Tufts UNIVERSITY

TRANSPORTATION DEMAND MANAGEMENT STRATEGIES

MARCH 2015

NELSON NYGAARD

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CONTENTS

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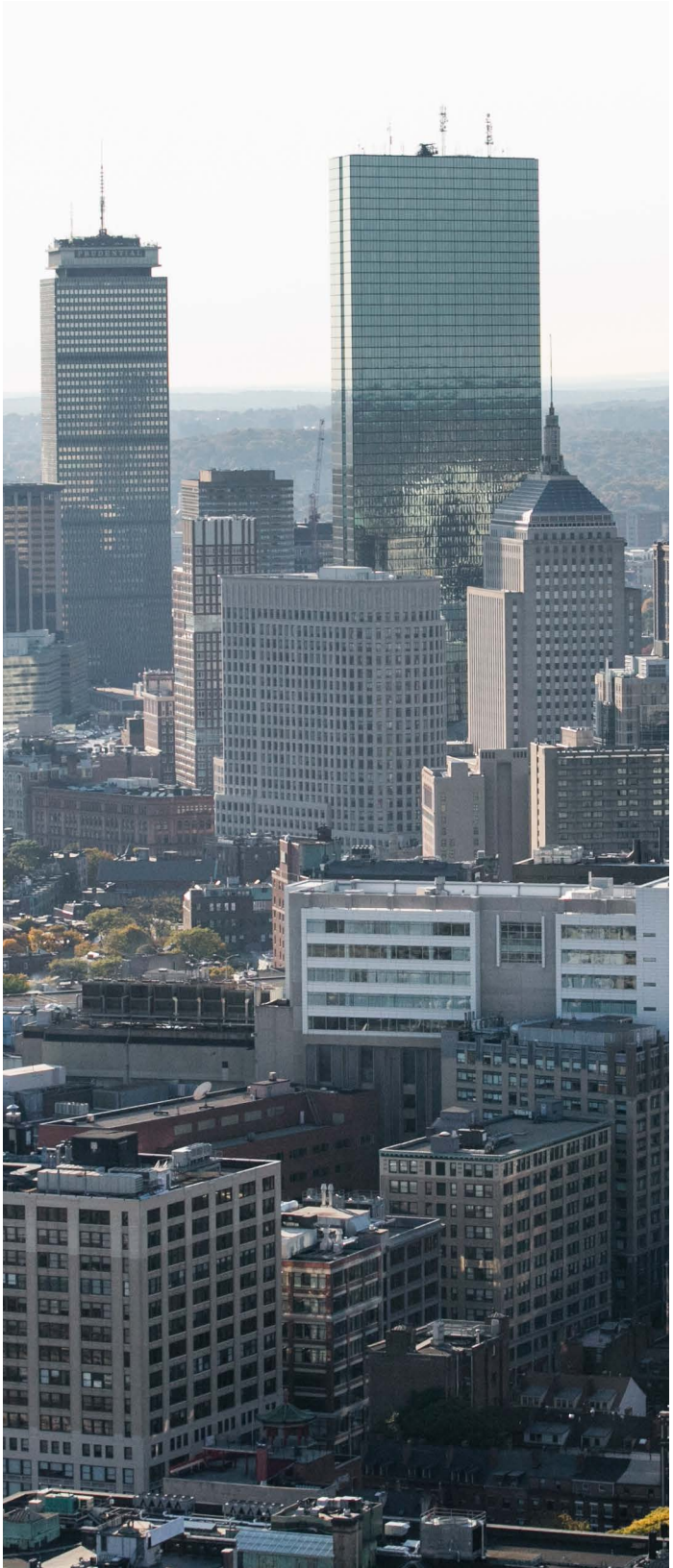

EXECUTIVE SUMMARY

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PLAN PURPOSE

Tufts University sought to develop a campus wide Transportation Demand Management (TDM) plan with specific programs addressing all modes of transportation, investment strategies, and tangible goals and targets. The TDM Plan establishes a set of strategies to help address growing transportation-related challenges and meet the diverse mobility demands of the University's faculty, staff and students. This plan was developed over an 8-month period with broad input from campus stakeholders, including students, faculty and staff from all three Massachusetts campuses. The TDM plan will make the University more competitive by responding to student and employee needs for a safer, more aesthetically pleasing environment; improving employee and student health and job satisfaction; and decreasing the amount of greenhouse gases released from University-related transportation.

This project included input from an online, University-wide commuter survey that garnered over 4,850 responses, multiple meetings during the spring, summer and fall 2014 semesters with a Working Group, and interviews and meetings with interested parties such as Tufts Shared Services, the Department of Public and Environmental Safety (DPES), and an advisory group at the Tufts Health Sciences Complex.

The Working Group provided comments and edits to the vision statement, goals and metrics during meetings. In order to build consensus and reach members that were unable to attend in-person working sessions, an online survey was developed with the Office of Sustainability and distributed via e mail to the Working Group. As a result of the survey and discussions with the Working Group, the vision and goals described at right provide a set of guiding principles for evaluating potential TDM strategies. The subsequent metrics provide benchmarks for the University's existing TDM and transportation programs, establishing a means of measuring progress in the future, following implementation.

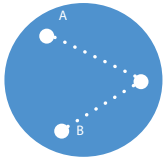
GOALS

A list of nine goals was developed based on an evaluation of existing master plans and policy documents, including the T10 Strategic Plan (2013-2023), the Campus Sustainability Council Report (2013), Tufts Medical Center Institutional Master Plan (2012), Grafton Campus Master Plan (2014), and Tufts University Master Plan Medford Campus (2006). Metrics were also identified to benchmark Tuft's existing parking and transportation programs and to establish a means of measuring progress in the future, following implementation. Both the goals and metrics were evaluated, screened, and refined based on input from the Working Group via meetings and an online survey. The top priorities identified for the TDM plan were Cost Effectiveness, Creating a Pedestrian Friendly Campus, Planning for Future Growth and Improving Transit Accessibility.

The plans goals include:

Plan for Future Growth

Increase Campus Sustainability



Improve Connectivity Between Campuses

Cost Effectiveness

Maintain Campus Competitiveness

Improve Transit Accessibility

Reduce Parking Demand

Promote Bicycle Use

Create a Pedestrian Friendly Campus

Vision Statement

The Tufts University TDM Plan is a ***Cost Effective*** program that allows the end user to make ***Informed Transportation Choices***. The TDM Plan will provide ***Clear, Consistent Information*** with a unified approach for all three US Campuses. The Plan will benefit both the University and the Surrounding Communities.

TDM Working Group

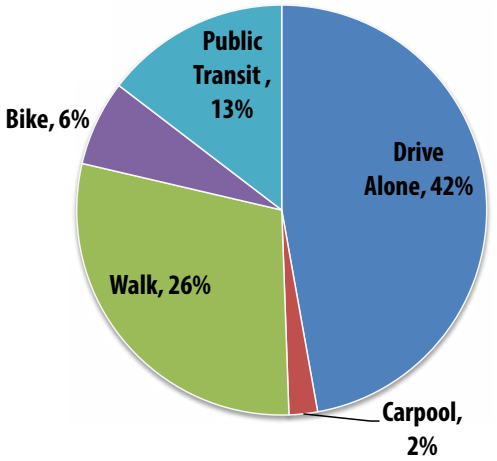
The Working Group included wide representation from multiple user populations including faculty, graduate and undergraduate students as well as representatives from the following departments: Real Property Services, Facilities, Tufts Shared Services (Boston), Tufts University Police Department (TUPD), Dept of Public and Environmental Safety Administrative Services, Grafton Planning, Operations, Campus Planning, Purchasing and Sustainability.

CAMPUS SNAPSHOT & ISSUES

The following key findings influenced the development of the Tufts TDM Plan strategies and recommendations.

Campus Mode Share

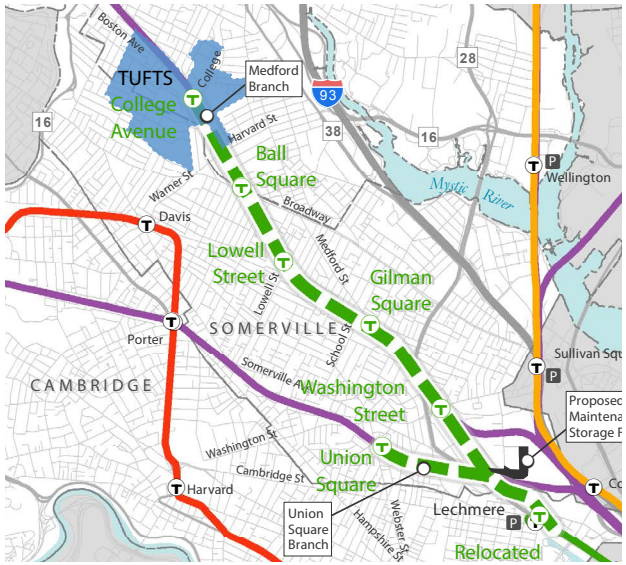
Drive alone mode share amongst all populations (staff, faculty and students included) varies between the three campuses. It is lowest at the Boston campus, at 14%, at Medford/Somerville it is 42% and is highest at the Grafton campus, at 81%. The Medford/Somerville campus drive alone mode share is slightly higher than peers American University (39%) and Boston College (37%). By campus population, there is also great variation. Notably, 68% of staff at the Medford/Somerville campus drive alone compared to 16% of students.



