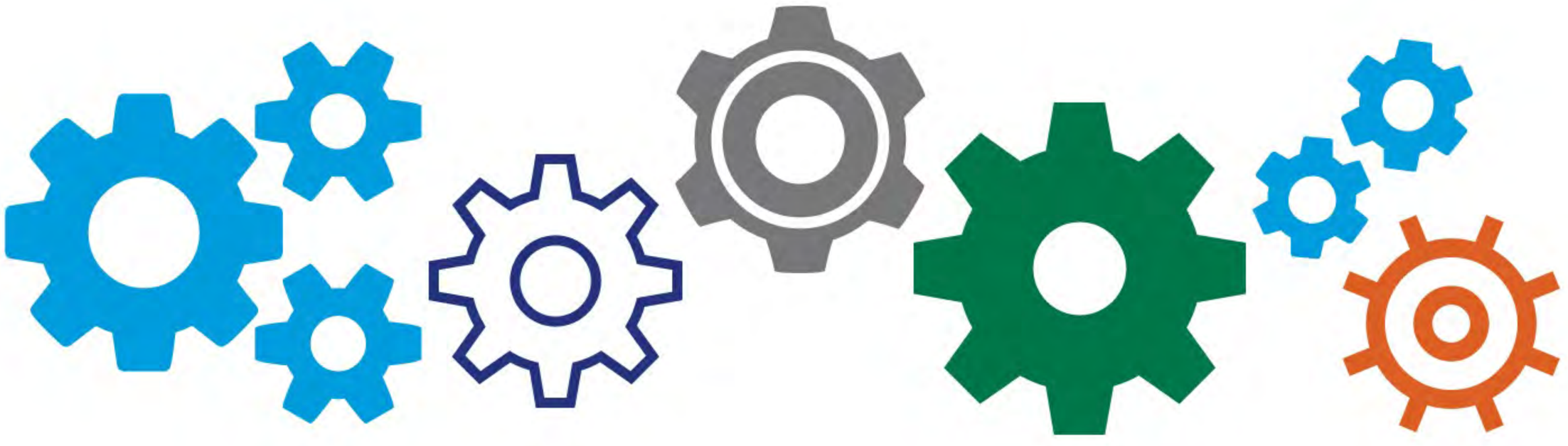
Fiscal Year 2016 Triangle Transportation Demand Management Program Impacts Report

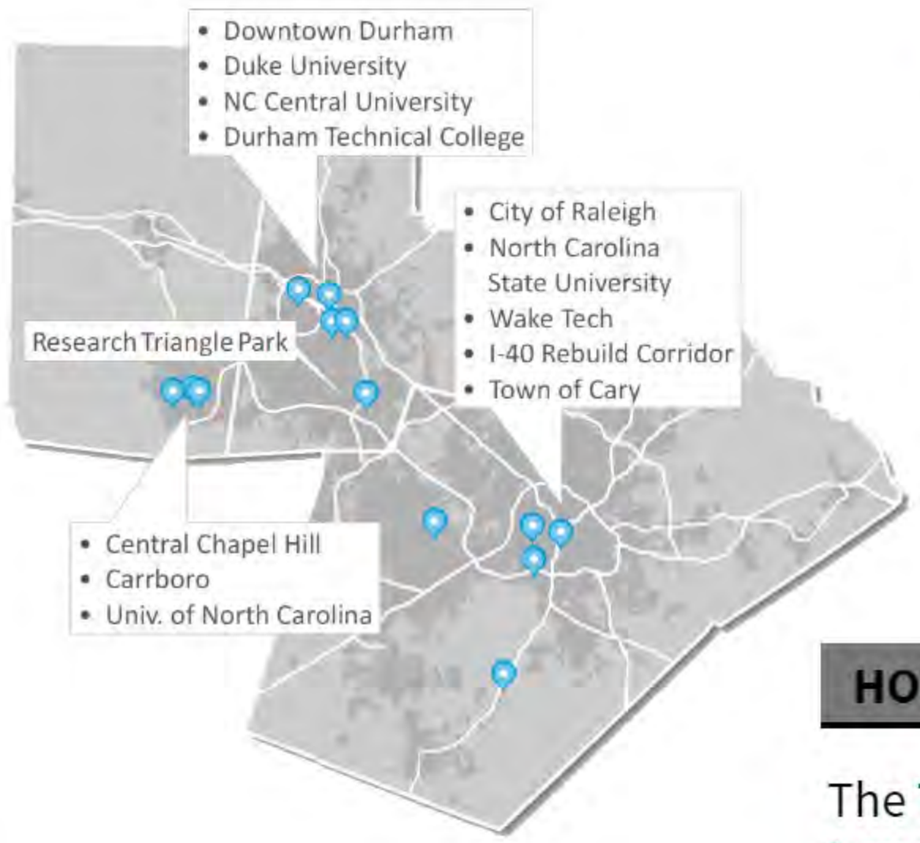
TJCOG.ORG

TABLE OF CONTENTS



Introduction

Program Background and Overview



What is TDM?

Transportation Demand Management (TDM) aims to reduce reliance on single-occupancy vehicles (SOV) for travel, by encouraging options such as carpooling, vanpooling, public transit, biking, walking, teleworking, and flexible work weeks. The Triangle TDM Program Impacts Report calculates the reductions in vehicle trips, vehicle miles traveled, and vehicle emissions resulting from programs funded by the Triangle TDM Grant Program.

STEPS OF TRAVEL BEHAVIOR CHANGE:

1) People become aware of non-SOV modes through TDM marketing efforts, employer outreach, or word of mouth.

2) People experience a shift in attitudes toward non-SOV modes and begin to consider using them.

3) People become increasingly willing to try a new mode

4) People try a new travel mode.

5) People are satisfied with the new travel mode and repeat it.

6) People adopt the new travel mode, establishing lasting changes in their travel patterns.

7) People maintain the behavior over time, even as their personal or professional circumstances change.

HOW IT WORKS:

The **Triangle Regional 7-Year Long Range Travel Demand Management Plan** was adopted in 2007, with the goal of **reducing growth** in regional commuter vehicle miles traveled (VMT) by 25% between 2007 and 2015.

"Hotspots" are areas containing several work clusters (Traffic Analysis Zones with high work-commute trip density), and areas with the best opportunities for TDM services. The TDM program targets these hotspots.

Three (3) organizations provide TDM funding in the region: the North Carolina Department of Transportation and the two Triangle Metropolitan Planning Organizations (MPOs), Capital Area MPO and Durham–Chapel Hill–Carrboro MPO.

Triangle J Council of Governments (TJCOG) was assigned primary responsibility for TDM administration in the region.

An annual, competitive solicitation for TDM projects to receive grant funding is coordinated by TJCOG. The solicitation focuses on supporting regional and local multi-year, sustainable efforts to reduce commuter-related VMT in the Triangle Region

Local Service Providers (LSPs) are the managers of each hotspot, typically being a local government or university. They document the progress of their programs, recent accomplishments, and help administer a biennial survey to employers, all which informs the data in this report.

Introduction

Program Background and Overview

WHY IS TDM IMPORTANT?

Rapid growth in the region has lead to both increased urbanization and sprawl. The historically automobile-centric infrastructure of the region is not equipped to handle the increased traffic and parking demand this has caused.

Driving alone is the most commonly used mode choice for commuters in the US. Most users assume it is the easiest or only option, without realizing that there are many other possibilities available that could save them time, money, and frustration.

Continued growth in the region will only cause additional congestion and delays. By 2040, much of the region is predicted to become extremely difficult to traverse by car. If the right steps are taken, however, these effects can be mitigated.

Air quality and climate change impacts are directly related to the number of vehicles on the road, and how long they are active. Reducing the number of vehicles and delay times can improve the health of a community both in the short and long term.

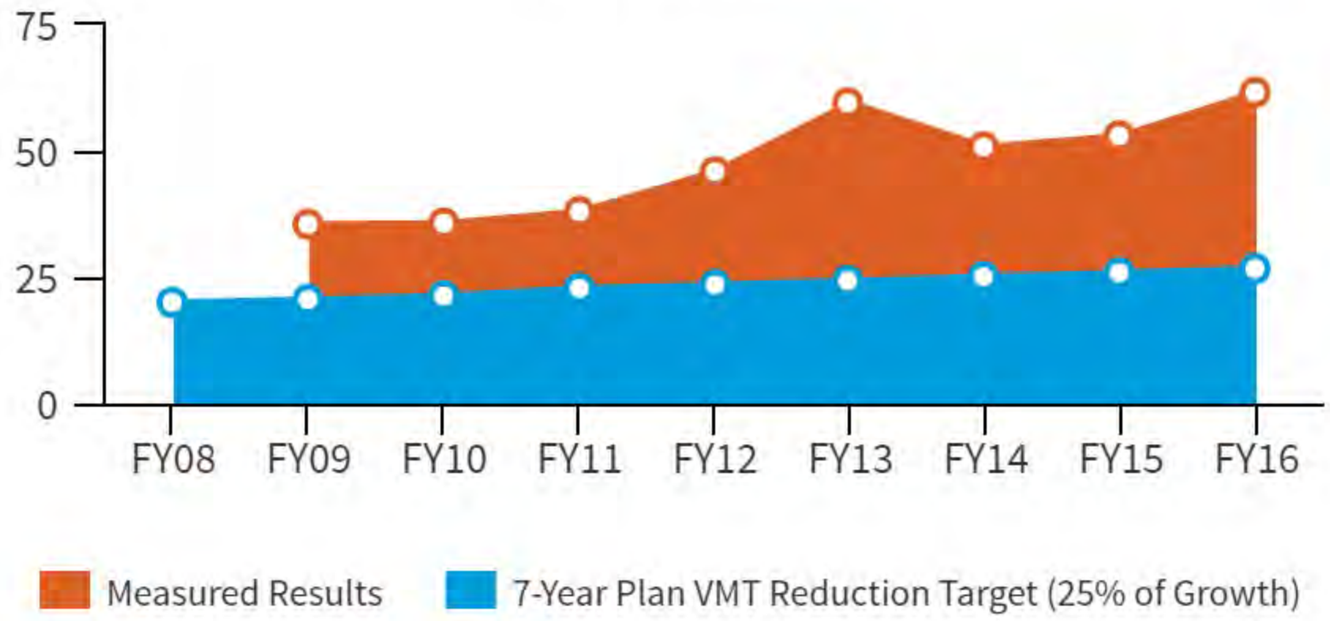
Unseen costs of driving alone far exceed the costs that most drivers consider. Along with the cost of a car, repair, and fuel, the following also need to be considered when making the choice to drive alone:

- Traffic service costs
- Road construction costs
- Road repair costs
- Vehicle accident costs
- Parking costs
- Environmental damage costs
- Health costs

AIMING FOR REDUCTION:

In the Triangle Regional 7-Year Long Range Travel Demand Management Plan, a goal of 25% reduction in growth of vehicle miles traveled (VMT) was set for 2015. Through the use of TDM programs and collaboration with local service providers (LSPs), that goal was met or exceeded each year, and continues to outpace the 25% target in 2016. The chart below illustrates the growth reduction from Fiscal Year 2008 through Fiscal Year 2016.

