs. American Community Survey and US Census data are often presented by individual jurisdictions but rarely on a regional basis that also includes analysis. The TDM partners will also look at the collection of new data such as bicycle trip counts. The region will focus efforts on measuring the impacts of TDM efforts on air quality.

Goal #4 Objectives

- ✓ Monitor progress accurately and in more meaningful ways.
- ✓ Enhance data analytics to support TDM strategies and educate the public. Include local program results to provide a more comprehensive summary of achievements.
- ✓ Identify areas that are Transportation Disadvantaged, In Persistent Poverty and Socially Vulnerable for TDM campaigns.
- ✓ Research and work towards incorporating emission reductions and air quality benefits for all forms of mobility including bike and walking.



Equity mapping

Work Program Schedule

Below is the general timeline tasks, campaigns and initiatives will be conducted.

Program Goals and Objectives	TDM Grant Focus	2024						2025					
		July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Strengthen integration of TDM Strategies at the regional level while supporting local initiatives													
Hold quarterly partner meetings and work group meetings as needed.	A												
Promote RidetheTriad.org as a single source for information about transit, biking, walking, trail, greenway, etc. opportunities across the region.	A												
Document local initiatives as part of our regional success.	A												
Expand call center participation and prepare for microtransit services within the Piedmont Triad.	A												
Expand partnership to include more Chambers of Commerce and community transit, bike, and pedestrian advocacy groups.	B												
Increase participation in our regional vanpool program													
Explore re-branding the vanpool program to provide a more regional focus.	A												
Develop a recognition program for Vanpool Program participants.	C												
Update list of targeted employers.	B												
Contact new employers each quarter and maintain a database tracking contacts and outreach mediums.	B												
Explore opportunities to form vanpools for non-traditional purposes including job training and education.	B												
Coordinate and give presentations to local community organizations, economic development entities, chamber of commerce organizations, municipal partners, trade associations, etc.	B												
Hold events at businesses and companies to promote the vanpool program.	B												
Implement a LinkedIn campaign about vanpooling targeting decision makers in Triad companies.	B												
Promote all forms of non-SOV travel:													
Re-initiate coordination of transit employee passes across the region. Expand transit pass program as a city and county government employee benefit.	D												

FY 25 Regional TDM Work Program

Program Goals and Objectives	TDM Grant Focus	2024						2025					
		July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Develop campaigns tailored to meet the needs of areas identified as Transportation Disadvantaged, Socially Vulnerable and In Persistent Poverty.	A												
Support Commute Friendly NC as a Piedmont Triad branded program. Initiate a pilot program with Greater Winston-Salem Chamber.	D												
Increase visibility of regional vanpool program on city and county websites.	C												
Conduct campaigns encouraging registration in the STRNC platform.	C												
Conduct campaigns promoting Triad’s Mobile and Smartcard faring system.	C												
Conduct campaigns promoting local and national events and activities such as Bike Month, Year of the Trails, Get on Board etc.	B												
Maintain and update RidetheTriad.org web page, as needed.	C												
Promote the Transit to Trails map. Design, produce and install identification signs and Transit to Trials bus stops and trail heads.	C												
Conduct campaign promoting public transportation connections to AMTRAK/NCDOT Rail stations and the Piedmont Triad International Airport.	A												
Enhance Data Analytics:													
Monitor progress accurately and in more meaningful ways.	A												
Enhance data analytics to support TDM strategies and educate the public.	A												
Identify areas that are Transportation Disadvantaged, In Persistent Poverty and Socially Vulnerable for TDM campaigns.	A												
Research and work towards incorporating emission reductions and air quality benefits for all forms of mobility including bike and walking.	E												
TDM Grant Focus Areas / A = Education of Travel Options (Marketing) B = Recruitment of Travelers into Non-SOV Modes (Outreach) C = Tools for Employers and Commuters (Program) D = Pilot Program E = Transportation Innovations													

Regional Scorecard and Potential Future Strategies

The charts below serve as the framework for future work plan development and highlights all the active strategies in the region. Following the charts there is a description of each strategy. These charts and descriptions were taken from the NCDOT VMT Reduction Study.

Strategy	Implemented
Worksite/Workplace (4)	Remote Work Policies
Regional (8)	Park and Ride Lots Public Transit Non-motorized Mode Support Vanpool Program
Telecommunication (3)	
Development Patterns (9)	
Public Policy/Regulatory (3)	Jurisdictional TDM Plan
Pricing (4)	
Application-Based (2)	MaaS Ride-Matching Applications
Support (10)	Facility Amenities Guaranteed Ride Home Vanpool Fare Subsidies Public Education and Promotion Ride-matching and Mobility Support Services

The Piedmont Triad regional has implemented 13 out of 43 strategies.