Modeshare at Medford/Somerville Campus

New Green Lane Station

At the Medford/Somerville campus, transit mode share amongst staff and faculty is 10% and 11% compared to drive alone share of 68% and 54% respectively. The proposed Green Line Station at the intersection of College and Boston Avenues is an unprecedented opportunity to change this dynamic and encourage commuting by transit. 35% of all FTE staff and faculty (more than 800 employees) live in towns served by the future Green Line Extension . However there are currently barriers to realizing this potential including the College and Boston Avenue intersection and no direct pedestrian and bicycle paths to the Main Campus.



Green Line Extension to Tuft University

Parking Conditions

With pricing for regular campus users ranging from $0.58 to $3.87 per day in Medford/Somerville, and $5.25 to $16.81 in Boston, the University is subsidizing the real cost of providing parking spaces up to $17 per day. Meanwhile, at peak, nearly 900 spaces are empty – mostly in the Dowling Garage and Cousens Lot. As the University works to reduce parking demand and free up land to accommodate future uses that better serve the University's core mission, restructuring parking rates can incentivize affiliates to use other modes, reduce greenhouse gas emissions, and offer choice on where to park and how much to pay. The management of the parking system should be closely integrated with the rest of the University transportation system, especially if future campus development would be best placed on existing parking lots.

Walking and Bicycling to Campus

For both staff and faculty, bicycle mode share is 4% while walk mode share is 8% and 6% respectively at the Medford/Somerville campus. Many employees live in communities well within biking distance: 30% of Grafton employees live in North Grafton, Westborough, Grafton and Shrewsbury and 20% of Medford/Somerville employees live in Somerville and Medford. The University has a growing bicycle program, represented by the popularity of Tufts Bikes at the Medford/Somerville Campus. However, there are significant gaps in the bicycle infrastructure/ lanes connecting to all three campuses indicated by responses to the 2014 Transportation Survey which ranked designated bicycle lanes highest for bicycling preferences.

TDM Program Awareness

There is low awareness of many of the existing TDM programs including: T-Pass pre-tax purchase, Zipcar, Hubway bikesharing and Emergency Ride Home. For example, 38% of employees at the Medford/Somerville campus are unaware of the pre-tax T-Pass program. The Health Sciences Complex is part of A Better City Transportation Management Association (TMA) which provides a comprehensive list of traditional TDM programs such as carpooling benefits, guaranteed ride home and walk/bike incentives. However, 89% of employees are unaware of A Better City's TDM programs such as carpool and walk to work incentives and there are 0 participants in the carpool program. With additional promotion, the university can make better use of the ABC TMA membership.

Campus Abbreviations

Some recommendations apply only to a specific campus, denoted in the text using the following abbreviations:

(M/S) : Medford / Somerville Campus

(B): Boston Campus

(G): Grafton Campus

(ALL): All three campuses

If not specified, the recommendation is a general policy not specific to a campus.

RECOMMENDED ACTIONS

The overall universe of TDM Strategies was developed based on the following:

- Analysis of existing TDM programs and their effectiveness;
- Results of the 2014 Transportation Survey;
- A comprehensive review of existing planning documents and studies including campus master plans and the University's ongoing multi-modal work with Nitsch Engineering;
- Field visits and observations;
- Discussions with the Working Group and meetings at the Health Sciences Campus;
- TDM best practices in other institutional settings;
- Consulting team's professional experience; and
- Peer review of American University, Boston College, Brown University, Princeton University and Washington University. These universities were selected based on their comparable size to Tufts, institutional profile, location within an urban setting, presence of a TDM program, and the availability of information.

Based on the process described above, a universe of TDM strategies was developed. Some were developed based on ongoing initiatives such as the construction of the future Green Line Station and the opportunities that this presents to reverse mode split trends at the Medford/Somerville campus. Others were a direct outcome of the analysis contained in Part 1, the Transportation Factbook that showed low awareness and participation in many of Tufts existing TDM programs and identified issues and opportunities based on the University's existing transportation system. These ideas were then organized into a list of 36 strategies that best address the Campus Snapshot and Issues described above.

Catalytic strategies scored higher when measured against the established goals but require a longer planning horizon and collaboration with external partners such as local host municipalities. Priority and secondary strategies score next highest respectively and can generally be pursued by the University in the immediate and short-term.

CATALYTIC STRATEGIES

1A. Install a Mobility Hub at the future Green Line station (M/S)

1B. Invest in multi-modal accessible paths between upper campus and future green line station (M/S)

1C. Restructure parking rates and invest revenues in TDM programs (M/S, B)

1D. Implement raised crosswalks, curb extensions on Professor's Row, College Avenue and a bicycle lane on Boston Avenue (M/S)

1E. Install bicycle lanes connecting to campus (ALL)

1F. Implement 50% staff and faculty T-Pass program (ALL)

1G. Implement Pedestrian/safety enhancements at College and Boston Avenue Intersection (M/S)

1H. Joey Shuttle Planning (M/S)

PRIORITY STRATEGIES

2A. Expand TDM programs (B)

2B. Install additional secure bike-parking at the Tremont Street plaza and an on-campus Hubway Station (B)

2C. Create University-wide policy for telecommuting/telelecturing (ALL)

2D. Audit bicycle parking and establish campus-wide standards for bicycle racks (ALL)

2E. Work with MBTA and cities of Somerville and Medford to upgrade bus stops (M/S)

2F. Develop a campus-wide bicycle plan (M/S)

2G. Offer a $20/month bicycle reimbursement benefit (ALL)

2H. Develop a personalized Employee MyCommute intranet site (ALL)

2I. Increase staff and faculty enrollment in pre-tax T-Pass deduction (ALL)

2J. Increase awareness of A Better City TDM programs at Health Sciences Complex (B)

2K. Construct end-of trip facilities such as showers and locker rooms and use existing facilities (ALL)

2L. Work with Worcester Regional Transit Authority (WRTA) to expand service (G)

2M. Establish "TDM Clearinghouse" website (ALL)

2N. Promote Go Safe walking escort service to off-site parking lots and South Station (B)

SECONDARY STRATEGIES

3A. Incentivize vanpools/carpools (ALL)

3B. Develop a "Bike Buddies" Program to encourage bicycle commuting (M/S, B)

3C. Increase awareness of discounted student semester T-Pass (M/S)

3D. Install frontloading bike racks on campus shuttles (M/S)

3E. Create a Departmental and Residential Hall "Transportation Ambassadors" program (or utilize existing outreach programs) (ALL)

3F. Provide information on non-SOV transportation options for inter-campus travel (ALL)

3G. Install self-service bike repair stations (ALL)

3H. Introduce HOV ridesharing permit (three or more person carpools) (ALL)

3I. Multi-modal safety awareness campaign in coordination with host community (ALL)

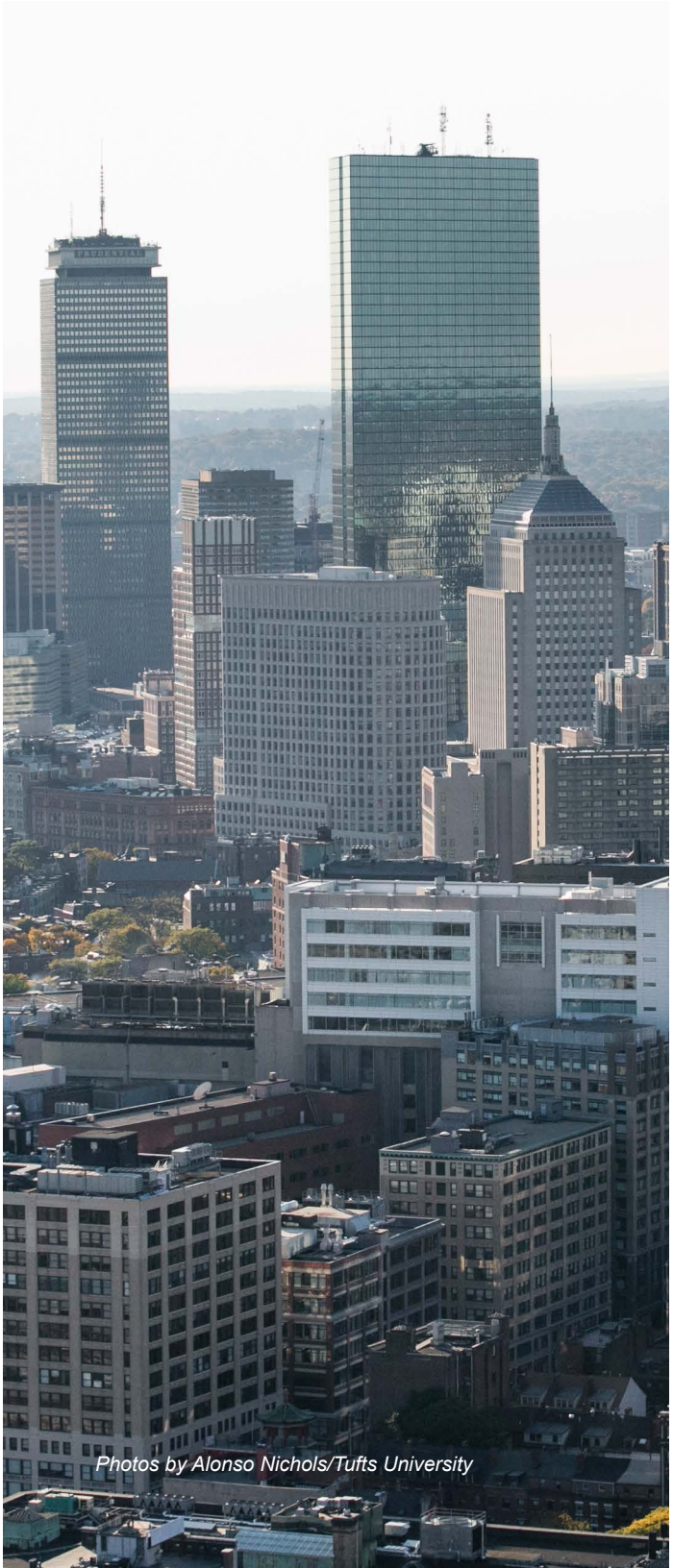
3J. Deploy a dynamic parking utilization software package and real-time electronic parking wayfinding signs for high parking-demand events (M/S)