Annual VMT Reduction FY08-FY16
(in millions)



PERFORMANCE MEASURES

IMPACTS OF 2016

Program Impacts

Estimating the true impacts of the many different TDM-funded services can be a challenge. To better understand these impacts in everyday terms, the results are conveyed as **vehicle trips**, **miles traveled**, **emissions reduced**, and **energy savings**. These estimates are an average of the overall travel changes within the system, and the changes that users reported were directly related to services provided by the TDM program.

NOTABLE ACCOMPLISHMENTS

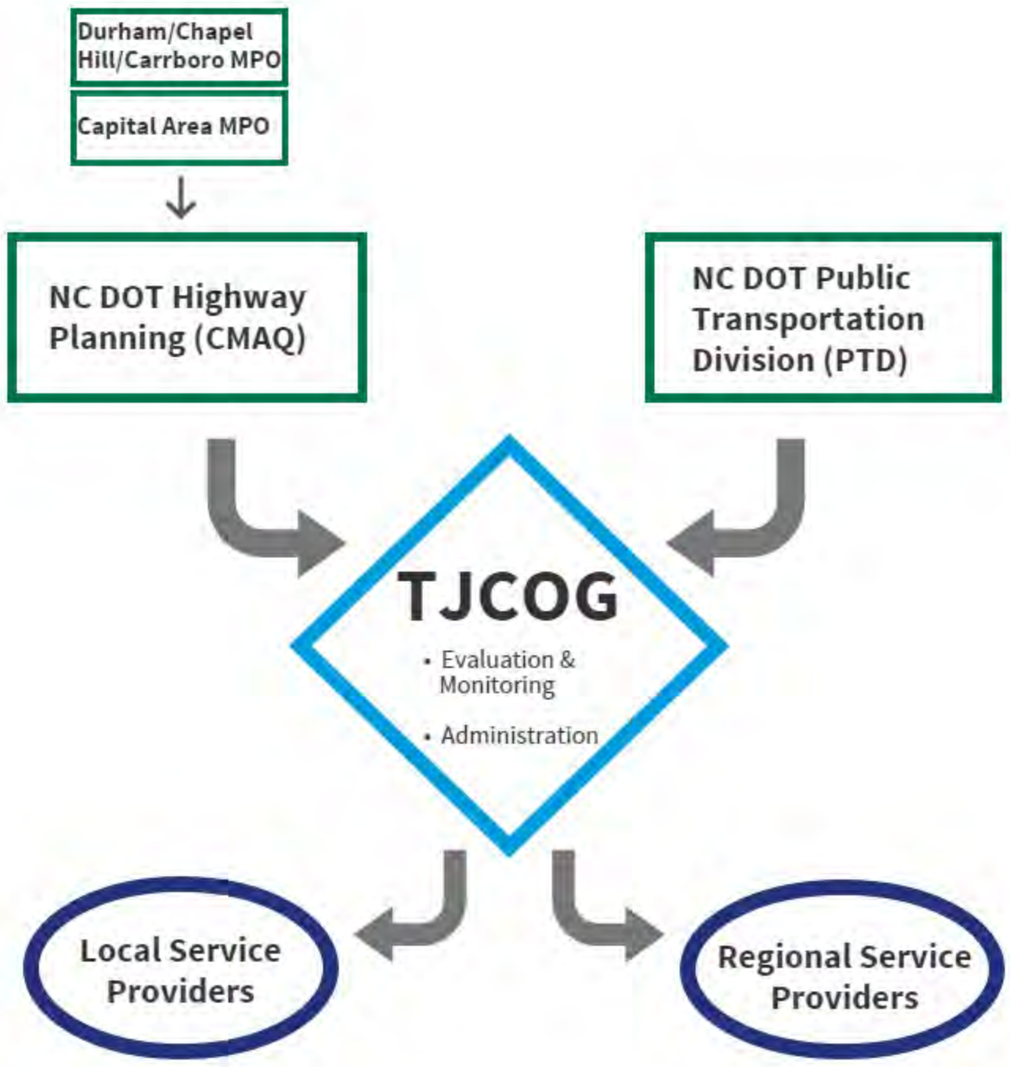
4.6 million vehicle trips avoided	That's equivalent to **over 5,500 people** not driving a car for the entire year in 2016
2.6 million gallons of gas saved	It would take almost **4 Olympic swimming pools** to hold that much gas
61 million commute miles reduced	That's roughly **129 trips to the moon** and back
31,921 alternative transportation users supported	If all those users drove single-file, the traffic jam would stretch **89 miles**
28 million pounds of Carbon dioxide (CO_2) release prevented	To sequester that much carbon naturally would require **583,333 trees**

Program Partners and Funding

Roles and Responsibilities

OVERSIGHT COMMITTEE

The **Triangle TDM Program Oversight Committee** is made up of representatives from the three ongoing program funders (NCDOT, CAMPO, and DCHC MPO) as well as the NC Department of Environmental Quality's Division of Air Quality and Triangle J Council of Governments (TJCOG) in an advisory capacity. The Oversight Committee reviews proposals and funding requests, provides comments as appropriate, and approves the budget for the program. The Oversight Committee also provides strategic direction for the program, establishing program priorities and coordinating the program with other transportation initiatives in the region.



NC DOT	MPOs
The **NC Department of Transportation (NCDOT)** provides the overall policy framework for TDM in North Carolina and provides state funding and fiscal oversight for regional TDM programs and individual Transportation Management Associations. NCDOT's involvement is guided by the Statewide Transportation Demand Management Plan (April 2004) and administered by the Public Transportation Division. NCDOT also provides funding for the statewide ridematching program software (managed by GoTriangle) as well as other TDM programs, projects (e.g., Fortify), and studies. NCDOT has contributed funding to the Triangle TDM program since 2007.	The two Triangle MPOs, **Capital Area Metropolitan Planning Organization (CAMPO)** and **Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO)**, provide federal Congestion Mitigation and Air Quality (CMAQ) Improvement Program funding for the Triangle TDM Program. The MPOs serve as the coordinating agencies between local governments, NCDOT, and FHWA. The MPOs are responsible for carrying out an annual work program, a portion of which includes updating Metropolitan Transportation Improvement Programs (a seven-year project programming schedule) and the Long-Range Transportation Plan (a minimum twenty-year forecast of projects and programs). The Triangle Transportation Demand Management has been a part of the Transportation Improvement Programs since 2008.

Program Partners and Funding

Roles and Responsibilities

TDM PROGRAM ADMINISTRATOR

Triangle J Council of Governments (TJCOG) serves as the administrator of the Triangle TDM Program that links state policy and funding with local and regional service providers. As such, TJCOG is primarily responsible for the Program Administration Performance Area in the 7-Year TDM Plan. Administration includes ensuring TDM programs are consistent with the 7 Year TDM Plan, providing overall management and dispersal of TDM funds as approved by the Triangle TDM Oversight Committee, and coordinating evaluation and monitoring activities for the Program (surveys, annual reports, etc.). In this role, TJCOG coordinates contracts, provides administrative support for the Oversight Committee, liaises among the Oversight Committee and Service Providers, answers budget questions, and attends monthly GoPartner meetings to help coordinate local and regional programs.

REGIONAL SERVICE PROVIDER	LOCAL SERVICE PROVIDERS
GoTriangle implements and coordinates regional TDM services and is the lead agency on all regional marketing and outreach initiatives. GoTriangle also functions as a Local Service Provider in Durham County and parts of Wake County.	**Local Service Providers (LSPs)** are primarily responsible for developing and implementing campaigns that market TDM services and provide outreach in their specific hotspots. LSPs are expected to be local experts who can address needs and craft campaigns to increase TDM participation. LSPs are encouraged to collaborate with one another and create appropriate partnerships to continually improve the marketing and use of TDM services within their hotspots. In addition to promoting TDM services locally, Local Service Providers also attend GoPartner regional meetings, support regional outreach efforts, and actively support regional initiatives. LSPs also have responsibilities for monitoring and reporting on their activities.

GOTRIANGLE

GO SMART : REGIONAL SERVICE PROVIDER

GoTriangle acts as both the Regional Service Provider and a Local Service Provider to two hotspots. GoTriangle's regional transportation services include buses, shuttles, and vanpools. GoTriangle also administers ShareTheRideNC, the statewide rideshare matching software that includes tracking and incentive options in the Triangle. Additionally, with the support of local transit agencies, GoTriangle provides the 485-RIDE transit information call center for customer questions. Regional programming promotes other alternative commute modes such as biking, walking, teleworking and carpooling. **GoSmart is the regional TDM brand.**

The TDM grant-funded services GoTriangle coordinates that are available or promoted locally include:

- **Vanpool service** divides your commuting cost between 7 to 15 other commuters who live and work near you. The vehicle, insurance, and maintenance are provided by GoTriangle and riders simply pay a low monthly fare.
- **GoPass** is a regional discounted transit pass that allows employees or students to ride for free when employers, universities or property managers cover the cost of ridership.
- Regional marketing campaigns such as **Think Transit Week**, **Telework Week**, **Bike Month**, and more.
- **Bicycle use and safety trainings** provided by Licensed Certified Instructors of the League of American Bicyclists.
- **ShareTheRide NC (STRNC)** is a rideshare database that matches commuters interested in carpooling or vanpooling together. Users can request matches for single trips and track their commutes using the Commute Calendar (which also estimates savings in commuting costs and emissions). Cyclists can also search for other bike commuters with a similar skill level or for mentors.
- **GoPerks incentive program,** hosted by STRNC, provides incentives to start a smart commute or for loyal smart commuters to track trips with the opportunity to earn points. Points can be redeemed as entries in monthly prize drawings.
- **Emergency Ride Home (ERH)** provides a voucher for a taxi cab or rental car in the event of an emergency to STRNC registrants who use smart commute modes.
- **GoLive Transit Real-Time Predictions System** allows users to access real-time bus route information through the *live.gotriangle.org* mobile website, the GoLive TransLoc App, or the GoLive text messaging system.