TDM STRATEGY IMPLEMENTATION BY ORGANIZATION Status P = Planning D = In Development M = Manages/Maintains Application R = Regional L = Local / Agency Specific									
	Piedmont Authority for Regional Transportation	Burlington-Graham MPO	Greensboro MPO	High Point MPO	Winston-Salem MPO	Region Type	Types of Trips Targeted	Potential Application Locations	Implemented By
Worksite/Workplace									
Employee Parking Cash-Out Program						Urban Suburban	Commuter	Urban City and Town Centers	State Private
Transportation Management Associations						Urban Suburban Rural	ALL	Any	County/Local MPO/RPO Private
Alternative Work Schedules						Urban Suburban Rural	Commuter	Any	State Private
Remote Work Policies	L					Urban Suburban Rural	Commuter	Any	Private
Regional									
Park and Ride Lots	M / R	R	R	R	R	Suburban Rural	Commuter	Urban City and Town Centers	State, County/Local Transit Agency
Alternative Mode Sharing						Urban Suburban	All types, typically short trips	Dense residential areas and universities	State, County/Local Private MPO/RPO
Carsharing						Urban Suburban	Infrequent car trips	Dense residential areas and universities	Private
Flexible Public Transit						Suburban Rural	All trips, particularly disabled, elderly and visitor trips	--	State, County/Local Transit Agency MPO/RPO
Public Transit	M / R	L	L	L	L	Urban Suburban	All	Urban Suburban	State, County/Local Transit Agency MPO/RPO
High Occupancy Vehicle (HOV) Facilities						Urban Suburban	All, primarily commuter	Suburban and urban highways, office parks	State, County/Local Private
Non-Motorized Mode Support		M / L	M / L	M / L	M / L	Urban Suburban	All	Dense commercial centers, residential area, downtowns, recreation areas	State County/Local MPO/RPO

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Vanpool Program	M / R	R	R	R	R	Urban Suburban Rural	Commuter	Urban and suburban area	State, County/Local Transit Agency MPO/RPO Private
Telecommunication									
Internet Based Strategies						Urban Suburban Rural	Non-commuter	Statewide	State / Private
Information Service: Broadband Expansion						Urban Suburban Rural	Commuter trips School trips Some trips to access services	Urban areas Suburban areas Rural areas Tribal lands	State, County, Local Gov't / Private
Telecommuting/Telework						Urban Suburban Rural	Commuter trips	All areas	State, County, Local Gov't / Private
Development Patterns									
Providing Affordable Housing						Urban Suburban Rural	Commuter	Tourist areas Urban Areas	County, Local Gov't / Private
Complete Streets						Urban Suburban Rural	All	All	State, County, Local Gov't MPO/RPO
Transit-Oriented Development						Urban Suburban	All	Cities and along rail and bus rapid transit routes in suburbs	State, County, Local Gov't Private Transit Agency
Connectivity						Urban Suburban	All	Urban and suburban neighborhoods	State, County, Local Gov't MPO/RPO
Development Impact Mitigation						Urban Suburban	Dependent on development	Universities as well as urban and suburban areas	State, County, Local Gov't MPO/RPO
Jobs/Housing Balance						Urban Suburban Rural	Commuter trips School trips Some trips to access services	Urban areas Suburban areas Rural areas Tribal lands	State, County, Local Gov't MPO/RPO
Compact Employment and Activity Centers (Multi-story, Mixed Use)						Urban Suburban	All, except freight	n/a	State, County, Local Gov't MPO/RPO Private
Compact Residential Development						Urban Suburban	All, except freight	n/a	State, County, Local Gov't MPO/RPO Private
Downtown Revitalization						Urban	All	n/a	State, County, Local Gov't MPO/RPO Private
Public Policy / Regulatory									
Access Priority/Restriction (Car-Free Zones)						Urban	Primarily commuter trips	Urban city centers, congested commuter, and transit routes	State, County, Local Gov't Transit agency
Trip Reduction Ordinances						Urban Suburban	General ordinance - all trips. Employer-based trip reduction program - commuter trips	Statewide Urban Areas	County, Local Gov't