3K. Increase number of Electric Vehicle (EV) charging stations (ALL)

3L. Monitor MBTA student U-Pass Strategies (ALL)

3M. Require all contractors to park in dedicated parking at Dowling Garage (M/S)

3N. Craft a bike parking duration policy (ALL)



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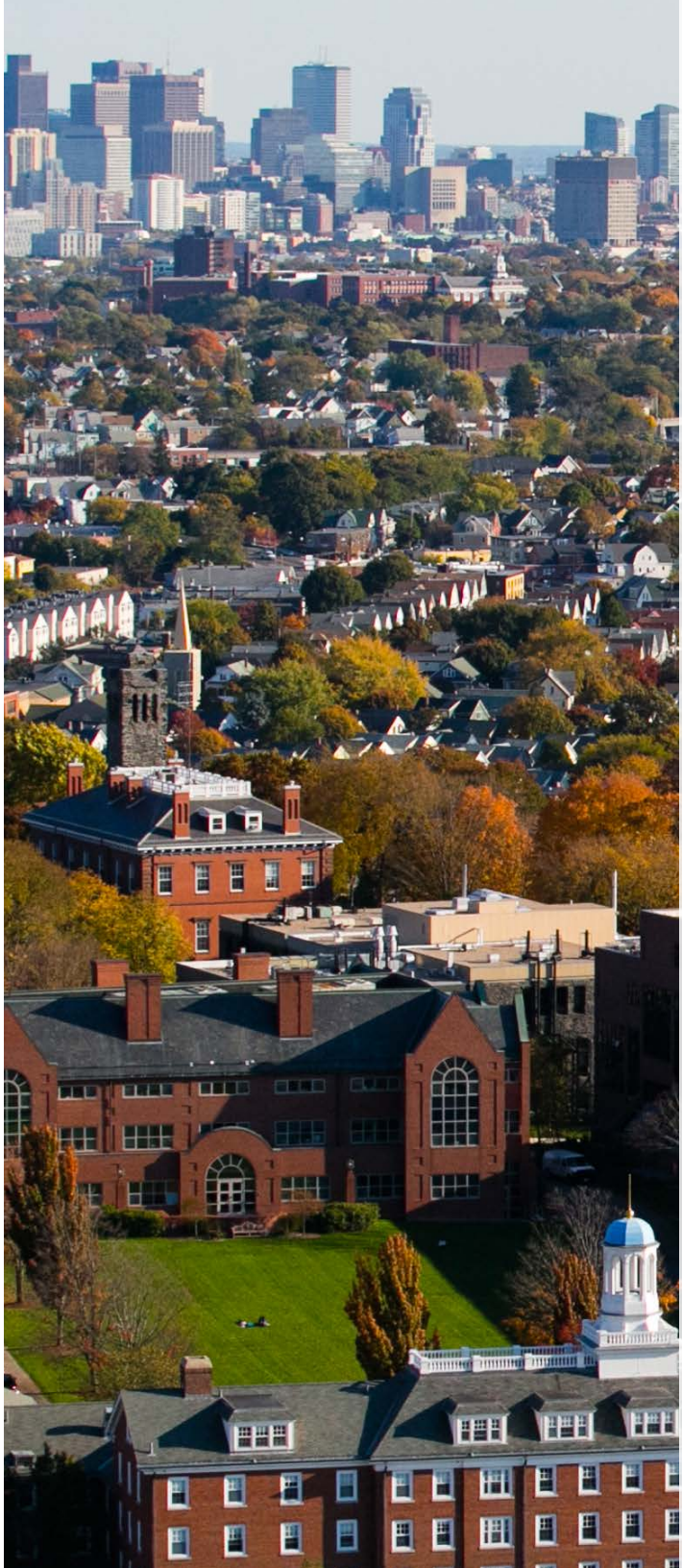


INTRODUCTION

Photo by Alonso Nichols/Tufts University

INTRODUCTION

This document is Part 2 of the Tufts University campus-wide Transportation Demand Management (TDM) Plan and contains the strategies needed to achieve the University's TDM goals. Part 1 of the Plan is the Tufts University Transportation Factbook that summarizes current TDM programs, existing mode splits and baseline measures of effectiveness of existing TDM Programs at each of the three US campuses.

The strategies in this report apply to the three Massachusetts campuses (Medford/Somerville Campus, the Health Sciences Campus in Boston, and the Grafton Campus) and are in addition to the currently employed TDM measures at the University. Some strategies are refinements to existing efforts, and others are new strategies and policies not currently in use at the University. The purpose of this document is to guide and prioritize TDM program and policy development for the University in the immediate future (FY 2015), near-term (FY 2016-2017), mid-term (FY 2016-2022) and long-term (FY 2023 and beyond).

This report includes the following elements:

- Overview of the vision, goals and metrics that guide the TDM Plan
- Methodology of the evaluation of proposed TDM strategies
- Identification of TDM strategies, categorized as 'catalytic', 'priority', and 'secondary'
- An implementation overview of each strategy, including planning-level costs and timeframe for application (and completion, if applicable)
- Impact of TDM strategies on Medford/Somerville parking demand
- A review of TDM-related municipal policies for Medford, Somerville, Boston and Grafton

VISION STATEMENT, GOALS, AND METRICS

To help guide the development of University TDM strategies, a vision statement and a set of goals and metrics were developed based on an evaluation of existing master plans and policy documents, including:

- T10: T10 Strategic Plan (2013-2023);
- CSCR: The Campus Sustainability Council Report (2013);
- TMC: Tufts Medical Center Institutional Master Plan (2012);
- GCMP: Grafton Campus Master Plan (2014); and
- TUMPMC: Tufts University Master Plan Medford Campus (2006).

The Working Group provided comments and edits to the vision statement, goals and metrics during meetings. In order to build consensus and reach members that were unable to attend in-person working sessions, an online survey was developed with the Office of Sustainability and distributed via e mail to the Working Group. The purpose of the survey was threefold:

1. To garner support for the Vision Statement;
2. To rank the goals in order or of importance; and
3. To solicit input on a set of metrics by which the TDM strategies can be measured.

As a result of the survey and discussions with the Working Group, the vision and goals described on the next page provide a set of guiding principles for evaluating potential TDM strategies, and the metrics provide benchmarks for the University's existing TDM and transportation programs, establishing a means of measuring progress in the future, following implementation.

Vision Statement

The Tufts University TDM Plan is a ***cost effective*** program that allows the end user to make ***informed transportation choices***. The TDM Plan will provide ***clear, consistent information*** with a unified approach for all three US Campuses. The Plan will benefit both the University and the surrounding communities.

TDM Working Group

The working group included wide representation from multiple user populations including faculty, graduate and undergraduate students as well as representatives from the following departments: Real Property Services, Facilities, Tufts Shared Services (Boston), TUPD, Dept of Public and Environmental Safety Administrative Services, Grafton Planning, Operations, University Planning, Purchasing, and Sustainability

TDM GOALS

The Working Group was asked to indicate the relative importance of each of the project goals to the planning process considering the particular area of the University represented by the individual.

Before ranking the goals, it was recommended that the Working Group consider the Vision Statement and weigh the relative importance of all nine goals. The Working Group ranked **Cost Effectiveness, Creating a Pedestrian Friendly Campus, Planning for Future Growth and Improving Transit Accessibility** as the Primary Goals for the TDM Plan.

PRIMARY GOALS

Cost Effectiveness

This goal is an overarching theme that seeks to reduce University costs related to transportation and maximize efficiencies of current programs and resources. This might include stabilizing parking costs and revenues, exploring new technologies to reduce administrative costs such as smart parking meters and focusing on those TDM measures that are most cost effective.

Create a Pedestrian Friendly Campus

A pedestrian-friendly campus includes safe, accessible paths and connections to surrounding neighborhoods and transit connections. This supports a policy directly expressed in the T10 Strategic Plan and policies of committing to wellness and sustainability (T10), reducing congestion on campus, reducing parking demand and increasing the share of employees that walk to campus (TMC). This goal also relates to handicap accessibility, a consideration for the whole campus, as expressed in the TUMPC.

Plan for Future Growth

This goal focuses on the ways in which TDM programs can support future development plans by reducing demand for parking and therefore the need to construct or rent parking spaces. Spaces occupied by surface lots can be replaced with uses that better support the University mission and campus-wide goals for sustainability.

Improve Transit Accessibility

The University must ensure affordable, equitable, multi-modal access to transit services including the Tufts shuttles and MBTA services. This supports policies contained in the CSCR, GCMP and TUMPC and will help maximize transit mode share and drive down parking demand as called for in the TMC.