NOTABLE ACCOMPLISHMENTS

24,000 NEW commuters began smart commuting in 2014 with the assistance of GoSmart programming – that's 6,000 MORE people than the entire town of Clayton.

2015 **Governor's Proclamation** of Commuter Awareness Week

Since the launch of GoPerks in 2015, **9,149 carpool trips** have been recorded.

GoTriangle was awarded the **City of Raleigh Sustainability Award** for a Regional Program in 2016.

GO Triangle

GoSmart

GOTRIANGLE

LOCAL SERVICE PROVIDER

As a Local Service Provider, GoTriangle conducts TDM outreach in Durham County and portions of Wake County; specifically, the North Raleigh/I-440 Corridor, areas impacted by the I-40/440 road reconstruction project (Fortify) and some major employment areas not covered by another Local Service Provider.

Central Durham Hot Spot: Particular attention is given to congestion levels and associated air quality due to employment growing rapidly in Durham County. Durham employers contribute by committing to sustainable commuter benefits for employees. They have hosted multiple programs promoting transit ridership and other mobility options that reduce parking demand. Durham's voluntary commute trip reduction program and dedicated outreach has made them successful with TDM.

Wake County Hot Spot: With the population in Wake County topping a million in 2014 and continuing that growth throughout 2016, congestion and the demand on current resources has been a big focus. Road construction on I-440, known as the Fortify Project, has compounded traffic congestion concerns. The Wake County TDM program services all municipalities within Wake County. The focus has been on reducing vehicle miles traveled (VMT) through employer commuter benefits programming and outreach due to the Fortify Construction project. Along with the efforts put forth to educate residents about the Fortify project, greater working relationships with the employers in North Hills and Perimeter Park, SAS, Rex Healthcare and other business centers have grown to work toward achievement of reduced SOV rates in Wake County.

NOTABLE ACCOMPLISHMENTS

In 2015, **GoPass Agreements** with Durham Tech, NC Central University, and the American Tobacco Campus made transit ridership available for all tenants.

Both the City of Durham and the American Tobacco Campus received **Best Workplaces for Commuters** designations in 2015.

The 2015 **Association for Commuter Transportation (ACT) Best Marketing Campaign** (under $5000 - local government) award was given to GoTriangle for the American Tobacco Parklets, promoting sustainable transportation options and reuse of parking for greenspace.

Durham & Wake County won multiple awards at the annual Golden Modes commuter awards program in 2015 including:

- **Multi-mode Innovator:** Rana Dayal, Extreme Networks in Morrisville, NC
- **Employee Transportation Coordinator Honors:** Peter Tillman, Durham VA Medical Center
- **Community Impact:** East Coast Greenway Alliance

TRIANGLE J COUNCIL OF GOVERNMENTS

BEST WORKPLACE FOR COMMUTERS

Triangle J Council of Governments manages the Triangle Best Workplaces for Commuters program developed by the U.S. Environmental Protection Agency (EPA). Best Workplaces for Commuters is an innovative membership program which provides qualified employers with national recognition and an elite designation for offering outstanding commuter benefits, such as a free or low cost bus pass, vanpool fares and strong telework programs. Best Workplaces for Commuters improves the way people get to and from work by recognizing forward thinking employers and celebrating their commitment to providing mobility options for their employees while improving our region and environment. The program provides public recognition and promotion of exemplary workplaces, as well as technical assistance, training, web-based tools, and forums for information exchange.

NOTABLE ACCOMPLISHMENTS

BWC has **29 participating organizations** in the Triangle region. **5 new organizations joined in 2016:** FHI360, NC Department of Environmental Quality, Wake Technical Community College, Durham VA Hospital, and Citrix.

Continuing its successes, the program now serves approximately **100,000 employees** at designated BWC locations in the Triangle region.

In 2016, Triangle J received National Recognition in the form of a **Gold Level Designation** in the BWC Race to Excellence.

BEST Workplaces for Commuters℠ Triangle Region

The following activities and events are just a few of many that Triangle J and BWC participated in during 2016:

- Attended **ACT Policy Summit** from April 12 – 14 in Washington DC to learn best practices, convene with TDM partners nationally, and learn how to augment and expand existing programming.

- Panelist for **TDM Break-out** session at State Energy Conference on April 20th, discussing general programs and resources on state-wide level.

- Participated in **Capital City Bike Ride** in Raleigh, aimed at increasing public official's cognizance of TDM programming in region.

- Participated in **DOT Webinar Town Hall** Meeting with Anthony Foxx on the future of transportation on May 11th, 2016.

- Attended **Raleigh Chamber Event, State of the City and County**, with discussion on transit connectivity and investments from Mayor and City Manager in June 2016.

CITY OF RALEIGH

COMMUTESMART RALEIGH

The CommuteSmart Raleigh program aims to reduce the use of single occupancy vehicles (SOV) through strategies and policies that promote travel behavior change. Strategies can include, but are not limited to, biking, walking, car/vanpooling, transit, flexible hours and teleworking.

This program is housed in the City's Transportation Division, which also includes GoRaleigh. The program also works closely with the the City's Bicycle and Pedestrian Coordinator, as well as the Bicycle and Pedestrian Outreach Coordinator.

The CommuteSmart Raleigh program enables two TDM Coordinators, working as a team, to oversee the project and serve as the points of contact for two City sectors: Downtown Raleigh and Inside the Beltline, and to regional partners.

NOTABLE ACCOMPLISHMENTS

The City of Raleigh has been designated as a **Best Workplace for Commuters** for **10 years.**

14 new employers joined the City of Raleigh's Transportation Demand Management network in 2016 alone, a **23% increase** from 2015.

CommuteSmart Raleigh has received numerous awards since 2013, including the **Hermes Creative Award** and **SEACT Outstanding Marketing Campaign Award.**

As of 2016, the City of Raleigh had **over 100 active vanpoolers** participating in their program, riding in 11 vanpools that are operated in association with GoTriangle.

DUKE UNIVERSITY

UNPARK YOURSELF

Duke University's Unpark Yourself program offers TDM services to more than 35,000 employees and nearly 15,000 students on the main campus as well as worksite locations between Duke and downtown Durham. TDM services such as vanpool, carpool, Enterprise CarShare, Zagster bikeshare, and transit options are offered through the Parking & Transportation Services department. Two and three-person carpools are discounted, while four or more people receive free, convenient parking. All registered alternative commuters receive occasional parking as needed, and registered bicycle commuters are automatically enrolled in the national Bicycle Benefits program.

Duke offers the GoPass free-of-charge to students and at a low cost of $25 per year to employees for access to unlimited rides on regional and local transit systems. In addition, Duke Transit operates 10 fixed daytime transit routes as well as after-hours transport services within the Duke Vans coverage boundary when transit is not in service. The Bull City Connector is a fare-free bus available to students, staff and faculty living near Duke's campus.

The Unpark Yourself program promotes all of these campus benefits, ShareTheRideNC, and more through regular outreach at new employee orientations, partnerships with a variety of Duke departments, and participation in numerous campus events each year.

NOTABLE ACCOMPLISHMENTS

2015 SEACT Chapter Award Winner for Outstanding Marketing Campaign: Unpark Yourself Challenge. 2,000 commuters participated in smart commuting and TDM awareness activities.

2015 Winner of the Employer Commute Champion for the region's annual commuter awards. This award recognizes employers that offers top-tier commuter benefits and facilities.

The **Zagster Bike Share program** at Duke has been enormously successful, with nearly **900** bike-share members enrolled. During the past year, over **6,500** hourly or daily bike-share rentals have been recorded. This helps support **1,020** daily student and employee bicycle commuters.

Since 2011, Duke University has maintained a **Best Workplaces for Commuters (BWC)** Membership

NORTH CAROLINA STATE UNIVERSITY

WOLFTRAILS

NCSU's WolfTrails program assists students, faculty and staff in accessing transportation services such as carpooling, employee vanpooling, bicycling, walking and transit. Full-time students and employees participating in the carpool program receive access to premium decks and lots, a discounted parking permit, and free occasional parking passes. Students and employees enrolled in the transit/bike/walk commuter incentive program receive two free parking passes per month. Employees who reside more than 20 miles from campus are eligible to join the vanpool program. Vanpool participants receive a $20 monthly subsidy, free van parking and free occasional parking passes. Employees enrolled in WolfTrails receive access to emergency ride home (ERH) services.

NC State offers the GoPass program to all students, faculty, staff and Centennial Campus affiliates. GoPasses are free for students and $60 for employees and can be used on all GoRaleigh and GoTriangle buses. In addition, the WolfLine is the university's transit system that operates 10 daytime routes and 4 evening routes. Other services available include Share the Ride NC (the regional ridematching service), Zipcar (a carsharing service) and WolfWheels (a bike-rental program).

NOTABLE ACCOMPLISHMENTS

The GoPass program at NC State saw passes distributed to **6,604 students** and **647 employees** in 2016. This resulted in **over 225,000 trips** on GoRaleigh buses during the year. Similarly, the WolfLine bus system saw an average daily ridership of **664 users**.

Over **500 students and employees** participated in the carpooling program in 2016.

Biking and walking **increased by 21%** for students and employees.

In 2015, NC State University achieved the following **awards and recognitions**:

- Best Workplace for Commuters (10 years)
- Bicycle Friendly University, Bronze Level
- AASHE STARS, Gold Rating for Campus Sustainability

NC STATE UNIVERSITY

WOLFTRAILS

RTP FOUNDATION

SMARTCOMMUTE@RTP

Established in 1999, SmartCommute@rtp is the transportation management association (TMA) for the Research Triangle Park. There are currently 200 member companies in the SmartCommute@rtp program, 29 of which have an internal Employee Transportation Coordinator (ETC) who promote TDM initiatives. Membership is automatic for companies within RTP's boundaries. There are more than 39,000 full-time and 9,000 contract workers in Research Triangle Park.