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Jurisdictional TDM Plans	M / R	M / L				Urban Suburban Rural	All	Urban areas Suburban areas Rural areas	Local Gov't, MPO/RPO
Pricing									
Gas Tax Increase						Urban Suburban Rural	All	Statewide	State Gov't
Parking Pricing						Urban	Commuter trips, short trips between parking facilities	Urban centers, town centers	State, County, Local Gov't Private
Road Pricing and Condon Pricing						Urban Suburban Rural	All, but primary peak period trips	High volume corridors and urban city centers	State, County, Local Gov't
VMT Fee Tax						Urban Suburban Rural	All trips	Statewide	State Gov't
Application-Based									
Mobility as a Service	D / R	D / R	D / R	D / R	D / R	Urban Suburban	All, except freight	Cities and nearby suburbs	State, County, Local Gov't Transit Agency
Ride-Matching Applications (Share the Ride NC or STRNC)	R	R	R	R	R	Urban Suburban	All	Urban and Suburban Areas, Towns, universities	State Gov't Transit Agency
Support									
Compact Development/Clustering						Urban Suburban Rural	All	All	State, County, Local Gov't
Facility Amenities	L					Urban Suburban	All	Universities, large employers	State, County, Local Gov't
Mobility Hubs						Urban Suburban	All	Urban, Suburban	State, County, Local Gov't Private Transit Agency
Guaranteed Ride Home	M	?	M	M	M	Urban Suburban Rural	Commuter trips	Areas with alternative transit options	Private, MPO/RPO Transit Agency
Alternative Mode Rebates/Incentives						Urban Suburban Rural	Primarily commuter trips	Employment sites, universities, cities, and municipalities	State, County, Local Gov't Private
Vanpool Fare Subsidies	M / R					Urban Suburban Rural	Commuter	Any existing or starting vanpool program	State, County, Local Gov't MPO/RPO Private
Parking Management						Urban	Commuter trips, short trips between parking facilities	Urban city centers, town centers	State, County, Local Gov't Transit Agency
Transit Fare Subsidies						Urban Suburban Rural	All	Locations with a significant transit presence	County, Local Gov't Transit Agency

Public Education and Promotion	M	M	M	M	M	Urban Suburban	All	Large urban regions, towns, commercial centers, universities	State, County, Local Gov't Transit Agency
Ride-matching and Mobility Support Services	M / R	R	R	R	R	Urban Suburban Rural	Primarily commuter trips, also recurring trips	Suburban areas, Towns, Low density rural areas	State Gov't Transit Agency

Description of TDM Measures:

Worksite/Workplace

Employee Parking Cash-Out Program

Many employers provide their employees a “free” parking space. Parking cash-out allows employees to opt out of using this space in exchange for payment which may be used to purchase transit fares, or in some programs, kept as cash. The program is typically administered monthly, but some daily cash-out programs do exist.

The cost of providing parking for employees is high. According to WGI, the 2019 average construction cost for a parking spot in a parking structure in Charlotte was \$18,122. A surface lot parking space would be less but would likely cost between \$2,000 and \$3,000 per space.

In addition to the construction costs, annual operation and maintenance can add about \$300-\$500 per year (\$2013) per space, and the initial land costs can also be high, particularly in a dense urban area.

Transportation Management Associations

Transportation Management Associations (TMAs) are independent groups that coordinate transportation services, usually in partnership with government entities. TMAs can consist of private citizens, employers, business owners, developers, or other stakeholders. Coordinated services can include ride-matching, employer shuttles, shared parking, paratransit, travel alerts, safe routes to school/work, bike sharing, or car sharing. TMAs can also be a valuable channel for communicating and marketing new TDM measures.

TMAs cover defined geographic areas and can have a mix of voluntary and compulsory membership. Required membership can be part of zoning and variance agreements. Voluntary membership rationale includes the economic growth seen in areas with TMAs and the ability to have a formal stakeholder voice. TMAs are not for profit and funding can be a mix of private funding like membership fees and public funding.

Alternative Work Schedules

Traditional work schedules consist of working an 8-hour day, 5 days a week typically Monday through Friday from about 8 AM to 5 PM. An alternative work schedule varies these work hours to spread the typical 40-hour work week over different hours of the day and sometimes for fewer days per week. If the 40 hours are spread over a shorter week, reductions in commuter VMT can be achieved. For example, if a commuter works 10 hours per day for 4 days per week, instead of 8 hours per day for 5 days per week, they reduce their weekly commuter VMT for this trip type by 20 percent. If they spread two weeks of work (80 hours) over 9 days instead of 10 days, a 10 percent reduction in commuter VMT can be achieved.