SUPPORTIVE GOALS

Increase Campus Sustainability

This means increasing the number of employees who walk, bike and take transit to campus. This goal supports multiple existing policies relating to reduction of greenhouse gases, committing to wellness and sustainability, reducing congestion on campus and reducing parking demand (CSCR, T10, TMC, GCMP).

Reduce Parking Demand

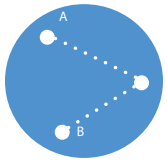
This goal reflects policy recommendations in the TMC to reduce parking demand and congestion on campus. For all three campuses it supports policies to reduce greenhouse gas emissions by up to 85% through 2050 (CSCR) and to create physical spaces consistent with sustainability goals (T10).

Maintain Campus Competitiveness

To remain competitive, the University must provide transportation choice, convenience and accessibility for all users including walkers, bicyclists and transit riders. This will help the University maintain its ability to attract top students, staff and faculty and support its commitment to excellence (T10).

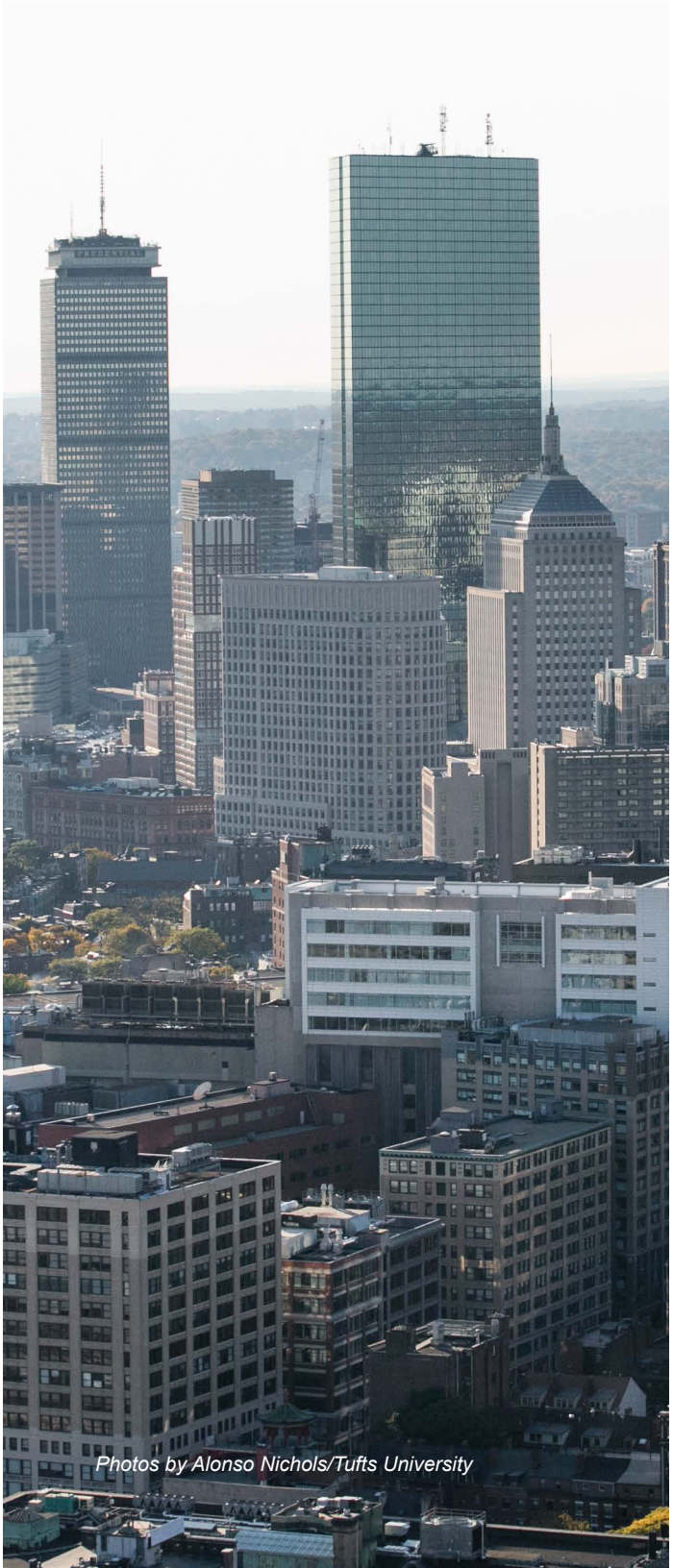
Promote Bicycle Use

Promoting bicycle use means encouraging cycling to campus via infrastructure, bike facilities and incentive programs. Promoting bicycle use supports policies of committing to wellness and sustainability (T10), creating a more cycle-friendly campus (CSCR), reducing congestion and parking demand and increasing the share of employees that bike to campus (TMC).



Improve Connectivity Between Campuses

This means greater support for staff, faculty and students who work on multiple campuses. Connectivity might be virtual, through teleconferencing or through alternatives to single-occupancy vehicle travel such as transit, carpool and vanpool. This goal supports policies to reduce miles traveled for University business as expressed in the CSCR and optimize how people move between campuses (expressed in the RFP for the TDM Plan).



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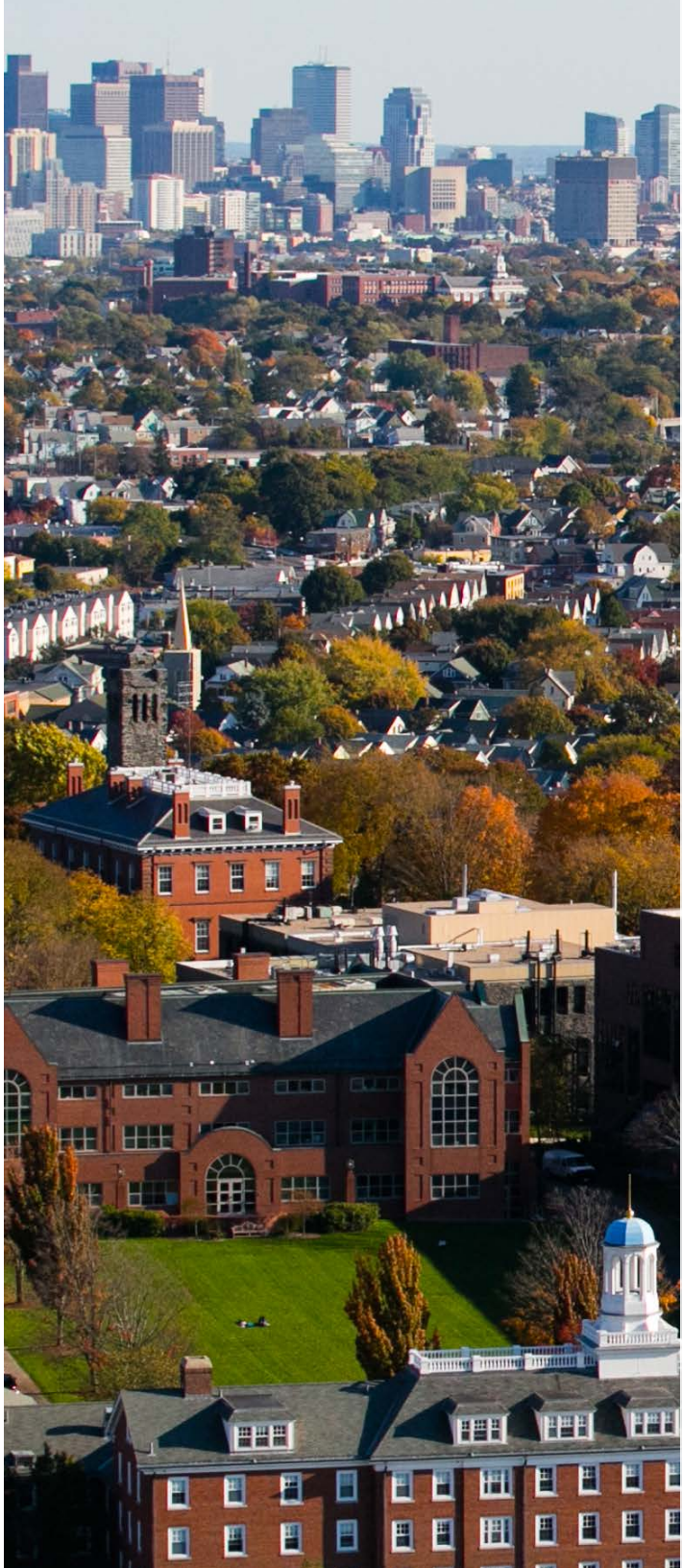


TDM STRATEGIES OVERVIEW

Photo by Alonso Nichols/Tufts University

TDM STRATEGY METHODOLOGY

The overall universe of TDM Strategies was developed based on the following:

- Analysis of existing TDM programs and their effectiveness;
- Results of the 2014 Transportation Survey;
- A comprehensive review of existing planning documents and studies including campus master plans and the University's ongoing multi-modal work with Nitsch Engineering;
- Field visits and observations;
- Discussions with the Working Group and meetings at the Health Sciences Complex;
- TDM best practices in other institutional settings;
- Consulting team's professional experience; and
- Peer review of American University, Boston College, Brown University, Princeton University and Washington University.