SmartCommute@rtp promotes employee vanpools, telework, transit, Emergency Ride Home (ERH), carpools, and bicycle facilities. New transit and vanpool commuters are eligible to apply for one free $25 stored-value bus pass and a 30-day vanpool subsidy. Many RTP companies also have strong telework and compressed workweek policies and internal benefits to employees that choose alternative transportation for their commute. SmartCommute@rtp also provides member employers with air quality resources and materials to keep employees informed of local air quality updates.

NOTABLE ACCOMPLISHMENTS

All 200 employers in the Research Triangle Park are now members of the SmartCommute program as of 2016. This means that the nearly **50,000 RTP employees** they represent are also engaged.

In 2015, SmartCommute attained a **Best Workplaces for Commuters (BWC)** membership.

With an impressively strong social media presence, SmartCommute is able to reach **25,000 followers** for @TheRTP on Twitter alone. Their dedicated Facebook page also features **over 1000 followers**.

In 2016, **over 190 vanpoolers** were active within the RTP, utilizing 26 vanpools to accommodate those riders. That's an **average of 7.3 riders per van**.

SmartCommute worked with IBM, GoTriangle and the Executive team at RTF in 2016 to complete a successful grant application to **provide an Uber pilot** in RTP that will replace the shuttle to IBM. The pilot will accomplish two things: it will greatly **reduce GoTriangle's costs (by 66%)** and provide faster **service to the front door of IBM** for transit riders that would usually take the shuttle to work from the Regional Transit Center.

SmartCommute@rtp
The Research Triangle Park

TOWN OF CHAPEL HILL

GO CHAPEL HILL

The Town of Chapel Hill provides coordinated TDM services through the Go Chapel Hill program. Chapel Hill's Transportation Management Plan program is designed to assist building owners in incorporating TDM best practices at their building locations while contributing to reduction in the community's drive-alone rate. Go Chapel Hill offers free membership to its Commute Club, promoting the use of alternative transportation and encourages members to pledge to use alternative commutes.

Chapel Hill, in partnership with the Town of Carrboro, promotes GoTriangle's vanpool program, Emergency Ride Home (ERH), ShareTheRideNC, GoPerks program and other regional services. Chapel Hill Transit provides fare free transit service to the University of North Carolina-Chapel Hill, Carrboro, and Chapel Hill.

Additionally, Chapel Hill and Carrboro are both Bicycle Friendly Communities. Bicycle commuting is increasing in popularity and cycling is encouraged through commuting events such as Annual Bike Night, Bicycle Breakfast, Open Streets Day, Bike on Bus, Lighten Up Cruiser Ride, safety workshops and more.

NOTABLE ACCOMPLISHMENTS

GoChapelHill.org

In 2016, Chapel Hill celebrates the **25th Anniversary** of its Transportation Management Plan program.

Go Chapel Hill has received **numerous awards** over the past two years, including but not limited to:

2016 **National Safer Streets**, Safer People Mayor's Challenge, Go Chapel Hill Representative

2016 **National Best Workplaces for Commuters** Designation

2016 **South Eastern Association for Commuter Transportation Funding Award** for the 2016 Go Chapel Hill Conference

2015 **National Association for Commuter Transportation Award for Outstanding Public Sector Award**

2015 **National Association for Commuter Transportation Award for Marketing & Outreach Public Sector Award** under $5,000

2015 **Bike Friendly Community**—Bronze Level, Town of Chapel Hill and Silver Level, Town of Carrboro

UNIVERSITY OF NORTH CAROLINA CHAPEL HILL

COMMUTER ALTERNATIVE PROGRAM : CAP

UNC-Chapel Hill promotes the use of alternative transportation through the Commuter Alternative Program (CAP). The Program is free to employees of the University and UNC Health Care, and to commuter students living off campus. Alternative modes and services promoted through the University include free bus service through Chapel Hill Transit, numerous regional transit systems, ShareTheRideNC ridematching service, Zipcar carsharing program, carpooling, vanpooling, bicycling and walking.

Commuter subsidies include $20 per month off the fare for GoTriangle and PART vanpools, a free bus pass to ride Chatham Transit's Pittsboro Express (PX), and a free GoPass for CAP members living outside Chapel Hill Transit's service area. The GoPass can be used on GoTriangle and PART regional buses, as well as GoDurham, GoRaleigh, and C-Tran buses. Park & Ride lots are also available in the Chapel Hill/Carrboro area, which allow commuters to shorten their drive-alone distance for a nominal fee.

The services listed above are promoted at various events on campus, the CAP e-newsletter, advertisements, campaigns and welcome packets. CAP helps UNC keep the campus walk-able and bike-able by reducing traffic and the need for parking facilities. CAP also supports UNC's goal to be a sustainable campus and a Best Workplace for Commuters.

NOTABLE ACCOMPLISHMENTS

UNC is a **Best Workplace for Commuters** member, and in 2015 was given **Gold level** recognition in the BWC "Race to Excellence".

A **Bicycle Friendly University (Silver rating)** designation has been awarded to UNC from the League of American Bicyclists.

The Association for the Advancement of Sustainability in Higher Education (AASHE) awarded UNC with a **Gold rating in the Sustainability Tracking, Assessment & Rating System (STARS)** in 2014.

In 2016, UNC CAP continued its transportation successes, as evident in the numbers from FY16:

- Over **1,300 Park & Ride** users
- **340** student and employee carpoolers
- **130** registered CAP Bicyclists
- Over **2,600 GoPasses** distributed to students and employees

UNC TRANSPORTATION & PARKING

WAKE TECHNICAL COMMUNITY COLLEGE

WAKE TECH ZOOM

Wake Technical Community College's ZOOM program (Zeroing Ozone Output Measures) is designed to encourage the use of alternative commute modes such as transit, carpool, bicycling and walking. ZOOM supports Share the Ride NC and works closely with local and regional transit agencies to improve upon and develop alternative transportation initiatives. Employees and students at Wake Tech can ride the GoRaleigh 40X bus free with their Wake Tech ID card, and curriculum students can get a GoPass to ride any other GoRaleigh bus routes for free. Employees can also take advantage of Wake Tech's summer compressed work schedule, which allows them to work longer days but only four days a week.

NOTABLE ACCOMPLISHMENTS

In 2016, Wake Tech was named one of the **Best Workplaces for Commuters** in the Triangle Region.

During the past year, Wake Tech has had multiple transit-related successes, including **free ridership for students** on the GoRaleigh 40X bus. Wake Tech also administered a survey and determined that increased bus service was a priority to many students. Utilizing this information they were able to **double service on the GoRaleigh 40X line**, increasing service from every hour to every 30 minutes. Ridership of this line in 2016 was **over 60,000**.

Wake Tech's Compressed Work Schedule (CWS) program saw an **increase of 100 users** in 2016.

18 "Carpool-Parking Only" signs were added to premiere parking spots at three of Wake Tech's campuses in 2016 to incentivize carpooling.

Appendix 1

Methodology

Approach to Calculating Program Impacts

Figure 1 illustrates the method that LDA Consulting developed to calculate travel and air quality impacts in the Triangle Region. As shown, it consists of a series of calculations, the original bases of which are the populations of interest for individual services. A series of multipliers (derived from surveys of users of the services or similar services) is then applied to account for various real-world complexities. Each service will have a unique set of multipliers that depend on the characteristics of the users and the service, but the basic calculation method is the same for all services. A brief description of the calculation process follows here.

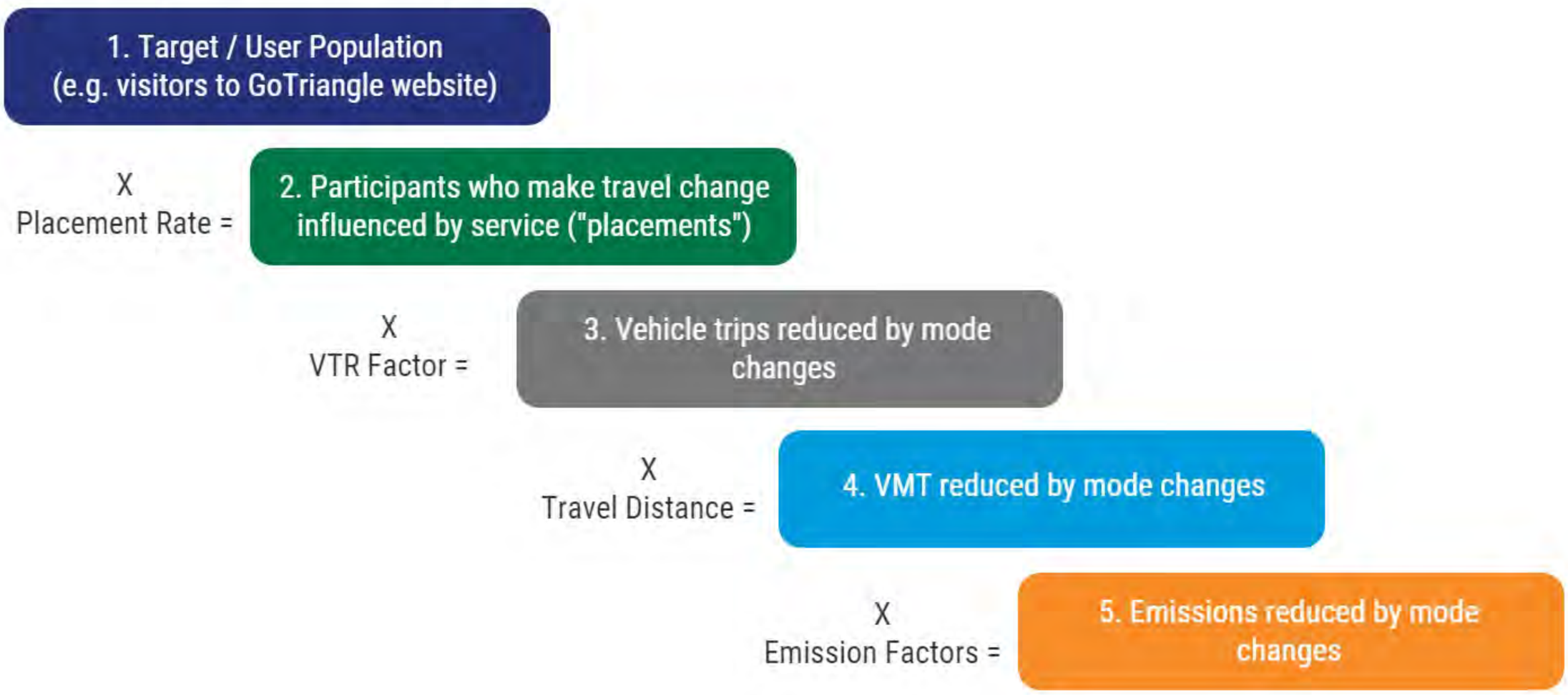
The approach defined in these nine steps was used to calculate the FY16 impacts for the Triangle TDM program. The results of the calculation are presented in Section 3.