Regional

Park and Ride Lots

Park and ride facilities are parking lots where commuters can park their personal vehicles and transfer to a “higher occupancy” transportation mode such as light rail, bus, or carpool vehicles.

Park and ride facilities are typically adjacent to a transit station and/ or a highway to allow for an easy connection between modes. Park and ride lots may be maintained by the Department of Transportation or other public agency and monitored by local law enforcement to prevent vehicle theft and overnight parking. Lots may also be converted from existing underutilized or unutilized lots like shopping centers.

Alternative Mode Sharing

Alternative mode sharing is a service in which non-automobile vehicles (typically bicycles or scooters, non-motorized or electric) are available to individuals to either rent for a fee or reserve for free. Some sharing programs require that vehicles be taken from and returned to docking stations, while other programs allow customers to drop off vehicles at the end of their journey.

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In the latter instance, vehicles are equipped with a GPS device that allows potential customers to see where available vehicles are on a smart phone application and allows the sharing company to locate their assets when maintenance is required. Some sharing services require customers to pre-register an account, while others just require a credit card to unlock the bicycle or scooter. Vehicles may have to be re-distributed throughout the day to ensure that the available vehicle supply meets the demand.

Carsharing

Carsharing is a car rental service that can replace vehicle ownership. Cars are available in mainly residential areas, and users can “rent” the car by the hour, adhering to pick-up and drop off protocols. There is usually a fixed charge associated with the rental and a per-hour charge. This rental model allows customers to make longer distance car trips without owning a car. Other trips made by the customer would typically be made via transit or walking (or other alternative travel mode). Most car sharing is facilitated through smartphone apps.

In the US, there are primarily two types of car-shares available: For-profit private vehicle rental companies oriented toward local residential use (Zipcar) and Peer-to-peer services, in which owners list their vehicles for rent for short periods (Turo).

Flexible Public Transit

Flexible public transit services are a hybrid of traditional, fixed route bus service and demand response (or paratransit) service. The objective is usually to provide the benefits of public transit to those who cannot safely complete the first mile/last mile of their trip, live in sparsely populated rural areas, are senior citizens, or have a disability. Typically, passengers contact the agency offering the service to reserve their trip. There are multiple examples of a flexible public transit service, including:

- **Route deviation:** The service has a defined path and schedule, but the vehicle may deviate from the path to pick up or drop off riders. Maximum deviation varies by service and can range from a quarter of a mile to a mile.
- **Point deviation:** The service has a defined area of service and stops, but no defined path.
- **Demand-Responsive Connector:** The service is effectively demand response, except that it has scheduled stops at public transit stations. In this way, it provides a means to access transit stations without having to drive or walk to the station.

Public Transit

Public transit is a set of transportation modes available to the public that maintain a published schedule on an established route on which passengers pay a fee and travel together. Examples of public transit include buses, light rail, commuter rail, subway,

ferries, and trollies. Public transit is most effective where it can be used by the most people. For this reason, transit is most prevalent in urban areas, in suburban areas that can bring commuters into city offices, and on college campuses.

High Occupancy Vehicle (HOV) Facilities

High Occupancy Vehicle (HOV) facilities are exclusive facilities for vehicles that qualify as an HOV, typically requiring at least two or three occupants including the driver. These facilities provide an inherent benefit to passengers in HOVs compared to passengers in non-HOVs. A common HOV facility is an HOV lane on a limited access highway. The goal of these lanes is to allow HOVs to travel faster in their separate lane from non-HOVs during periods of traffic congestion. HOV lanes may or may not: operate as a standard general-purpose lane outside of peak commuting periods, provide continuous access with general purpose lanes, or have separate structural elements from the general-purpose lanes. HOV lanes may also be on highway on-ramps with ramp meters; by being separated at the meter, HOVs can “queue jump” in front of non-HOVs. Another HOV facility is HOV parking which reserves desirable spots (typically closest to the destination building) in a lot or garage for HOVs.