Based on the process described above, a universe of TDM strategies was developed. Some were developed based on ongoing initiatives such as the construction of the future Green Line Station and the opportunities that this presents to reverse mode split trends at the Medford/Somerville campus. Others were a direct outcome of the analysis contained in Part 1, the Transportation Factbook that showed low awareness and participation in many of Tufts existing TDM programs and identified issues and opportunities based on the University's existing transportation system. Key amongst these is the opportunity to restructure parking pricing and use future revenues to invest in TDM programs. Other strategies simply build on existing programs – for example the strategy to increase staff and faculty enrollment in the pre-Tax T-Pass deduction program is a direct outcome of the fact that there is currently only 4.4% enrollment in this program (at Medford/Somerville). Further expanding TDM awareness through the existing Eco-Ambassadors program directly supports University TDM goals. Some other strategies are additions and new concepts that follow best practices that have been successfully implemented at other Boston area institutions to support mode shift. These include offering a 50% T-Pass subsidy and providing a $20 per month reimbursement for bicycle commuting expenses.

Each strategy in the universe was then entered into the matrix contained in this report (see Implementation Scenarios section) based on how they measure against the nine established goals and based on professional judgment as to overall ability to support mode shift to non-motorized modes. The three categories include:

Catalytic

- Scoring 20-30 based on established TDM goals and most likely to jump-start a shift to non-motorized modes
- Typically requiring an overall longer-term planning horizon (FY 2016-2020) and collaboration between the University and outside partners such as the MBTA and host municipalities

Priority

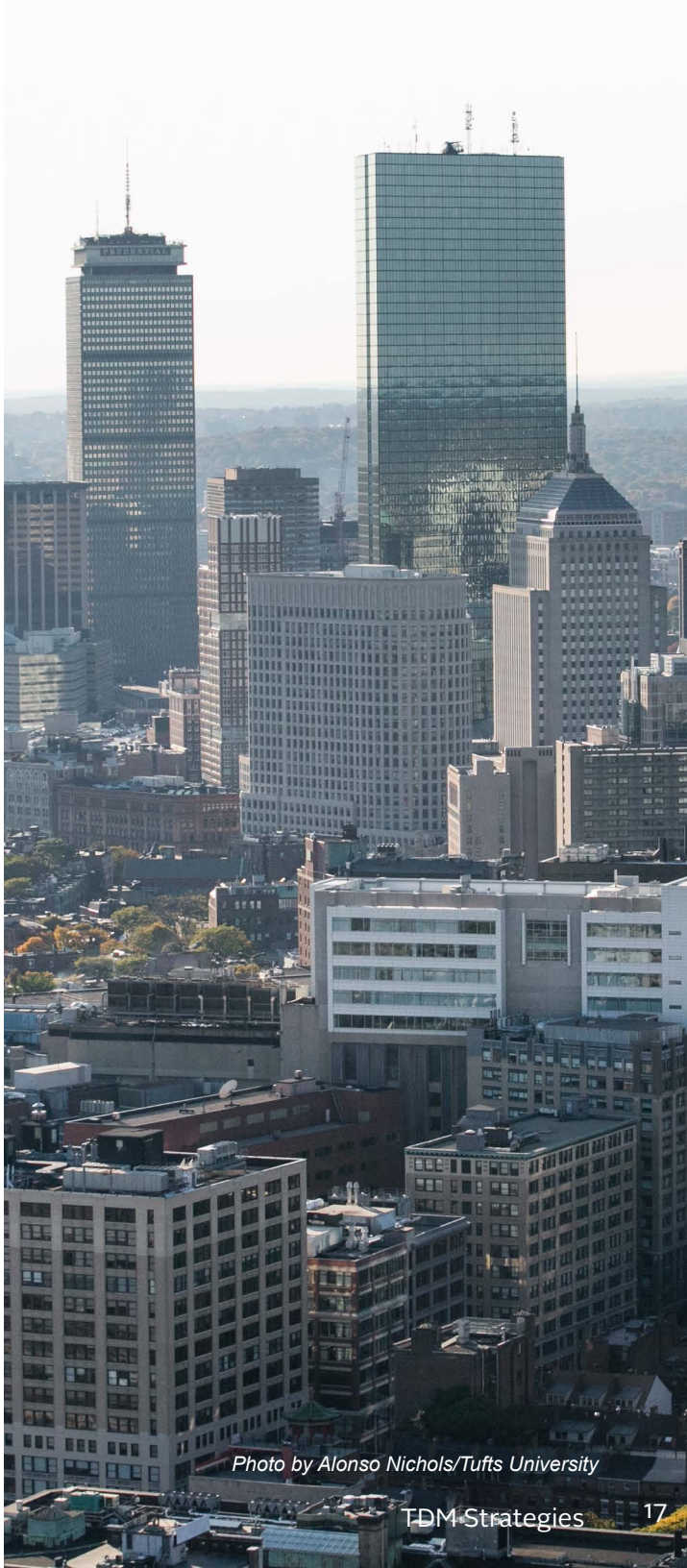
- Scoring 15-20 based on established TDM goals
- Generally well-suited for immediate and near-term implementation (FY 2016-2017)

Secondary

- Scoring 2-15 based on established TDM goals
- Can be pursued in the immediate and near-term (FY 2015-FY 2017)

The University is operating within a constrained financial situation where each implementation decision will influence the University's ability to implement other strategies. Therefore, it should be clarified that it is not recommended that every proposed strategy is implemented; rather the University should seek a balance of strategies that complement one another and are right-sized to current and potential funding. Many of these benefits will be qualitative rather than quantitative. The strategies mix qualitative and quantitative TDM measures in a simple matrix format so that strategies can be easily weighed. As strategies are implemented and more information becomes available, the assessment can be revisited; the evaluation structure can be used for future updates to this TDM plan. The results of this methodology are detailed in the next section of the report.

The scatter plot in the next section compiles all of the programs based on these three categories. For this effort, professional judgment was used to establish qualitative "cost" and "benefit" assessments. Since this is a strategic level plan and many of the recommended projects and programs are not yet well defined, only order of magnitude cost estimates are provided rather than detailed costing. For some strategies, costs could vary widely depending upon the scope of deployment and design details. For these reasons, this chart should be used only as a starting point in prioritizing individual recommendations for implementation.



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TDM Implementation Summary

The high level summary table groups all TDM strategies onto a single page, providing a visual assessment of how strategies rank against a baseline or reference case (where applicable) and against one another. Strategies are color coded by category for comparison. Ease of implementation is an overall assessment of whether the strategy can be implemented in the near term by Tufts University or whether it requires collaboration with outside entities and a longer time frame. The chart also provides a basic assessment of financial and political challenges. Highest impact strategies are most likely to encourage a shift to non-motorized modes of transportation.

Photo by Alonso Nichols/Tufts University

CATALYTIC STRATEGIES
[SCORING 20-30]

Eight strategies stood out as critical to jump-start the implementation of the campus TDM Plan and are therefore "catalytic". Each of these scored high in the qualitative evaluation under the goals listed above, particularly on Cost Effectiveness, Create a Pedestrian Friendly Campus, Plan for Future Growth, Improve Transit Accessibility and overall ability to induce and support mode shift. Central to the catalytic strategies is the opportunity presented by the future Green Line Station.

The catalytic strategies also directly close the most significant gaps in access to campus: for example, both the Boston and Medford/Somerville campuses are hampered by a lack of bicycle infrastructure on roadways both on campus and connecting to campus. On-campus strategies such as investment in upgrades to pedestrian and bicycle infrastructure scored highly in the qualitative assessment since they directly support campus populations and have a greater potential to be implemented by the University independently and in the near term. Below are the eight catalytic strategies:

1A. Install a Mobility Hub at the future Green Line station (M/S)

1B. Invest in multi-modal accessible paths between upper campus and future green line station (M/S)

1C. Restructure parking rates and invest revenues in TDM programs (M/S, B)

1D. Implement raised crosswalks, curb extensions on Professor's Row, College Avenue and a bicycle lane on Boston Avenue (M/S)

1E. Install bicycle lanes connecting to campus (ALL)

1F. Implement 50% staff and faculty T-Pass program (ALL)

1G. Implement Pedestrian/safety enhancements at College and Boston Avenue Intersection (M/S)

1H. Joey Shuttle Planning (M/S)

PRIORITY STRATEGIES
[SCORING 15-20]

The next set of strategies represents the second tier of priority projects and programs. These are generally well-suited for near or mid-term implementation and could become more aggressive as funding becomes available. The majority of these programs are within direct control of the University and include low-hanging fruit such as installing additional bike parking at the Tremont Street plaza, continuing work on a University-wide policy for telecommuting, increasing awareness of existing TDM programs at the Boston campus and establishing a TDM clearinghouse website serving all three campuses. Below are the fourteen (14) priority strategies:

2A. Expand TDM programs (B)

2B. Install additional secure bike-parking at the Tremont Street plaza and an on-campus Hubway Station (B)

2C. Create University-wide policy for telecommuting/telelecturing (ALL)

2D. Audit bicycle parking and establish campus-wide standards for bicycle racks (ALL)

2E. Work with MBTA and cities of Somerville and Medford to upgrade bus stops (M/S)

2F. Develop a campus-wide bicycle plan (M/S)

2G. Offer a $20/month bicycle reimbursement benefit (ALL)

2H. Develop a personalized Employee MyCommute intranet site (ALL)

2I. Increase staff and faculty enrollment in pre-tax T-Pass deduction (ALL)

2J. Increase awareness of A Better City TDM programs at Health Sciences Complex (B)

2K. Construct end-of trip facilities such as showers and locker rooms and use existing facilities (ALL)

2L. Work with Worcester Regional Transit Authority (WRTA) to expand service (G)

2M. Establish "TDM Clearinghouse" website (ALL)

2N. Promote Go Safe walking escort service to off-site parking lots and South Station (B)