1. Define the commuter population "base" for each service

A TDM service is designed to influence or encourage a targeted set of travelers to shift to non-drive alone "alternative" modes. These targeted travelers represent the population base or population of interest for that service. Depending on the service, this could be (for example) all commuters, students, employers, or another targeted group. Population base counts for this evaluation were provided by Triangle TDM Local Service Providers.

The FY16 evaluation assessed benefits accruing from TDM services during Fiscal Year 2016 (July 1, 2015 through June 30, 2016) based on commuters who received or accessed services during this 12-month period. It also includes additional credit to account for continued or "retained" use of alternative modes by commuters who started using a new alternative mode in FY15 after using the service and continued using the new mode in FY16. Specifically, for services in which these continued FY15 service users would not be duplicative of commuters in the FY16 participation base, a percentage of the FY15 participation was counted toward the FY16 participation base.

Figure 1: Impact Calculation Multipliers Series



Appendix 1

Methodology

2. Calculate "placement rate."

Placement rate refers to the percentage of commuters in the population base who are "placed" into an alternative mode after receiving a service. Placement rates are calculated using data from surveying a sample of the population and vary from one service to another since they depend on the characteristics of the service and user population. To collect placement rate data, commuters are asked several questions:

- How do you travel to work now? What modes do you use and how often do you use them?
- Did you make any mode use changes in your travel to work since you received "X" service?
- How did you travel before you made these changes?
- Did the service encourage or assist you to make this change? (to derive an estimate of the influence of the service)

Respondents who made a travel change that was influenced by the service are considered "placements." Two rates are calculated and are distinguished by the length of time the commuter uses the alternative mode after shifting. The "continued rate" represents commuters who made a shift to a new alternative mode and continued using the new mode. The "temporary rate" represents commuters who tried a new alternative mode but shifted back to original mode within the evaluation period. In some cases, the temporary rate could be used to estimate impacts for a program, such as a trial program, that was in effect for only a portion of the year. Delineation between temporary and continued change is necessary because temporary changes provide credits to the program only for the duration of time respondents used the new mode.

3. Estimate the number of new alternative mode placements.

Step 3 estimates the number of new commuter placements in alternative modes. This is the expected number of commuters who started or increased use of alternative modes as a result of the service. It is calculated as:

Total Population base (from Step 1) x Placement rate (from Step 2)

4. Calculate the vehicle trip reduction (VTR) factor for new placements.

Using the same survey data used to calculate placement rate, the VTR factor is calculated as the average daily vehicle trips reduced per placement, taking into account three types of changes:

1) Shifts to an alternative mode, either from driving alone or from another alternative mode
2) Increased use of alternative modes (e.g., riding the bus more days per week)
3) Increase in the number of riders in an existing carpool or vanpool

The VTR factor is calculated by summing the individual weekly vehicle trip change for each commuter placement to obtain a count of the total change in vehicle trips for all placements together, then dividing by the number of commuter placements to estimate the average change in vehicle trips per placement. Note that the calculation can include alternative mode shifts that increase vehicle trips, such as a change from transit to carpool, but commuters who shift from alternative modes to driving alone are not included, since these changes most often result from changes in personal travel needs, such as changing jobs, and are not the intended result of TDM services. In short, the calculation accounts for vehicle trip increases resulting from successful placement of an alternative mode user into a lower-occupancy alternative mode (e.g., bus rider shifts to carpooling), but does not penalize the program if it is unable to keep an existing alternative mode user in an alternative mode. Appendix 4 presents an example of a basic VTR factor calculation.

Appendix 1

Methodology

5. Estimate vehicle trips reduced.

The number of daily vehicle trips reduced for the service is estimated by multiplying the number of commuter placements by the VTR factor:

Total placements (from Step 3) x VTR factor (from Step 4)

6. Estimate vehicle miles traveled (VMT) reduced.

The daily VMT reduced is calculated by multiplying the number of daily vehicle trips reduced (Step 5) by the average commute distance for commuters who made a travel change. The average distance is calculated from the same survey data used to calculate the placement rate and VTR factor or from other service-specific data obtained from Local Service Providers.

Total vehicle trips reduced (from Step 5) x one-way travel distance

7. Adjust vehicle trips and VMT for access mode and trips.

Emissions reductions were calculated by multiplying vehicle trips reduced and VMT reduced by emissions factors; but because commuters who drive alone to meet a carpool, vanpool, or bus create a "cold start," the air quality analysis subtracts these access trips and the VMT driven to the meeting point from the vehicle trip reductions and the VMT reductions. These "adjusted" vehicle trips reduced and VMT reduced, rather than the initial totals, are used as the base for calculation of emissions reduced.

The adjusted VMT reduced also is reported as the total VMT reduction for the program. But because vehicle access trips are typically very short relative to the total commute distance and the vehicle trip is physically removed from the road network for the vast majority of the commute trip, the adjusted vehicle trip count is used only for the emission portion of the analysis; the total vehicle trip reduction is reported as the travel impact of the program.

8. Estimate emissions reduced.

Daily emissions reduced are estimated by multiplying regional emissions factors by the number of VMT reduced to determine the pollutants reduced as result of the program. The emissions factors in the FY16 evaluation were derived from emission data obtained in 2013 from NCDOT-Transportation Planning Branch's Air Quality website (see specific factors in the notes under the table in Appendix 7). The emissions factors account for emissions created from a "cold start" when a vehicle is first started, a "hot soak" that occurs when the vehicle is later turned off, and the emissions generated per mile of travel by an average warmed-up vehicle.

Adjusted VMT reduced (from Step 7) x Running emission factor for individual pollutants

9. Estimate the energy savings.

Energy savings is reported as gallons of gasoline saved and is estimated by multiplying the adjusted VMT reduced by an average fuel consumption factor for the regional mix of light-duty vehicles.

Appendix 1

Methodology

Impact Multiplier Factors

The impact calculation method applied a series of service-specific multiplier factors to more accurately estimate impacts, which are applied during several of the steps described above. Appendix 2 presents key factors (placement rates, VTR factors, travel distances, and drive-alone access percentage) for the services included in the calculation. For example, for the ShareTheRideNC ridematch database, the long-term placement rate for participants into alternative modes is 36%, and the long-term vehicle trip reduction factor is 0.6 trips per day. These figures were derived from a survey of rideshare database registrants.

Whenever possible, the calculation methodology derives multiplier factors from data collected by TJCOG or the Regional or a Local Service Provider. Many Service Providers conducted some follow-up contacts with service users, during which data were collected on service use and mode changes; data from commuter surveys was also used. If original local data were not available to derive a factor directly, the evaluation team sought a proxy or assumed value from another Triangle TDM service that was expected to have similar characteristics and for which a multiplier value was known. If this was not possible, the evaluation team used multiplier values derived for similar programs in other U.S. locations that have conducted program evaluations.

Many of the program's services are used in conjunction with other services. For example, someone might use the GoTriangle website as well as the ShareTheRideNC database. To correct for the overlap and avoid double or triple counting participating commuters, the evaluation team derived discount factors to estimate the share of each service impact that was independent of other services. These discount factors were multiplied by the trip, VMT, and emission impacts calculated for each service individually to reduce individual service impacts appropriately.

The final step in the calculation was to add all the discounted impacts for each program together, to produce the total aggregate impacts for all services combined. These impacts are presented in Table 1 (daily) and Table 2 (annual).

Table 1 – FY16 Triangle TDM Program Daily Impacts

Impact Indicator	All Changes	Average of All & Directly Influenced Changes (Best Estimate)	Directly Influenced Changes
Placements (new alternative mode users)	43,246	31,921	20,597
Daily vehicle trips reduced	24,863	18,607	12,351
Daily VMT reduced	343,439	246,276	149,114
Emissions reduced (daily kilograms)			
– Nitrogen oxides (NOx)	228	164	99
– Volatile organic compounds (VOC)	311	223	135
– Carbon dioxide (greenhouse gas)	156,505	112,228	67,951
Energy savings – daily gallons of gasoline saved	14,430	10,348	6,265