Non-Motorized Mode Support

Non-motorized modes of transportation include walking and biking. These modes can be recreational or for conveyance. Non-motorized mode support focuses on strategies to support and encourage walking or biking. This can include installing and maintaining sidewalks and bike lanes, increasing connectivity, public education and promotion campaigns of non-motorized modes, bicycle parking, bicycle racks on buses, pedways, and Safe Routes to School or work programs. This strategy could be used to support other strategies like Complete Streets

Vanpool

Vanpools are a type of transit where a group of 5 to 15 people share a van to travel together from a common community location, such as a park-and-ride lot or a transit station, to a place of work. Types of vanpool programs include:

- **Owner/operator arrangements** where an employee-owned vehicle is used for vanpooling. The owner must check with his or her insurance carrier regarding liability issues. Costs are shared among the commuters.
- **Employer sponsored programs** where the vehicle is owned by the employer or operated through a lease with a private vanpool vendor. Employers would typically provide maintenance, insurance, and other support services.
- **Third party lease programs** are facilitated via a monthly lease between the vanpool participants and a third-party vanpool vendor. The vendor provides the vehicle, maintenance, insurance fuel, and other support services.

Telecommunication

Internet Based Strategies

Internet-based strategies may reduce VMT by providing online services as substitutes to making trips to a physical location.

These can include services from both private and public sources. Internet-based private services include online banking/financial services, telehealth, online retail, online fitness instruction, online secondary education, and general customer service. Internet-based public services can include some DMV services, court services, parking services, tax services, permitting, notary, voter registration, transit ticketing, and record requests. Successful online services are clear and easy to use, run on well-supported web platforms, and are frequently accompanied by telephone services to provide human clarification when needed.

Planning organizations can encourage other public agencies to move eligible services online, or even formalize online based service prioritization in the form of legislation.

Information Service: Broadband Expansion

Broadband is defined by the FCC as reliable high-speed internet with download speeds of at least 25 megabits per second. Broadband internet can be delivered through digital subscriber line (DSL), cable modems, fiber, wireless, satellite, and broadband over powerline. Broadband coverage is a key aspect of facilitating teleworking and distance learning. State efforts to expand broadband access are primarily focused on connecting broadband to homes and small businesses.

Telecommuting/Telework

Telecommuting or teleworking is a telecommunications strategy that uses the internet as an alternative to traditional commutes to work in a single occupancy vehicle. The employee can work from home using high-speed internet rather than commuting into an office. Telework allows for more flexible schedules and may reduce the burden on commuting. It may also reduce vehicle miles traveled, especially during rush hour. Telework can be part of a successful employer rewards program to avoid peak road congestion.

Development Patterns

Providing Affordable Housing

Affordable housing programs are administered by government agencies to provide subsidized rental homes for low-income households. Typically, a tenant in an affordable housing unit pays monthly rent equal to 30 percent of their monthly income.

These programs allow low-income workers to live closer to their jobs, even if their jobs are in areas with high property values. In urban areas, such as Raleigh or Charlotte, affordable housing may bring low-income workers close enough to their downtown jobs that they walk, bike, or take mass transit to work. In tourist areas, it may allow service workers to live closer to where they work.

Complete Streets

Complete Streets is a concept that designs streets to be comfortably used by all types of users, not just cars. Ideally, complete streets provide infrastructure that can be used by people walking and biking, using transit and driving in cars. They are designed to operate safely for all users, regardless of age, ability, or mode of transportation. Complete streets may include sidewalks and crosswalks, accessible pedestrian signals, curbs and curb extensions, median islands, bike lanes, special transit lanes, comfortable and easily accessible transit stops, narrower travel lanes, and other measures.

Transit Oriented Development

A Transit-Oriented Development (TOD) is a compact, mixed-use community centered around a transit station that, by design, invites residents, workers, and shoppers to drive their cars less and ride mass transit more. Since these mixed-use developments are densely developed, they also promote walking and other non-motorized modes of travel. Generally, TODs within a half mile of the actual transit station are the most successful in achieving travel mode shifts from cars.

Connectivity

Connectivity refers to the density of connections and directness of links in roadway networks. A well-connected network has many intersections and short blocks with minimal dead-ends or cul-de-sacs. Travel distance decreases and route options increase as connectivity increases. Increased connectivity allows for more direct travel between destinations. Connectivity can apply both internally to streets within a neighborhood or area and externally to other arterials and other neighborhoods. Connectivity is most applicable in high-density urban or suburban areas. It is best implemented by local governments, transportation management associations, developers, or neighborhood associations. A common example of connectivity is a fused grid street design, which uses public squares at the end of cul-de-sacs to provide pedestrian and bicycle connections.

Development Impact Mitigation

Development Impact Mitigation is a strategy in which government entities require developers to mitigate the traffic impact their projects will cause when they are fully built

and generating traffic. These measures are meant to ensure that the transportation network can handle the additional demand developments may cause. Some measures the developer may take, such as widening roads or converting a non-signalized intersection to a signalized intersection, encourage driving to the development and do not reduce VMT. Other measures, however, such as providing bicycle storage, a comfortable bus shelter, or new transit routes encourage people to take alternative modes to the development which reduces VMT compared to if those measures are not enacted.