SECONDARY STRATEGIES

[SCORING 2-15]

Although these secondary strategies score lower under the established goals than the catalytic and priority strategies, many of these strategies could be deployed in the immediate to near term:

3A. Incentivize vanpools/carpools (ALL)

3B. Develop a "Bike Buddies" Program to encourage bicycle commuting (M/S, B)

3C. Increase awareness of discounted student semester T-Pass (M/S)

3D. Install frontloading bike racks on campus shuttles (M/S)

3E. Create a Departmental and Residential Hall "Transportation Ambassadors" program (or utilize existing outreach program) (ALL)

3F. Provide information on non-SOV transportation options for inter-campus travel (ALL)

3G. Install self-service bike repair stations (ALL)

3H. Introduce HOV ridesharing permit (three or more person carpools) (ALL)

3I. Multi-modal safety awareness campaign in coordination with host community (ALL)

3J. Deploy a dynamic parking utilization software package and real-time electronic parking wayfinding signs for high parking-demand events (M/S)

3K. Increase number of Electric Vehicle (EV) charging stations (ALL)

3L. Monitor MBTA student U-Pass Strategies (ALL)

3M. Require all contractors to park in dedicated parking at Dowling Garage (M/S)

3N. Craft a bike parking duration policy (ALL)

KEY TO PLANNING LEVEL COST ESTIMATES

$: $0-$4,999

$$: $5,000 - $49,000

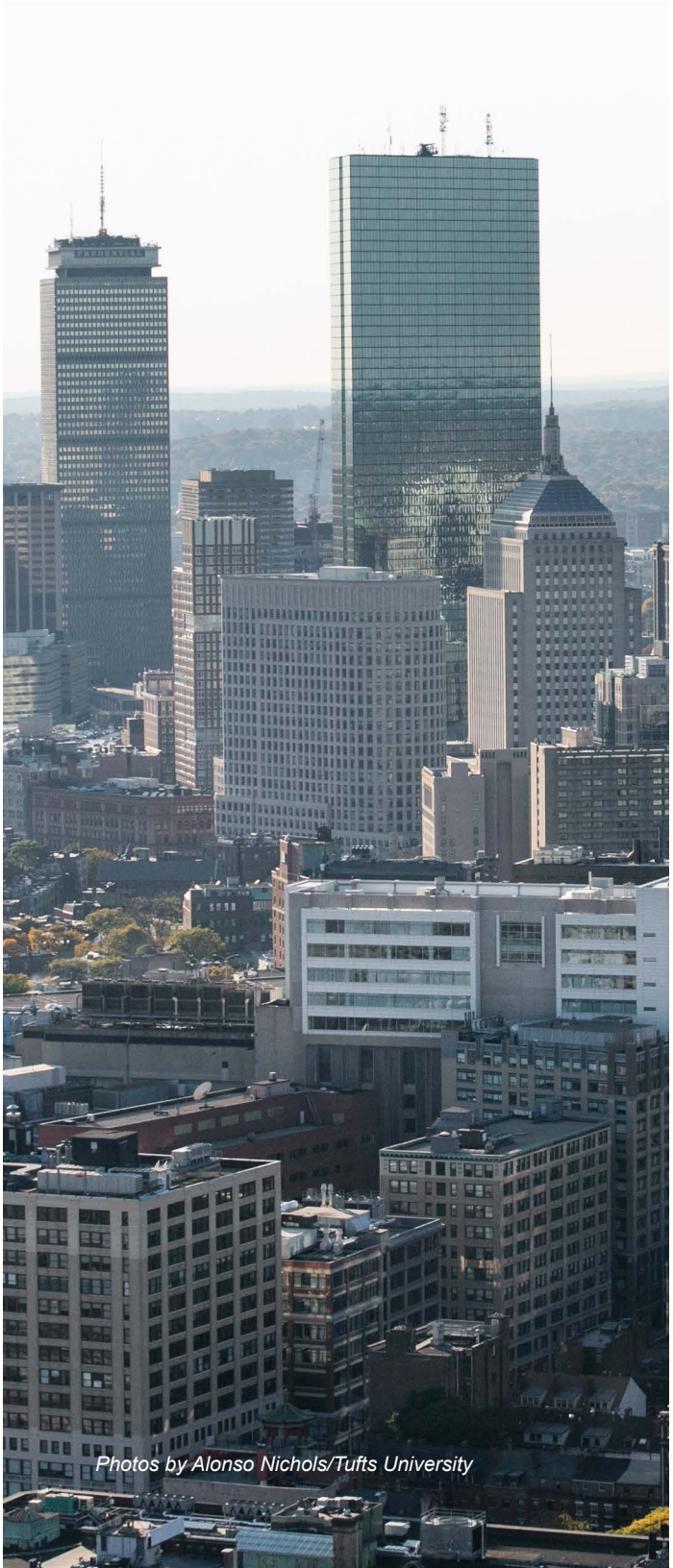
$$$: $50,000 - $99,999

$$$$: $100,000 +

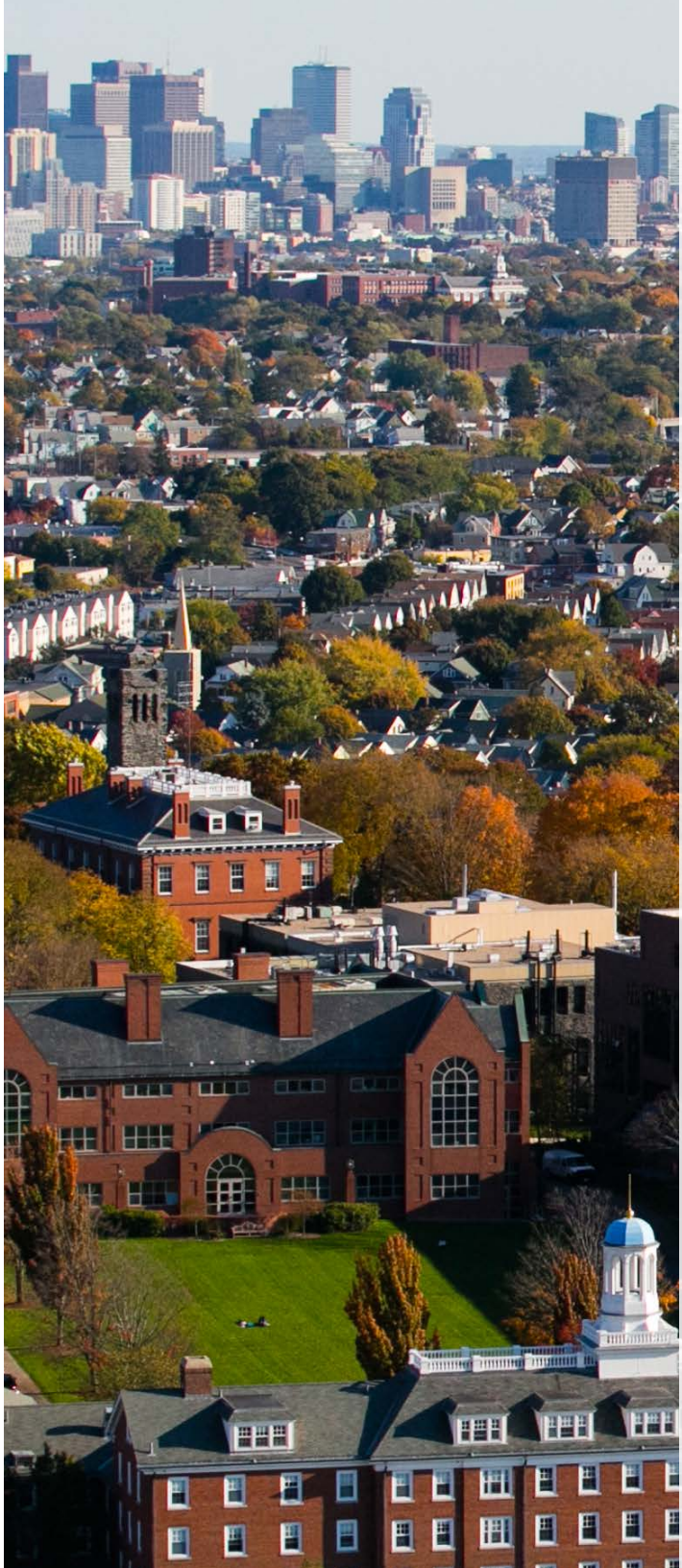
TDM Staffing

A Tufts University full-time transportation coordinator could provide the following functions and help administer the TDM programs at all three campuses. Responsibilities would include:

- Marketing and distribution of commuter programs and information to new employees and students including increasing awareness of existing TDM programs
- Development and implementation of new commute program and incentives
- Distribution of transportation news and commuter alerts relating to local construction projects, or local events that affect traffic and access
- Direct commute assistance to staff and faculty
- Support annual rideshare and data gathering
- Assistance with rideshare matching
- Manage Guaranteed Ride Home programs
- Audit and review of campus transportation needs
- Consultation to employees regarding pre-tax transportation fringe benefits
- Regular postings on social media
- Promotion and participation in Massachusetts Bike Week (held annually in May), Eco-Awards and other transportation events and initiatives
- Commuter challenges and participant rewards
- Representing the University interests at local stakeholder meetings with the City, State, MBTA and other public forums



Photos by Alonso Nichols/Tufts University



CATALYTIC STRATEGIES

1A. INSTALL A MOBILITY HUB AT THE FUTURE GREEN LINE STATION

Issues and Opportunities

- At the Medford/Somerville campus, transit mode share amongst staff and faculty is 10% and 11% compared to drive alone share of 68% and 54% respectively.
- The proposed Green Line Station at the intersection of College and Boston Avenues is an unprecedented opportunity to change this dynamic and encourage commuting by transit.
- 35% of all FTE staff and faculty (more than 800 employees) live in towns directly served by the future Green Line Extension .
- Though adjacent, the proposed station is not easily accessible to the Medford/ Somerville campus.