Appendix 1

Methodology

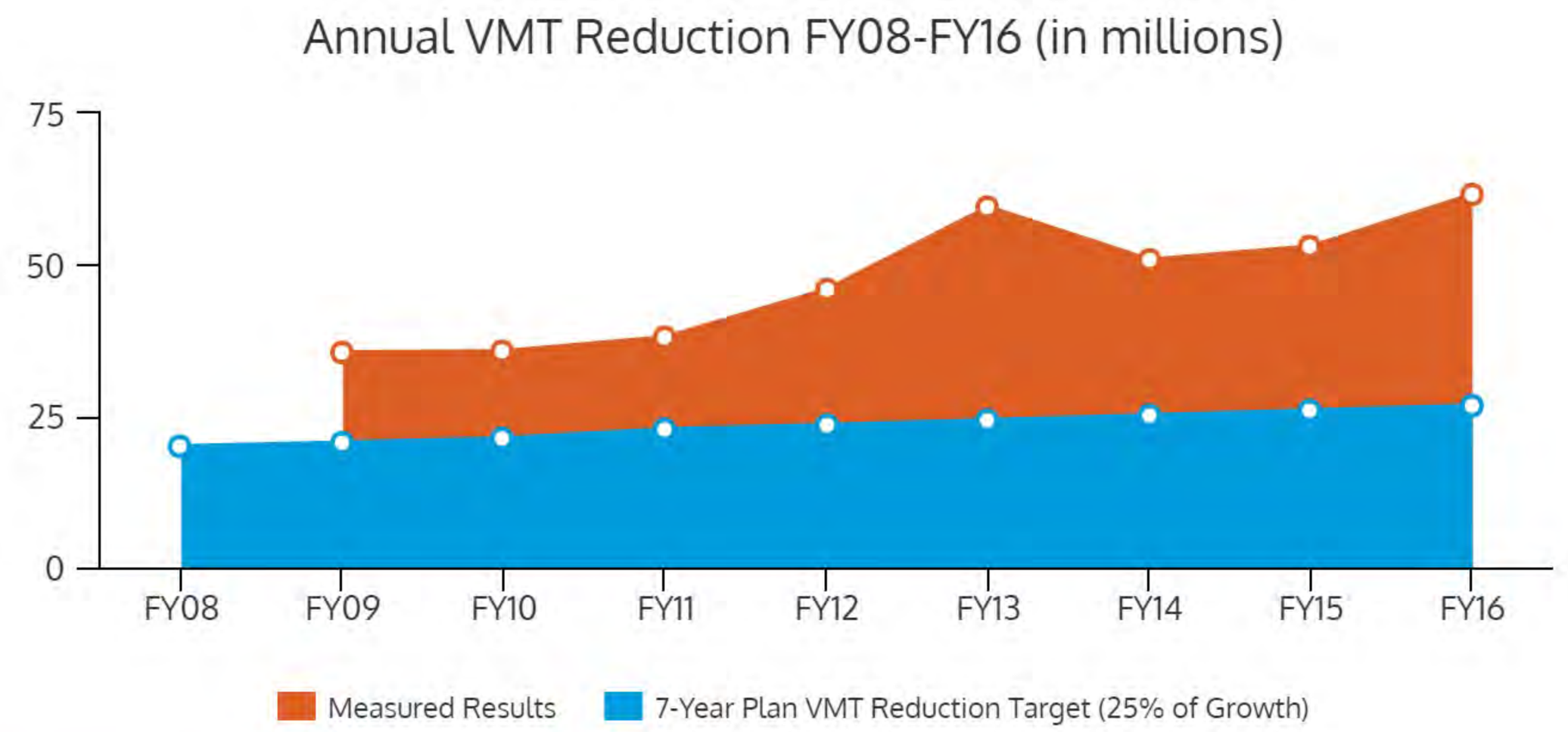
Table 2 – FY16 Triangle TDM Program Total Annual Impacts

Impact Indicator*	All Changes	Average of All & Directly Influenced Changes (Best Estimate)	Directly Influenced Changes
Placements (new alternative mode users)	43,246	31,921	20,597
Daily vehicle trips reduced	6,215,643	4,651,686	3,087,730
Daily VMT reduced	85,859,709	61,569,059	37,278,409
Emissions reduced (daily kilograms)			
– Nitrogen oxides (NOx)	228	164	99
– Volatile organic compounds (VOC)	311	223	135
– Carbon dioxide (greenhouse gas)	39,126,270	28,057,020	16,987,771
Energy savings – daily gallons of gasoline saved	3,607,551	2,586,935	1,566,320

*Note: Annual Impacts were calculated by multiplying daily impacts by 250, the average number of commute days in a year. Not all impact indicators can be multiplied, however. The number of new alternative mode users is true regardless of daily vs annual time period. NOx and VOCs are not typically estimated annually since they dissipate in the atmosphere.

Figure 1 illustrates the annual progress of the Triangle TDM Program from FY2008–FY2016 compared with the VMT reduction goals set in the 2007 Plan and previous years. The Program has far exceeded the Plan's goal of reducing growth in the region's commute VMT by 25%.

Figure 1 – Annual Vehicle Miles Traveled Reduction



Appendix 2

FY16 Data Collection and Impact Calculations

Three types of data serve as the basic factors for the TDM impact measurement:

1) Level of participation in TDM programs
2) Incidence of new or increased use of alternative modes as a result of the program (alternative mode "placements")
3) Average trip and vehicle miles traveled reduction from individual mode shifts

The FY16 calculation estimated impacts for 28 TDM services implemented by nine TDM Local Service Providers in the Triangle Region. The evaluation team, consisting of TJCOG staff using the evaluation system provided by LDA Consulting, first reviewed quarterly reports and other documents provided by the Service Providers to TJCOG to verify services, compile data that could be used in the evaluation, and identify missing data. The evaluation team contacted each grantee to verify FY16 participation data and to identify user surveys or other sources that could be used to update the evaluation calculation factors. TJCOG made updates to the calculation factors based on local surveys as well as literature values from other research as necessary (see Appendix 5 for notes on sources of data used in the FY16 calculations).

Services Included in the FY16 Impact Calculations

The impact calculations prepared under this project are specific to the Triangle TDM Grant Program; in other words, only TDM services that are funded by the Triangle TDM Program and implemented by either GoTriangle or one of the local TDM Service Providers are included in the calculation. Many other TDM services are available to commuters who work or live in local areas that are locally funded outside of the Triangle TDM Program. These services certainly also contribute to the regional impacts, but are not explicitly captured in this assessment since they are not directly supported by Triangle TDM Grant Program funding. Thus, the impacts reported in this report actually account for only a portion of the total TDM effort in the region. Additionally, the method does not explicitly account for contributions of transit, bicycle, and pedestrian infrastructure in the region. Access to such infrastructure can play a role in influencing mode choice, but this is not quantified separately.

Each service funded by the Triangle TDM Program was designated as Primary, Secondary, or Support. Primary services are usually services that directly enable commuters to use alternative modes, such as transit and carpooling services. Primary Services may also include services for which participants can be counted with a high degree of certainty. Secondary services are services that directly promote and help users take advantage of Primary services, such as the GoTriangle website and ShareTheRideNC. Supporting Services, such as Emergency Ride Home and outreach efforts, help commuters.

Impacts are calculated for Primary and Secondary services using the methodology described in Section 1. The evaluation approach assumes impacts for supporting services are captured through the participation that is counted in Primary and Secondary services. Appendix 2, Table 1 presents brief descriptions of each Service Provider and the services they offer and promote.

The FY16 calculation calculated impacts for 28 Primary and Secondary services implemented by nine TDM Service Providers ("Core Programs") in nine local "hotspots" as well as across the region as a whole. The evaluation system is designed to calculate only student and employee commutes and exclude other types of trips.

Table 1 lists all the individual primary and secondary services that were included in the FY16 impact calculation. Services are listed below by the Service Provider who primarily coordinates the service and that provides the data for the impact calculation. (Note that many other Service Providers may promote or otherwise assist in utilization of the service). Page 23 contains a list of Supporting Services whose influences are indirectly captured in the impact calculation.

Appendix 2

FY16 Data Collection and Impact Calculations

Table 1 – Regional and Local Triangle TDM Program Services

Primary and Secondary Commuter Services listed by Coordinating Service Provider	Evaluation Tier (Primary or Secondary)
GoTriangle	
ShareTheRideNC ridematching	Primary
GoPasses used on GoTriangle and GoDurham routes	Primary
Employee vanpools originating from the Triangle region	Primary
GoTriangle website	Secondary
North Carolina State University (NCSU)	
WolfLine Bus Transit	Primary
WolfTrails Bike/Walk Program	Primary
WolfTrails Employee Carpools	Primary
WolfTrails Student Carpools	Primary
Zimride ridematching	Primary
SmartCommute@rtp	
Trial pass good on GoTriangle routes	Primary
Telework and compressed work schedule options	Primary
University of North Carolina (UNC)	
Park & Ride Lots	Primary
Carpools	Primary
Piedmont Authority for Regional Transportation (PART) vanpools	Primary
Chapel Hill Transit Pittsboro Express Pass	Primary
Commuter Assistance Program (CAP) Bike Benefit	Primary
CAP Walk Benefit	Primary
Zimride ridematching	Primary
Town of Chapel Hill (with Town of Carrboro)	
Chapel Hill Transportation Management Plan (TMP)	Primary
Wake Technical Community College	
GoRaleigh 40X Express Bus Service	Primary
4-day summer compressed work schedule	Primary
Duke University	
Employee carpools	Primary
Student carpools	Primary
Bike Program	Primary
Ridepost Ridematch	Primary
Duke Parking / Transportation Website	Secondary
City of Raleigh	
GoPasses used on GoRaleigh routes	Primary

Appendix 2

FY16 Data Collection and Impact Calculations

Some of the Triangle TDM Program Supporting Services promoted and provided by Local and Regional Service Providers include:

- Emergency Ride Home
- Regional Call Center
- Bicycle Benefits Program
- Pledge Programs
- Retail Discounts
- Trainings for Cyclists
- Carsharing (e.g., Enterprise, Zipcar)
- Vanpool Subsidies
- Occasional Parking Passes
- Websites
- Social Media
- Marketing, Events, and Other Outreach

Issues Addressed in Evaluation System

The long-term TDM evaluation system developed in 2009 highlighted several measurement and calculation issues related to the fair and accurate measurement of change from the services noted above. Following is a brief discussion of several issues and considerations related to the inclusion and treatment of individual services in the evaluation:

- Regional versus local calculation
- Service overlap
- Repeat use of services
- Local TDM services not funded by the Triangle TDM Program

Collective Impacts of Local and Regional Services

All commuters in the Triangle Region have access to most regionally offered commute services. Some commuters also have access to locally delivered services offered only in their home or work areas. Some regional services, such as vanpooling, have local implementation components for marketing and outreach. Both regional and local efforts contribute to the mode choice decisions of commuters who encounter and use the services and it would be extremely difficult, if not impossible, to separate the impacts of one Service Provider's work from those of all the others.

During the development of the long-term evaluation system, TJCOG and TDM Service Providers agreed that the TDM Program represents a coordinated result of regional and local services and that it would be appropriate to report the impacts of all services as a whole, rather than apportioning impacts among individual Service Providers. Further, individual primary and secondary services with both regional and local elements, such as the vanpool program, were calculated as regional programs, with a single impact estimated for the region. Supporting services available regionally are also not listed for each Service Provider that promotes them; Local Service Providers promote regional supporting services such as Emergency Ride Home in their Marketing & Outreach activities as appropriate.

Appendix 2

FY16 Data Collection and Impact Calculations

Service Overlap

Table 1 lists the Triangle TDM Services that are quantitatively evaluated in this report. TDM services funded by the Triangle TDM Program are designed to work together as an attractive package of services, and there can be substantial overlap among the programs. For example, a commuter might receive a ridematch, register for a regional commute event, and see regional program marketing, but the commuter's resulting commute changes should be counted only once in the impact calculation. Recent employer and student commuter surveys have incorporated questions to help determine which services are used alone and which are used in combination. The evaluation team also solicited input from TDM Service Providers regarding the degree to which various TDM services overlap.