Jobs/Housing Balance

Jobs/Housing Balance is the concept that VMT can be greatly reduced if the quantity and quality of housing in an area matches the employment opportunities in that area. The reduction is a result of reducing the required distance traveled between an individual's residence and workplace. Jobs/ Housing Balance has also been correlated to higher TDM program adoption rates, especially carpooling.

Balance is achieved by stimulating either housing or job production in areas that are out of proportion. Strategies that encourage housing production include economic inducement, infill housing, parking reduction requirements, brownfield redevelopment, transit-oriented development, finance reform, tax credits, mixed use development, and zoning revisions. Strategies that encourage job production include targeted education/ research, community-based job training, venture capital investment, airport investment and promotion, and fiber optic cable.

Mixed Land Use

Mixed Land Use is a zoning strategy in which multiple land uses are intermingled within a zone. Land uses include residential, commercial, entertainment, and institutional uses. This strategy can reduce the distance between homes and workplaces and other destinations, which encourages people to drive shorter distances and possibly switch to either walking or bicycling. Mixed Land Use provides travelers the opportunity to "bundle" trip purposes. For instance, if a business office is adjacent to a grocery store, office workers may go grocery shopping after work, thereby removing the need to make a separate grocery shopping trip on the weekend.

Public Policy/Regulatory

Access Priority/Restriction

Access priority and access restriction are public policy and regulatory strategies that focus on prioritizing transit and other modes of transportation over single-occupancy vehicles. There are several types of access priority and restriction:

- Route deviation: The service has a defined path and schedule, but the vehicle may deviate from the path to pick up or drop off riders. Maximum deviation varies by service and can range from a quarter of a mile to a mile.
- Transit lanes that give priority to transit. These include segregated bus lanes which are fully separated from the main road and reserved for transit and queue jump lanes which enable transit to overtake queuing vehicles at a signal.
- Transit signal priority uses technologies to reduce the time at traffic signals for transit vehicles.
- Car-free streets or car-free zones limit personal vehicle access. Some cities in Europe have banned cars in city centers.

Trip Reduction Ordinance

A Trip Reduction Ordinance is a requirement adopted by a state, region, or city to manage congestion and reduce vehicle miles traveled by promoting alternatives to single-occupancy vehicles. Most of these ordinances date back to the 1990s when the US Congress passed the Clean Air Act, endorsing trip reduction ordinances to increase non-automobile travel. Trip reduction ordinances include programs that require developers to reduce the drive-alone rate for their developments as well as state or city mandated employer-based programs to reduce the drive-alone rate among commuters.

A common form of trip reduction ordinance is an employer-based trip reduction program. These programs are implemented by employers to reduce single- occupancy employee commuting trips. The employer program can include any of a variety of TDM measures including employer- subsidized transit passes, company-run vanpool services, or employer-run shuttle service to transit stations. 250 employees are often the minimum number of employees needed to participate in the program.

Pricing

Gas Tax Increase

Gas taxes or fuel taxes are a pricing strategy commonly used to fund highway and roadway facility maintenance. All US states and the US federal government have a gas tax. In North Carolina, the gas tax varies with state population and energy prices. Some states allow local governments to levy additional fuel taxes. Many states are now revising the definition of fuel to include non-gas alternative fuels.

Parking Pricing

Parking pricing refers to charging a fee to park in public (municipal) lots and curbside spaces and private lots. Types of parking pricing strategies that could potentially reduce

VMT include:

- Price on-street parking. This could encourage people to use alternative modes of transportation.
- Price parking so that it is equal to or greater than the cost of transit to encourage transit use.
- Have a local parking pricing plan that charges similar fees for parking at a given time. This can be applied on a static basis or can be demand- responsive, charging based on the demand. The goal of demand responsive parking pricing is to charge a price that is low enough that the driver will decide to park there without further “circling” for cheaper spots, but also high enough that customers are likely to leave quickly, allowing their space to be occupied by another vehicle. A parking pricing strategy for employers would be to charge employees for parking in the employer owned lots.