Strategy

- Maximize access to the future College Avenue station area by all modes
- Install a Mobility Hub, which includes integrated connections and transportation choices:
  - » Real time travel information
  - » Bus connections
  - » Hubway or bike share
  - » Improved pedestrian crossings
  - » Campus information
  - » Transit and other transportation pass sales
  - » Car-sharing
  - » Additional campus offices/buildings
  - » Signage and directional information

Next Steps

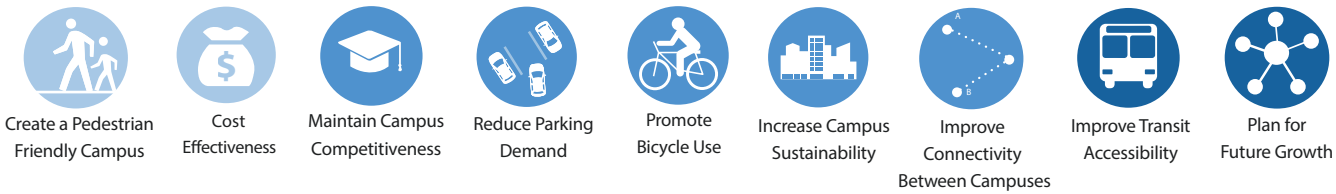
- There are several different ways to set up a Mobility Hub including engaging in joint development and other public-private partnerships to capture land value increases from transit infrastructure investments.
- Proactively coordinate with multiple transportation providers to include in station area plans.
- Collaborate with the City of Medford and traffic engineers VHB and Nitsch Engineering to reconfigure the College and Boston Avenue intersection.
- Include components of a mobility hub in conceptual designs including the elements listed above.

Campus
MEDFORD/SOMERVILLE

Score
25-30

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

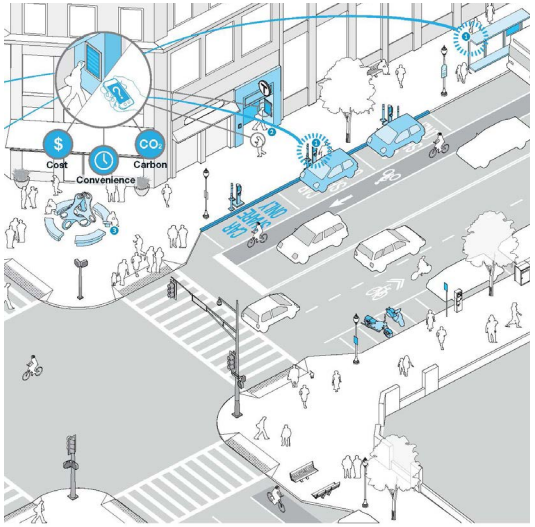


Intensity, Metrics, and Cost

Planning should happen in the short-term with implementation to coincide with construction of the new Green Line Station in the FY2018-2022 timeframe.

- Metrics:
  - » Transit Mode Share - 10% faculty, 11% staff
  - » Number of transportation choices available at future Green Line Station

- Cost: $$$$



Mobility hub concept Credit: Boston Complete Streets

What is a Mobility Hub?

Mobility Hubs bring together alternative transportation choices, virtual trip-planning and placemaking . They range from large-scale investments around transit centers with multiple transfers, such as South Station, to interventions in neighborhoods at locations near bus or rapid transit. Mobility Hubs are a part of the City of Boston Complete Streets Guidelines and include:

- **Alternative transportation choices** such as bus, rail, electric vehicle charging and bicycle and car share parking are co-located to allow ease of transfers
- **Trip planning** is enabled by providing real-time global positioning system (GPS) information to users to improve access and connectivity to transit services
- **Placemaking** –through streetscape improvements and information about local resources, a sense of place can be created.

1B. IMPLEMENT MULTI-MODAL ACCESSIBLE PATHS

Issues and Opportunities

- Future development on Boston and College Avenues and construction of the new Green Line Station will generate high pedestrian and bicycle demand between Upper Campus and the intersection of Boston and College Avenues.
- There are currently no multi-modal accessible paths between Upper Campus and Boston Avenue in the sloped areas ("hillside site") between the Dowling Garage and the stairs fronting College Avenue behind Paige Hall. This area is also fenced in.
- Current master planning efforts recommend the following for the hillside site:
  - » A Central Energy Plant; and
  - » A pedestrian bridge across Boston Avenue connecting to an air rights development at the future Green Line Station. No multi-modal accessible paths are proposed.

Strategy

- Construct new multi-modal accessible path(s) on the slopes between Dowling Garage and the staircase behind Paige Hall on College Avenue.
  - » Map potential multi-modal accessible paths based on existing and future pedestrian desire-lines.
- Install bicycle gutters on existing (and potential future) staircases to improve the accessibility of these slopes to all users.
- Consider a multimodal path that travels directly up the hill opposite the future Green Line station in order to serve pedestrians and cyclists coming from the east side of Boston Avenue who prefer to remain at street level.
- Increased multi-modal activity on the slopes will help activate Boston Avenue and increase a sense of safety.
- The paths will serve user groups arriving at the future Green Line Station "gateway" to the University.

Next Steps

- Work with Tufts students to map existing and future pedestrian desire lines.
- Hire a landscape architect to refine alternatives based on location of future building footprints.

Intensity, Metrics, and Cost

Planning should happen in the near-term with implementation to coincide with construction of the new Green Line Station in the FY2018-2022 timeframe. This strategy can be implemented expeditiously since the sloped areas are entirely within University property.

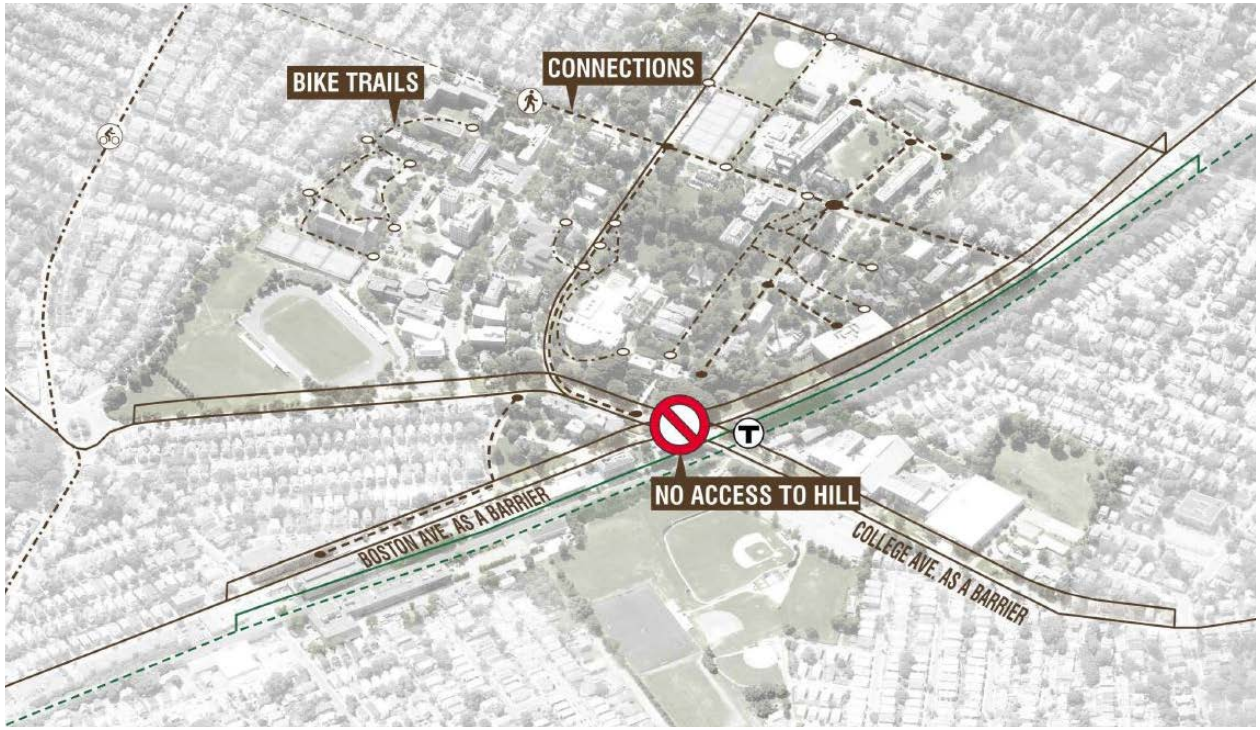
- Metrics:
  - » Walk + Bike Mode Share (10% faculty, 12% staff)
  - » Pedestrian counts on Boston Avenue
  - » Walk time to station and length of accessible path
- **Cost**: $$$$ (Over $100K)

Campus
MEDFORD/SOMERVILLE

Score
25-30

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.



