

University of Virginia Transportation Demand Management Plan



Submitted to:



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EXECUTIVE SUMMARY

The University understands the need for safe and efficient transportation systems and the ability for all user groups – students, faculty, staff, patients, and visitors – to have multiple choices for movement around Grounds and to access the University as a destination. Transportation Demand Management (TDM) is the art of influencing travel behavior for the purpose of reducing the demand for single occupant vehicle use. To help achieve the University’s transportation goals, this TDM Plan will examine existing modes of access to the University and Health System for different user types, to specifically address issues related to faculty and staff daily commutes, student access to classes, staff and patient access to Health System facilities, and public access to events. This TDM Plan was developed as a part of the update of the University’s Master Plan to enhance Grounds planning decisions for improving mobility while respecting the context.

The TDM Plan for the University is a strategic plan providing recommendations for the transportation system improvements over 10-and 20-year planning horizons. This plan requires examining the future of Grounds from both a physical and user perspective, and recommends tools and mechanisms to better link transportation and land uses to affect a more efficient and sustainable transportation system.

A successful plan also needs the collaboration of all the user groups. The University established a Steering Committee to oversee the plan development process. Six focus groups provided a wealth of first-hand information on the strengths and weaknesses of the existing transportation system and ideas for the future. Through the steering committee, the focus groups, and discussions with senior leadership at the University, the following TDM Plan has been established.

EXISTING CONDITIONS

As part of the existing conditions assessment, a review of existing pedestrian, bicycle, parking, traffic, and transit accommodation was conducted. Existing commuting choices were also evaluated.

Pedestrians and Bicycles

In general, pedestrian travel is well accommodated within major precincts on Grounds. However, major roadways such as Emmett Street and University Avenue present a barrier to safe pedestrian travel. A good network of pedestrian pathways is provided internal to Grounds; however existing sidewalks and crosswalks leading to Grounds are always not placed strategically to suit existing pedestrian needs and lack the uniformity necessary to make them highly visible.

In many areas, signage and wayfinding for pedestrians is limited. The street network in Charlottesville is somewhat confusing due to the topography in the area, historic development patterns, railroad corridors, and other features. Also, there is a dense network of pathways through Central Grounds that does not necessarily correspond to desire lines between the Health System campus and the McCormick Road area.

The demand for bicycle access is greatest in Central and West Grounds, however, bicycle access through these areas is limited and the terrain in certain locations is steep for bicycles. Currently, bicycle racks are not well-located and bicycle parking is inadequate, as evidenced by bicycles locked to railings and signs.

Parking

Parking in and around Grounds and the Health System complex is accommodated through numerous surface lots and parking decks, as well as metered street locations scattered throughout the area. In general, the bulk of the parking provided for the University and related functions is located outside Central Grounds and requires a five to ten minute walk to reach most destinations. A large majority of the parking spaces require permits and can therefore only be used by staff, faculty, students, and other University affiliated users. Both the University and Hospital implement an extensive permit parking program in order to manage the daily use of this parking.

Traffic

Many of the roadways that serve as major access corridors to Grounds were constructed some time ago, and provide two-lane cross-sections in context with the historic framework of the area. These roadways experience congestion due to growth at the University, in the City of Charlottesville, and the region. Wide roadway cross-sections and large intersections with multiple turn lanes are not considered an appropriate context for the historic nature of Charlottesville or the University. To the extent practical, it is a priority of all parties to maintain the area's historic nature. This priority must also be balanced with providing safe and efficient operations to all transportation users.

Transit

Two transit services and multiple transit routes are readily available for those traveling to, from or within the University of Virginia Grounds and the Health System complex. These include seven fixed-routes operated by the University Transit Service (UTS) and five direct routes (no transfers) and three indirect routes (with transfers) by the Charlottesville Transit Service (CTS) operated by the City of Charlottesville. For students, faculty, and staff who have disabilities and who are unable to use the UTS fixed route buses, the Parking and Transportation Service provides UTS Demand and Respond Transportation Service (UTS DART). In addition, JAUNT provides demand-responsive transit services in the larger region surrounding Charlottesville.

Commute Options

The University and local and regional agencies operate numerous programs in order to encourage the use of alternative modes of transportation. Employees and students have access to transportation resources to help reduce the number of single occupancy vehicle trips associated with the University. These alternative modes are made more appealing to commuters through the following programs: RideShare, Carpooling, Bicycling/Walking, Teleworking, Vanpooling, Guaranteed Ride Home, Park and Ride Lots, Emmet/Ivy Parking Garage Occasional Parker Program, Rental Vehicles, JAUNT, and Greene County Transit.