Road Pricing and Cordon Pricing

Road Pricing means that vehicles are charged a fee to use a roadway. Traditional road pricing includes toll roads and other toll facilities such as toll bridges and tunnels. Congestion Pricing, sometimes referred to as Value Pricing, is a subset of Road Pricing and levies differential tolls depending on the time of day such that fees for use are higher during congested periods. Congestion Pricing can be applied on traditional toll facilities as well as in Express Lanes, which are tolled lanes adjacent to free lanes. Some Express Lane facilities allow high occupancy vehicles over a certain occupancy requirement to travel for a reduced rate or for free, thereby encouraging ride sharing. In Cordon Pricing, a toll is paid by a vehicle to enter an “area” such as a downtown.

VMT Fee or Tax

Vehicle Mileage Traveled (VMT) fees are levied based upon the average mileage that a vehicle is driven in a set period (year) and are envisioned as a replacement for gas taxes. Gas taxes, which tax the user on a per gallon basis, have been the main source of income for the nation’s transportation funding. Unfortunately, officials have been reluctant to increase the gas tax, and because fuel efficiency and alternative fuel vehicle use have increased and because fuel costs have also not increased at the rate of inflation, receipts have not increased with inflation. VMT fees or taxes are more equitable, as users pay directly for the miles they travel and those that have more gas dependent vehicles are not disproportionately shouldering the burden. Depending on the rate of the fee levied, VMT fees or taxes could result in fewer miles driven, reducing overall VMT.

Application-Based

Mobility as A Service

Mobility as a Service (MaaS) is the combination of most (if not all) transportation modal options into one application (app). The objective of MaaS is to provide community members with a central app that they can use for all trip planning in a region, with the app providing intermodal trip options for customers’ trips from their initial origin to their destination. The apps may have inputs for the customer trip characteristics, such as whether they are traveling with heavy equipment or if they are using a wheelchair. Some MaaS apps may offer subscription packages, in which payment to the MaaS app could include transit fares, bikeshare costs, and a credit with Transportation Network Companies (TNCs) such as Uber or Lyft.

Ride-Matching Applications

Mobile ride-matching (or ridesharing) applications help travelers find other travel partners for trips. These applications may focus on matching carpoolers for recurring commuter trips, however, most app-based ride matching focuses on dynamic carpooling allowing users to arrange ad-hoc rides on demand or on very short notice. In North Carolina the statewide site is called Share the Ride NC (STRNC). These travelers may include customers of a Transportation Network Company (TNC) for single events (or trips), or intercity travelers with private cars making the same trip. These ride matching applications consider their customers’ origin, destination, and schedule to determine what potential carpools or drivers are compatible with them.

Support

Compact Development/Clustering

Compact development is recognized as dense development; residential areas with high ratios of residents per area and employment areas that have high ratios of jobs over an area. Clustering is defined as locating related activities close to one another. Concentrated residential and employment areas can provide density needed for successful transit services and ridesharing to occur between the two. Clustering necessary services (schools, groceries, municipal services) near or within residential areas or employment centers can promote trip chaining and non-motorized trip making (walking).

Facility Amenities

Facility amenities include a wide variety of services that support alternative modes like walking, biking, and transit. They can include long and short-term bike parking, bicycle storage, bicycle maintenance facilities (tire pumps and light tools), electric recharging, changing and restrooms with shower facilities, pedestrian shade/cooling stations, transit

stop shuttles, or satellite parking with shuttle service. Amenities are usually most appropriately located at trip-end or trip-start points. These locations include apartment complexes, office buildings, consumer businesses, banks, schools, etc. These amenities are usually provided as an incentive to attract residents, patrons, students, or employees.

Guaranteed Ride Home

For those who typically use alternative transportation modes (carpooling, transit, bicycling), Guaranteed Ride Home programs reimburse preregistered commuters for taxi or Transportation Network Company (TNC) service fares when emergencies arise. One obstacle to using alternative transportation modes is that the modes are generally less flexible than driving to work alone; carpooling requires all members to depart at the same time, public transit may be unavailable outside of peak hours, and bicycling may be unsafe or prohibited in some areas after sunset. If commuters knew that they could take a taxi or a TNC vehicle at no extra expense should an emergency occur, they would be more likely to utilize alternative transportation modes.

Typically, participants must be pre-registered to take part in a Guaranteed Ride program. They must take an alternative form of transportation to work and must have an emergency to utilize the program. Depending on the program, qualifying emergencies include:

- Injury, illness, or crisis for the program participant or family member;
- Supervisor requests that the participant works overtime; and
- The driver of the participant's carpool has an emergency.