Using input from these sources, each Triangle TDM Program-funded service was classified into one of three categories: primary, secondary, or support.

1. Primary services are defined as those that are likely to be used alone, or if they are used in combination with other services, are likely to have the greatest motivational impact of the services in the package.

2. Secondary services are expected to be used primarily in combination with other services but with less direct influence. The designation of primary versus secondary also takes into account how readily or directly data can be collected on the use and impacts of the services.

3. Support services include those, such as marketing, that primarily inform commuters of travel options or other program services; in essence, they offer a "referred" influence. They can directly motivate mode change with no intermediate contact, but these impacts are difficult to measure. The FY16 evaluation does not attempt to quantify independent impacts from marketing activities. The impacts of supporting services are captured through participants' use of the services promoted.

Repeat Use of a Service

The impact calculation also considers that some service participation counts reflect multiple uses of a service by a single user. For example, a commuter might use the GoTriangle.org website several times in a month to check schedules for various trips, or receive more than one ridematch list in a year if an existing carpool is disbanding. It is fairly easy to track the number of "unique users" if they are known by name or other identifier. But for some services, unique identification is not used, so participation counts are divided by an estimate of repeat uses to convert them into a measure of "unique users" during the evaluation period. Whenever possible, these factors were derived from questions on user surveys that estimate the number of uses during the evaluation period and divide the participation count by the average number of uses.

Appendix 3

Explanation of VTR Factor Calculation Methodology

Appendix 4: Explanation of VTR Factor Calculation Methodology

The vehicle trip reduction (VTR) factor represents the average number of vehicle trips that a commuter "placed" in an alternative mode would reduce per day. The VTR factor combines the trip reduction results of three possible types of travel changes that new commuter placements might make:

1) Drive-alone commuters shifting to an alternative mode
2) Commuters who currently use an alternative mode shifting to another alternative mode (e.g., from carpool to transit)
3) Commuters who currently use an alternative mode increasing their weekly frequency of alternative mode use (e.g., from carpool one time per week to carpool three times per week).

Shown below is a brief example of how the VTR factor would be calculated for seven commuters who made the following travel changes:

- Placement 1 – shifts from driving alone, 5 days per week, to a two-person carpool, 5 days per week
- Placement 2 – shifts from driving alone, 5 days per week, to transit, 5 days per week
- Placement 3 – shifts from driving alone, 5 days per week, to teleworking, 2 days per week and driving alone 3 days per week
- Placement 4 – shifts from driving alone, 5 days per week, to two-person carpool, 2 days per week and driving alone 3 days per week
- Placement 5 – shifts from a two-person carpool, 5 days per week, to transit, 5 days per week
- Placement 6 – shifts from transit, 5 days per week, to a two-person carpool, 5 days per week
- Placement 7 – increases the frequency of carpool from 1 day per week to 3 days per week, driving alone the other 2 days

The VTR factor is calculated by determining the number of vehicle trips all placements would reduce together and dividing that total by the number of placements. We assume that a commuter makes two trips a day, one from home to work and a second from work to home. Thus a commuter who drives alone would make 2 vehicle trips each day. If the commuter carpools, he would make ½ vehicle trip to work and ½ trip back home, for a total of 1 vehicle trip per day. A commuter who uses transit, bikes, or walks is assumed to make 0 vehicle trips. A commuter who teleworks also makes 0 vehicle trips on telework days.

Shown below are the travel modes and the numbers of vehicle trips each of the seven commuters described above would make for each day of the week before the shift to an alternative mode and after the shift. The third column shows the net vehicle trips (number of trips after the shift minus number of trips before the shift). The final column shows the total weekly trips reduced. Note that commuter placement #6 actually increases his weekly commute trips, because he shifts from a higher occupancy alternative mode (transit) to a lower occupancy mode (carpool).

Appendix 3

Explanation of VTR Factor Calculation Methodology

Sample VTR Calculation
Travel Modes Before and After Shifts to Alternative Modes
By Commuter and by Day of the Week

	Vehicle Trips Before Shift					Vehicle Trips After Shift					Vehicle Trips Net Trips					Weekly Change
	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F	
Placement 1	D	D	D	D	D	C	C	C	C	C						
DA* to 2p CP*	2	2	2	2	2	1	1	1	1	1	-1	-1	-1	-1	-1	-5 trips
Placement 2	D	D	D	D	D	T	T	T	T	T						
DA to TR*	2	2	2	2	2	0	0	0	0	0	-2	-2	-2	-2	-2	-10 trips
Placement 3	D	D	D	D	D	D	D	C	C	C						
DA to TC/DA (part-time)	2	2	2	2	2	2	2	2	0	0	0	0	0	-2	-2	-4 trips
Placement 4	D	D	D	D	D	D	D	C	C	C						
DA to CP/DA	2	2	2	2	2	2	2	2	1	1	0	0	0	-1	-1	-2 trips
Placement 5	C	C	C	C	C	T	T	T	T	T						
2p CP to TR	1	1	1	1	1	0	0	0	0	0	-1	-1	-1	-1	-1	-5 trips
Placement 6	T	T	T	T	T	C	C	C	C	C						
TR to 2p CP	0	0	0	0	0	1	1	1	1	1	+1	+1	+1	+1	+1	+5 trips
Placement 7	D	D	D	D	C	D	D	C	C	C						
DA/CP to CP	2	2	2	2	1	2	2	1	1	1	0	0	-1	-1	0	-2 trips
Total weekly trips	11	11	11	11	10	8	8	7	4	4	-3	-3	-4	-7	-6	-23 trips

Total placements = 7 placements (travel for each shown above)
Total vehicle trips reduced per week = 23 trips per week (all placements together)
Total vehicle trips per day (all placements together) = 23 trips per week / 5 days per week
= 4.6 vehicle trips per day

Average vehicle trips reduced per placement **= 4.6 vehicle trips per day / 7 placements**
= 0.66 vehicle trips per placement

The seven commuter placements would reduce an average of 4.6 vehicle trips during a single day, thus the average number of trips reduced per day by each of the seven placements would be 0.66. This is the VTR factor.

**Note: C/CP = Carpool*
D/DA = Drive Alone
T/TR = Transit

Appendix 4

Notes on Data Sources and Factors Used in Impact Calculations

Calculation of Credits for Regional Services promoted Locally

- Retained local involvement in the FY14 SmartCommute Challenge was included in the GoTriangle regional calculation
- Local promotion of ShareTheRideNC and STRNC ridematching is included in the GoTriangle regional calculation
- GoTriangle coordinated vanpools offered through SmartCommute@rtp, NCSU, UNC-CH, and Raleigh are calculated under the GoTriangle Vanpool Program

Participation Counts (data provided by Service Providers)

GoTriangle

- ShareTheRideNC rideshare database - Number of Triangle registrants as of end of FY16
- GoTriangle GoPass - FY16 GoTriangle boardings using a GoPass, discounted by 10% to account for overlap with other transit systems
- GoTriangle Vanpool - Number of vanpool riders at end of FY16
- GoDurham GoPass - FY16 GoDurham boardings using a GoPass, discounted by 10% to account for overlap with other transit systems
- GoTriangle.org website - Non-bounce sessions from Raleigh-Durham metro area

NC State University (NCSU)

- NCSU GoRaleigh GoPass - Total FY16 trips billed to NCSU for use of GoPass by NCSU students on GoRaleigh bus
- NCSU Wolfline - Average daily riders discounted to exclude intra-campus travel and non-commute trips
- NCSU WolfTrails Bike/Walk Program - Number of registered bikers/walkers; only full-time employees are eligible for benefit
- NCSU Employee Carpools - Number of registered employee carpoolers at end of FY16
- NCSU Student Carpools - Number of registered student carpoolers at end of FY16
- NCSU Zimride - Total commute ride requests posted in FY16

SmartCommute@rtp

- RTP Transit Incentive - Number of 10-Ride passes good on GoTriangle buses distributed in FY16
- RTP Telework / Compressed work schedule - Total employees at RTP sites that offer telework or compressed schedule

University of North Carolina at Chapel Hill

- UNC Park & Ride - Number of employee and student registrants
- UNC Carpools - Number of registered employee and students carpoolers as of end of FY16
- UNC Vanpool - Number of PART vanpool riders at end of FY16
- UNC Pittsboro Express (Chapel Hill Transit) Pass - Number of Chapel Hill Transit passes issued to employees and students for express bus route from Pittsboro
- UNC CAP Walk - Total number of employee and off-campus student registrants for the CAP walk benefit
- UNC CAP Bike - Total number of employee and off-campus student registrants for the CAP bike benefit
- UNC Zimride - User count; export of Zimride data cleaned to include only new local commute rides posted by active, unique users

Town of Chapel Hill

- Chapel Hill Transportation Management Program - Total employees at sites subject to ordinance based on data collected by June, 2016

Appendix 4

Notes on Data Sources and Factors Used in Impact Calculations

Wake Technical Community College

- Wake Tech GoRaleigh 40X Express Route to campus - annual boardings on routes to campus showing a Wake Tech ID
- Wake Tech Compressed Work Schedule / 4-day summer work week - total faculty / staff during summer (estimate)

Duke University

- Duke Employee Carpools - Number of employees registered for carpool benefits at end of FY16
- Duke Students Carpools - Number of students registered for carpool benefits at end of FY16
- Duke Bike - Number of employees and students registered for bike benefits at end of FY16
- Duke STRNC ridematching (formerly RidePost/GreenRide) - Number of users searching for commute matches in FY16
- Duke Website - Non-bounce visits from Raleigh-Durham metro; includes correction for page views and multiple visits to site

GoRaleigh

- GoRaleigh GoPass - FY16 GoRaleigh GoPass boardings excluding NCSU boardings

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Placement Rates

GoTriangle

- ShareTheRideNC - 2009 placement survey results
- GoPass - Assumes 60% of riders are at non-university work location; 40% work / go to school at universities with shorter commute year (40 weeks)
- Vanpool - Assumed 100% of vanpool riders were in another mode before joining the vanpool
- GoDurham GoPass
- GoTriangle.org website - Estimated from Arlington, VA web survey (2009, LDA/SIR)