TDM PLAN AND FUTURE CONDITIONS

One of the first steps toward defining a TDM plan for the University of Virginia was a review of TDM practices at other similar institutions. Once the range of TDM measures was identified, the team defined four different packages of TDM strategies reflecting different degrees of incentives and controls on travel behavior. The effectiveness of these strategies was then tested using the EPA Commuter Model v2.0 which estimates the likely change in travel behavior for different TDM programs. Finally, the impact of these travel behavior changes on the parking system at the University was considered. In this analysis, the amount of additional parking needed to meet future population projections was estimated.

Peer Analysis

Many colleges, universities and hospitals are implementing TDM programs. In general, these institutions are pursuing these policies for one of the following three reasons:

1. To comply with state or local development regulations,
2. To reduce the costs and physical impacts of providing parking facilities; or
3. Out of general environmental concern.

As part of this study, current practices at several universities were identified to help formulate the University of Virginia's program. The results of this survey are provided in Table ES-1.

Table ES-1 Peer Analysis Summary

	Mission	Key Features	Parking Fees (\$)	Marketing	Funding
Virginia Tech	Promote and encourage alternatives to drive along commuting	Vanpool discounts, reserved parking, free transit	81 to 106	Website, email, direct mail	Information Unavailable
University of North Carolina	Reduce traffic congestion	Van/carpool reserved parking, discounts, free transit, car share	281 to 1,659	Website, events, email, transportation coordinators	State, parking permits
Harvard University	Reduce traffic and improve air quality	Van/carpool reserved parking, discounts	915 to 1,830	Website, email, events	University Human Resources
Cornell University	Reduce demand for parking, improve air quality	Van/carpool subsidies, bike lanes	0 to 690	Website, events, in person	Parking permits
Stanford University	Ease traffic congestion	Van/carpool subsidies, prizes, free car rental vouchers	216 to 552	Website, email, events, refer a friend	Information Unavailable
University of Wisconsin	Reduce vehicles driven to campus	Van/carpool discounts, extensive paths	445 to 1,035	Website, events,	Parking permits
University of Michigan	Reduce SOVs	Vanpool program	191 to 690	Website	Information Unavailable

Scenarios of TDM Program Implementation

Based on the input from the University of Virginia Steering Committee, the stakeholder workshops, and the peer analysis presented above, four potential TDM scenarios have been developed and compared to a baseline scenario. These include the following:

- Very Aggressive Scenario;
- Aggressive Scenario;
- Moderate Scenario; and
- Least Aggressive Scenario.

As summarized in Table ES-2, the TDM scenarios are focused on commuters to Grounds and the Health System. They do not focus on measures intended to reduce student-resident driving. The first scenario (Very Aggressive) includes all of the potential measures for consideration by the University. The subsequent scenarios include fewer or less aggressive implementation of the TDM measures.

Table ES-2 TDM Scenarios

TDM Measure	TDM Scenario				
	Very Aggressive	Aggressive	Moderate	Least Aggressive	Baseline
1. No Parking Expansion	◆				
2. Parking Price Increase	> 100 %	50 to 100 %	50 %	20 – 33 %	Minor
3. Parking Permit Buyback	◆	◆			
4. Student Parking Reduction ¹	◆	◆			
5. Vanpool/Carpool Parking Location	Premium	Premium	Reserved	Reserved	
6. Vanpool/Carpool Financial Incentive	Free & Bonus	Free & Bonus	Discount		
7. Housing Incentives/Sponsorship	◆	◆			
8. Bicycling Improvements	Lanes/Paths	Lanes/Paths	Racks, etc.		
9. Pedestrian Improvements	◆	◆			
10. Free-Ride Transit ²	◆	◆	◆	◆	◆
11. Commuter Membership Program	◆	◆			
12. Member Spot-Rewards	◆	◆			
13. Transportation Events	◆	◆			
14. Transit Advocacy/Coordination	◆	◆	◆	◆	◆
15. Park & Ride Implementation	◆	◆	◆		
16. Pre-Tax Payment for Alternatives	◆	◆	◆		
17. RideShare Marketing	◆	◆	◆		
18. Ride Matching Assistance	◆	◆			
19. Car-Sharing	◆	◆	◆	◆	
20. Flexible Work Arrangements	◆				
21. Occasional Parking	◆	◆	◆	◆	◆
22. TDM Coordinator	◆	◆	◆	◆	◆
23. Program Marketing	◆	◆	◆	◆	
24. Website Enhancements	◆	◆	◆	◆	

1. Student changes are not modeled in the results discussed later, however an aggressive program would include changes to student parking policies and other measures to reduce automobile use by students.
 2. UVA recently implemented a “Free-Ride” transit program, however, its effects are not included in the baseline.
- ◆ Program element included. Where appropriate, a level of program implementation is identified.

Mode Split Analysis

The United States Environmental Protection Agency's (EPA) Commuter Model (version 2.0) was used to test the effectiveness of the various TDM scenarios. The Commuter Model is a spreadsheet-based computer model that estimates the travel impacts of TDM programs. The results of the model for each TDM Scenario are presented in Table ES-3.