Incentive Programs

Incentive programs provide an additional monetary, convenience, or intangible incentive to individuals who adopt certain TDM measures or behaviors. Generally, incentive programs provide an extra "push" to increase adoption rates of implemented TDM measures. Alternatively, incentives can be provided for individuals who reduce their personal VMT, regardless of how they achieved that goal. Successful incentive programs usually incorporate elements of "gamification", competition, or social recognition.

Cash incentives could be in the form of micro-payments, scheduled lottery-style drawings, or instant "scratch-off" style winnings. Other monetary incentives could include gift cards, vouchers, or high value coupons, which are usually for local businesses. Monetary incentives are usually earned by either gaining "entries" to win or exchanging "points" that are accrued over time. An example would be gaining an entry for a \$100 weekly lottery for every mile logged biking with an app, or alternatively gaining one "point" for every biking mile logged and exchanging 100 points for a \$10 gift card to a local bike shop. Successful monetary incentive programs partner with private businesses and

organizations to carry the financial cost of incentives.

Parking Management

Parking Management strategies are policies and programs that produce more efficient use of parking resources. Parking management strategies can reduce development costs, increase affordability, encourage multi-modal planning, encourage use of alternative modes, and reduce VMT. Common parking management strategies include:

- **Shared Parking:** a parking facility serves multiple users and destinations. This is most successful if different destinations have different peak periods. Some examples are shared parking rather than reserved spaces, shared parking among destinations, public parking facilities, and in lieu fees. Reducing available parking inherently promotes less vehicle use/increased use of alternative travel modes.
- **Remote Parking:** Remote or satellite parking is the use of off-site parking facilities. This can be shared parking or park and ride lots. Employers or destinations need to provide incentives to encourage motorists to use distant facilities.
- **Unbundled Parking:** Parking is rented or sold separately from residential or office space. This is a popular policy in transit-oriented developments.

Public Education and Promotion

Public education and promotion strategies focus on promoting and educating the public on TDM measures and non-vehicular modes of travel. Effective public education and promotion requires delivering different messages to different people, with an emphasis on people who are most likely to change their behavior. Public education and promotion campaigns should emphasize benefits to participants. Partnerships with other institutions, municipal agencies and private companies can be beneficial to these marketing programs. A report from the Victoria Transport Policy Institute found that consumer surveys indicated that around 25-50% of drivers would consider using travel alternatives and are interested in learning about them.

Ride-Matching Services

Ride-matching services help potential carpoolers or vanpoolers find other travel partners for regularly scheduled, routine trips. It is a common part of commuter trip reduction programs. It often accompanies a rideshare program. Ride-matching services are more effective over larger areas, and these are more effective if there is one regional ride-matching program. Small ride-matching programs may use ride notice boards or match potential partners by hand. Larger programs may use computerized matching systems that match travelers based on origin, destination, and schedule.

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Ride-matching is common for commuter trips but can be used for recurring recreational trips, trips to medical appointments, or trips to and from school.

Transit Fare Subsidies

Transit fare subsidies are funds used to directly offset the individual cost for riders to take transit and can come in many forms. Discounts can be offered to low-income households, individuals with disabilities, youth, or seniors to improve mobility. Providing discounts to these groups to make transit their most affordable option also helps transit systems maintain a viable level of ridership. Discounts can also be offered to high frequency riders to promote commuting via transit.

A discounted rate can be provided to employers or schools who provide transit passes to their employees or students. This is usually when an employer or school provides an unlimited transit pass to employees or students and then the employer or school pays the transit authority either a greatly reduced per trip fare or an agreed upon lump sum per participating employee or student. These kinds of discounts can incentivize individuals to change their commuting mode and provide a way for employers to attract and maintain employees or property managers to attract and keep tenants.

Vanpool Fare Subsidies

Vanpool fare subsidies are funds that are used to directly offset the individual cost for commuters to participate in a vanpool program. Subsidies can be paid out directly to commuters in the form of a refund or can be paid out to the vanpool organizing agency/company and passed onto the commuter in the form of a discount. Subsidies can also be offered to existing vanpools that are experiencing fluctuation in ridership by monetarily “filling” empty seats while waiting for new members to prevent the vanpool from dissolving. Determining if a vanpool is qualified for a subsidy is usually based on the county of their origin and/or destination.

Subsidizing vanpool fares can help attract the needed riders to achieve these goals. Providing vanpool subsidies can also make vanpooling an affordable option for low-income commuters, with base rates for vanpools being around \$150 per month per rider, though rates vary widely based on distance and number of occupants.