NC State University

- NCSU GoRaleigh - Assumes 100% placement; 40% of riders are faculty / staff with longer commutes; 60% are students
- NCSU Wolfline Bus - 100% use; based on daily ridership participation, but all temporary to account for academic year
- NCSU Bike/Ped program - Estimated 25% new bikers; 75% previously biking
- NCSU Employee Carpools - Estimated 50% of employee participants are new carpools
- NCSU Student Carpools - Estimated 50% of student participants are new carpools
- NCSU Zimride - Estimated similar to STRNC: 30% continued; 10% temporary

SmartCommute@rtp

- RTP Transit Passes - Assumes 36% start using transit and half (18%) continue
- RTP Telework / Compressed Work Schedule - RTP employee survey showed 11% new participants teleworking in past year

University of North Carolina at Chapel Hill

- UNC Carpools - Estimated 50% of participants are new carpools
- UNC Park & Ride - Estimated 50% of participants are new alt mode users
- UNC PART Vanpool - Assumed 100% new van riders
- UNC Pittsboro Express (Chapel Hill Transit) Pass - Assumed 80% of pass holders have shifted to transit
- UNC Bike - Assumed 25% new bikers; 75% previously biking (UNC estimate)
- UNC Zimride - Estimated similar to STRNC - 30% continued; 10% temporary

Appendix 4

Notes on Data Sources and Factors Used in Impact Calculations

Town of Chapel Hill
- Chapel Hill Transportation Management Program - Drive-alone rate in 2015: 92.5%, 2001 rate: 93.5%. Difference = 1% (2015 CH TMP report)

Wake Technical Community College
- Wake Tech GoRaleigh 40X - Assumes 40% of riders are continued users who travel full-year schedule, 60% travel temporarily / part-year basis during academic year only (40 weeks)
- Wake Tech 4-day Week - Estimated 85% of faculty / staff are absent on schedule with 1 day off per week

Duke University
- Duke Employee Carpool - Estimated 50% new carpoolers
- Duke Student Carpool - Estimated 50% new carpoolers - use same factors as for employees
- Duke Bike - Estimated 25% new bike riders
- Duke GreenRide - Estimated 30% new carpoolers who continue and 8% who carpool temporarily
- Duke Website - Assumed placement rate equal to gotriangle.org's

Go Raleigh
- GoRaleigh GoPass - Assume 95% continued (employees) and 5% Meredith and Peace College students (temporary/partial year)

VTR Factors

GoTriangle
- ShareTheRideNC - 2009 placement survey results
- GoPass - Assumed 80% of transit users would have driven alone
- Vanpool - Assumed vanpool used 5 days per week, 7 riders per van
- GoDurham GoPass
- GoTriangle.org website - Estimated from Arlington, VA web survey (2009, LDA/SIR)

NC State University
- NCSU- GoRaleigh - Assumed 80% of transit users would have driven alone
- NCSU Wolfline bus - Assumed 80% would have driven alone
- NCSU Bike/Walk Program - Estimated bike 3.5 days per week (NCSU 2015 employee survey)
- NCSU Employee Carpool - Average carpool used 4.2 days/week, 2.0 person carpool (NCSU 2015 employee survey) - 0.8 vehicle trip reduction per day
- NCSU Student Carpool - Average carpool used 3 days/week, 2.2 person carpool (NCSU 2015 student survey) - 0.7 vehicle trip reduction per day
- NCSU Zimride - Estimated 4 carpool days per week for continued and 2 carpool days per week for temporary users; 2.0 person carpool

SmartCommute@rtp
- RTP Transit Passes - Assumed 4 days per week transit use
- RTP Telework / Compressed Work Schedule - Estimated 2.2 teleworked days per week for new teleworkers (2015 RTP employee survey)

Appendix 4

Notes on Data Sources and Factors Used in Impact Calculations

University of North Carolina at Chapel Hill

- UNC Carpool - Assumed carpool used 4 days per week, 2.0 person carpool (2013 survey)
- UNC Park & Ride - Assumed all participants use transit from Park & Ride lots
- UNC PART Vanpool - Assumed vanpool used 5 days per week, 7 riders per van
- UNC Pittsboro Express (Chapel Hill Transit) Pass - Estimated use of 4 days per week
- UNC CAP Bike - Assumed bike used 3.5 days per week
- UNC Zimride - Assumed 4 carpool days per week for continued and 2 carpool days per week for temporary

Town of Chapel Hill

- Chapel Hill Transportation Management Program - 8.1%% new alt mode use from 2001-2013 (carpool = +1.6%, transit/bike/walk/telework = +6.5%); 20% of alt mode change is to carpool (1.0 days/wk new carpool use); 80% of alt mode change to modes with 0 personal vehicles (4 days per week); VTR factor = (10 vehicle trips before - (2 * 1 / 2)) / 5 days = 1.8 daily trips reduced

Wake Technical Community College

- Wake Tech GoRaleigh 40X - Assumed 80% of transit users would have been driving alone
- Wake Tech 4 day week - Weighted average trips reduced assuming usual mode split (WTCC data)

Duke University

- Duke Employee Carpools - Average 3.9 carpool days/week; 2.2 carpool occupancy = 0.9 vehicle trip reduction per day (2015 Duke employee survey)
- Duke Student Carpools - Average 3.3 carpool days/week and 1.3 drive-alone days; 2.4 occupants per carpool = 0.8 vehicle trip reduction per day (Duke 2015 employee survey)
- Duke STRNC - Assumed continued carpool use 4 days per week, temporary carpool use 2 days per week
- Duke Bike - Average 3.6 bike days/week for employees; 3.9 bike days/week for students. Assumed full time is 4.5 days per week (80% of program) and part time is 2.0 days (20% of program) = 4.0 average days per week (2013 Duke Employee Survey, 2013 Duke Student Survey)
- Duke Website - Assumed VTR factors equal to gotriangle.org's

GoRaleigh

- GoRaleigh GoPass - Average 3.9 transit day/week for both continued and temporary (2015 Raleigh employee survey)

Travel Distance

Go Triangle

- ShareTheRideNC - 2009 placement survey results
- GoPass - Estimated from transit users in GoTriangle employee survey
- Vanpool program - 35.3 miles - STRNC placement survey average distance for vanpoolers
- GoDurham GoPass
- GoTriangle.org website - Estimated regional travel distance

Appendix 4

Notes on Data Sources and Factors Used in Impact Calculations

NC State University

- NCSU GoRaleigh GoPass - Average 12.9 miles for employee transit riders, 4.5 for student transit riders, 30% employee riders, 70% students - 7.0 mi average (2015 NCSU Employee Survey, 2015 NCSU Student Survey)
- NCSU Wolfline bus - Calculated average transit distance from 2013 TJCOG commuter surveys weighted for students vs employees
- NCSU Bike/Ped - Weighted average of bike and walk miles (Students bike 2.1, walk 0.9; Employees bike 6.0, walk 3.5) (2015 NCSU Employee Survey, 2015 NCSU Student Survey)
- NCSU Employee Carpools - Average of 16.7 miles for carpoolers (2015 NCSU Employee Survey)
- NCSU Student Carpools - Average of 5.3 miles for carpoolers (2015 NCSU Student Survey)
- NCSU Zimride - averages: 14.6 miles for employees, 1.2 miles for students. Assumed 50-50 employee-student split: 7.9 mi average (2015 NCSU Employee Survey, 2015 NCSU Student Survey)

SmartCommute@rtp

- RTP Transit Passes - Estimated from transit users in GoTriangle employee survey
- RTP Telework / Compressed Work Schedule - From RTP employee survey

University of North Carolina at Chapel Hill

- UNC Carpools - Estimated by UNC staff; weighted average of employee and student travel distances (2013 UNC Employee Survey and 2013 UNC Student Survey)
- UNC Park & Ride - Average driving distance from Park-n-Rides to Skipper Bowles Parking Deck is 3.9 miles
- UNC PART Vanpool - Estimated by UNC TDM staff as 21.7 miles average for all vanpools from point of last departure
- UNC Pittsboro Express (Chapel Hill Transit) Pass - Distance from Pittsboro Park & Ride to campus according to Google maps: 15.5 miles
- UNC CAP Bike - Estimated by UNC staff; capped at 15 miles; weighted average of employee and student travel distances (2013 UNC Employee Survey, 2013 UNC Student Survey)
- UNC CAP Walk - Estimated by UNC staff; capped at 3.5 miles; weighted average of employee and student travel distances (2013 UNC Employee Survey, 2013 UNC Student Survey)
- UNC Zimride - Average of distances in Zimride report, based on users 20.0 miles

Town of Chapel Hill

- Chapel Hill TMP - 15.8 based on TOCH 2015 TMP report

Wake Technical Community College

- WakeTech GoRaleigh 40X - Determined 40E route distance from google maps. Dropped average from 11 to 9 miles based on intermediate stops.
- WakeTech 4-day week - Average distance of 19.8 miles (2015 Wake Tech Employee Survey)

Duke University

- Duke Employee Carpool - Average 14.3 miles for employee carpoolers (2015 Duke Employee Survey)
- Duke Student Carpool - Average 6.6 miles for student carpoolers (2015 Duke Student Survey)
- Duke Bike - Average 2.9 miles for Duke bicyclists (both employees and students) (2015 Duke Employee Survey and 2015 Student Survey)
- Duke GreenRide - Weighted average carpool distance of 9.2 mi; based on employee distance (14.3 mi) and student distance (6.6 mi), with estimated proportions of employees and students using program (292 employee/750 total and 458 students/750) (2015 Duke Employee Survey, 2015 Student Survey, GreenRide web stats)
- Duke Website - Estimate of distance for all respondents in Duke 2015 Employee Survey

GoRaleigh

- GoRaleigh GoPass - 17.9 miles transit distance (2015 Raleigh Employee Survey)

Appendix 4

Notes on Data Sources and Factors Used in Impact Calculations

Service Overlaps

- Ridematch - 38% also used SmartCommuteChallenge, 41% used online transit trip planner or GoTriangle info center, 23% vanpool riders, 12% transit riders

- Duke RidePost overlap - 75% of employee Greenride users used STRNC, but only 5% of student RidePost users used STRNC; estimated weighted average: 35%

- Duke RidePost overlaps with GoTriangle.org: 53% of employee RidePost users and 53% of student RidePost users used GoTriangle.org; estimated weighted average: 50%. Overlap also between STRNC/GoTriangle

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