Table ES-3 TDM Scenario Mode Share Results

Mode Share	TDM Scenario				
	Very Aggressive	Aggressive	Moderate	Least Aggressive	(Existing) Baseline
Drive Alone	41 %	49 %	54 %	57 %	62 %
Carpool	21 %	17 %	13 %	12 %	10 %
Vanpool	2 %	2 %	2 %	1 %	0 %
Transit	7 %	7 %	7 %	6 %	5 %
Bicycle	4 %	3 %	2 %	2 %	2 %
Pedestrian	20 %	17 %	17 %	17 %	16 %
Other	5 %	5 %	5 %	5 %	5 %
Total	100 %	100 %	100 %	100 %	100 %

1. UVA recently implemented a "Free-Ride" transit program, however, its effects are not included in the baseline data

Parking Analysis

The changes in mode split were applied to future population estimates provided by the University to estimate the impact of the TDM scenarios on the amount of parking that will be needed in each condition to support planned institutional growth. The analysis is conducted for both a 2015 and a 2025 horizon year. The analyses also rely on a number of different assumptions described in the report.

The TDM programs discussed in this report do not reflect potential changes in student auto ownership or behavior. It is possible that further reductions in future parking needs could be realized through measures designed to influence student travel behavior. The results of the parking analysis are summarized in Table ES-4.

Table ES-4 – Summary of Parking Analysis

	2015	2025
Total Parking Demand Increase		
<i>Baseline</i>	1,400	3,250
Least Aggressive	975	2,725
Moderate	775	2,475
Aggressive	450	2,100
Very Aggressive	0	1,325
Net New Parking Needed¹		
<i>Baseline</i>	400	2,250
Least Aggressive	0	1,725
Moderate	0	1,475
Aggressive	0	1,100
Very Aggressive	0	325
Percent Increase in Parking Needed		
	Total/Net	Total/Net
<i>Baseline</i>	9 / 2	20 / 14
Least Aggressive	6 / 0	17 / 10
Moderate	5 / 0	15 / 9
Aggressive	3 / 0	13 / 7
Very Aggressive	0 / 0	8 / 2

¹ Approximately 1,000 parking spaces are currently available to accommodate increased demand

The table shows that a TDM plan can reduce the amount of parking that will be needed to support future growth in enrollment and employment. For example, with the baseline scenario, the University will need to significantly expand its commuter parking supply. With the very aggressive scenario, the University may be able dramatically reduce, or even eliminate, the need for additional commuter parking.

The University will need to balance its desire to avoid investment in new parking facilities with its ability to implement aggressive TDM measures to formulate a thoughtful TDM program that meets its existing and future needs. Additionally, the University will need to recognize the speculative nature of the TDM analysis and that future realities in terms of available data, travel behavior, program effectiveness, and institutional acceptance may necessitate a change of course in the future.

Steering Committee Direction

The steering committee discussed the appropriate level of TDM implementation. There was consensus that the University of Virginia should pursue TDM in a moderate to aggressive way. Members of the steering committee supported the implementation of a program that reduces single occupant vehicle travel as much as possible without creating disruption to employee's ability to complete work responsibilities and meet personal obligations. It was suggested that Phase 2 of this plan should consider the income and geographic impact of the TDM program on specific populations. Phase 2 should also ensure that the program is consistent with existing or modified human resource and benefit policies. The impacts on neighborhood parking around Grounds should also be assessed.

With implementation of the moderate to aggressive TDM program, University can expect a 3 percent reduction in automobile mode share (with an 8 percent shift from single occupant vehicle to carpooling) and a reduction in parking demand of between 625 and 775 spaces for the 2015 and 2025 scenarios, respectively when compared to the Baseline scenario. This reduction in parking needs is likely to result in substantial cost savings associated with the development of new parking resources. Rough estimates gauge this cost savings to be in the range of \$15 to \$27 million over the timeframe considered in this study.

Preliminary Conclusions

The analysis contained in this report shows that TDM can play a significant role in the development of the Grounds Plan and future growth. TDM can help reduce automobile traffic associated with growth in enrollment and employment at the University of Virginia and can help reduce or eliminate the need for an increase in the parking supply. The degree to which TDM can assist with these objectives will be determined based on the University's selected approach - determined through stakeholder participation, the rigor and success of program implementation, and the behavioral response of the University community.

PHYSICAL IMPROVEMENTS

To support the TDM plan, a range of physical improvements can encourage walking, bicycling, and the use of transit. Guidelines for implementation of these improvements are also provided in this report. There are two alternatives for including physical improvements on University Grounds. The University could decide to implement some or all improvements as a single grounds-wide construction project or improvements could be included in construction as plans as new facilities are developed. In either case, the goal of the improvements is to form a comprehensive system of measures that encourage University staff, students, and health system employees to seek alternate modes of transportation when destined to the University.