Existing barriers to accessibility Credit: CBT Architects

Accessible paths at University of Rochester are both practical and appealing, Credit: Bergmann Associates, Paul Spaulding

Steep slopes at Tufts main campus, Credit: CBT Architects

1C. RESTRUCTURE PARKING RATES

Issues and Opportunities

- With pricing for regular campus users ranging from $0.58 to $3.87 per day in Medford/ Somerville, and $5.25 to $16.81 in Boston, the University is subsidizing parking spaces up to $17 per day.
- At peak, nearly 900 spaces are empty – mostly in the Dowling Garage and Cousens Lot.
- As Tufts works to reduce parking demand and free up land to accommodate future uses that better serve the University's core mission, restructuring parking rates can incentivize affiliates to use other modes, reduce greenhouse gas emissions, and offer choice on where to park and how much to pay. The management of the parking system should be closely integrated with the rest of the University transportation system.

Strategy

The University should manage parking by:

- Pricing parking based on location, charge more for highest demand spaces, not by facility type or user group, with the lowest demand costing the least.
- Incentivizing daily parking rates, not full-year permits, to promote travel to campus via different modes.
- Phasing out parking subsidies by incrementally charging closer to the market rate.
- Using parking revenues (after operating and maintenance costs) to fund better transit service, bicycle facilities, pedestrian infrastructure, and supporting elements (e.g. lighting, streetscapes, security personnel, etc.).
- Tufts should cooperatively fund its transportation programs, even if programs are managed via different departments. This means that, for example, excess parking revenues should be used to fund other transportation programs, such as the shuttles or bicycle racks.

Next Steps

- The University should tie annual rate changes to parking demand.
- Monitor parking utilization annually and adjust rates accordingly

Intensity, Metrics, and Cost

Planning may occur sooner but is likely to happen in the mid-term (FY 2018-2022) once a University parking policy is developed and the appropriate annual rate increases are determined.

Metrics:

- » Drive Alone Mode Share at Medford/ Somerville campus: 54% faculty, 68% staff
- » Drive Alone Mode Share at Boston campus: 33% faculty
- » Parking Spaces/Capita at Medford/Somerville: 0.19
- » Parking Availability Goals in Key Facilities

- Cost: $$ (Administrative Costs)

Campus

MEDFORD/SOMERVILLE

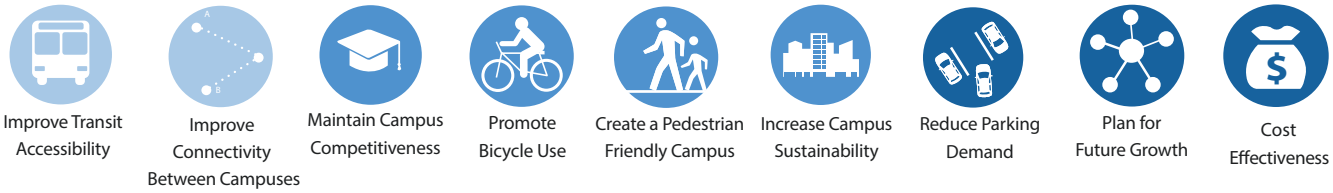
BOSTON

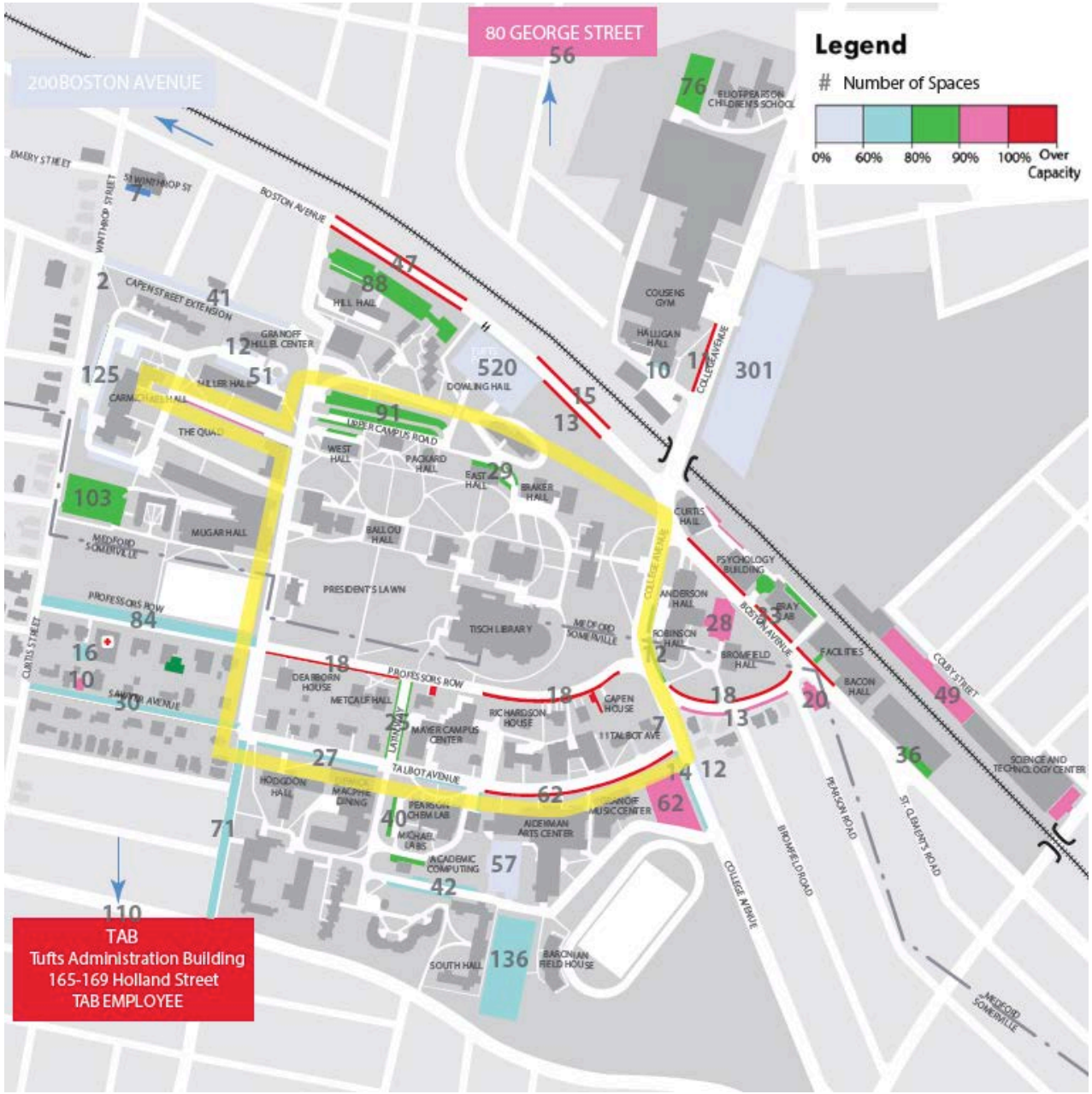
Score

20-24

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.





Suggested Core Parking Zones (in Yellow)

Parking Pricing Benefits

- Gives users a choice on how much they want to pay and where they want to park.
- Offers an incentive to use multiple modes.
- Daily parking payment is less labor-intensive and easier to enforce than window sticker permits.
- Stickers need to be distributed and replaced as needed while requiring every car to be visually inspected by enforcement personnel.
- Payment technologies can be entirely online and enforcement is automatic with gates, sensors, pay by space, or license plate recognition
- Parking areas can be used for University buildings, events, or green space instead of parking facilities.
- Fewer parking spaces reduces the number of vehicles on campus, thereby reducing vehicular-pedestrian-bicycle conflicts.

1D. IMPLEMENT BIKE AND PEDESTRIAN IMPROVEMENTS ON KEY CAMPUS ROADWAYS

Issues and Opportunities

- For both staff and faculty bicycle mode share is 4% and walk mode share is 8% and 6% for staff and faculty respectively at the Medford/Somerville campus.
- 20% of Medford/Somerville employees live in Somerville and Medford, within walking and biking distance.
- Working with Nitsch Engineering, the University has identified multi-modal improvements at key intersections and roadways such as curb extensions, reconstructed pedestrian ramps, raised crosswalks and other traffic calming devices.
- Multi-modal improvements on roadways approaching the future Green Line Station and surrounding parcels slated for development will support goals to increase transit mode share.

Strategy

- Accelerate implementation of visible, "front-door" multi-modal enhancements in near to mid-term.
- Prioritize Nitsch's recommended multi-modal upgrades.

The following strategies are identified as most supportive of improving pedestrian safety and access to the future Green Line Station.

Professors Row:

» Curb extensions at crosswalks
» Raised crosswalks
» Raised intersections
» Convert Professors Row and Talbot Ave to one-way, or close to non-shuttle traffic

College Avenue:

» Eliminate parking and provide curb extensions
» Decrease radius of Dearborn Road at College Avenue
» Narrow College Avenue between Professors Row and Boston Avenue

Boston Avenue Bicycle Improvements:

» One-way conversion with two-way bike lane

Next Steps

- Build consensus on the preferred traffic calming/safety measures from the menu of capital improvements described in the Nitsch Multimodal Access Study (2013) considering potential benefits, costs and other factors such as ease of snow plowing and maintenance.
- Consider recommendations in the Powder House Boulevard Study (2014) as a later phase to limit costs and to first focus on the above improvements that support development at the Green Line Station.
- Work with the City of Somerville and City of Medford to implement preferred alternatives.
- Explore the potential to leverage Green Line Extension funds for projects that will enhance access to the new College Avenue Station.

Campus
MEDFORD/SOMERVILLE

Score
20-24

Goals Met

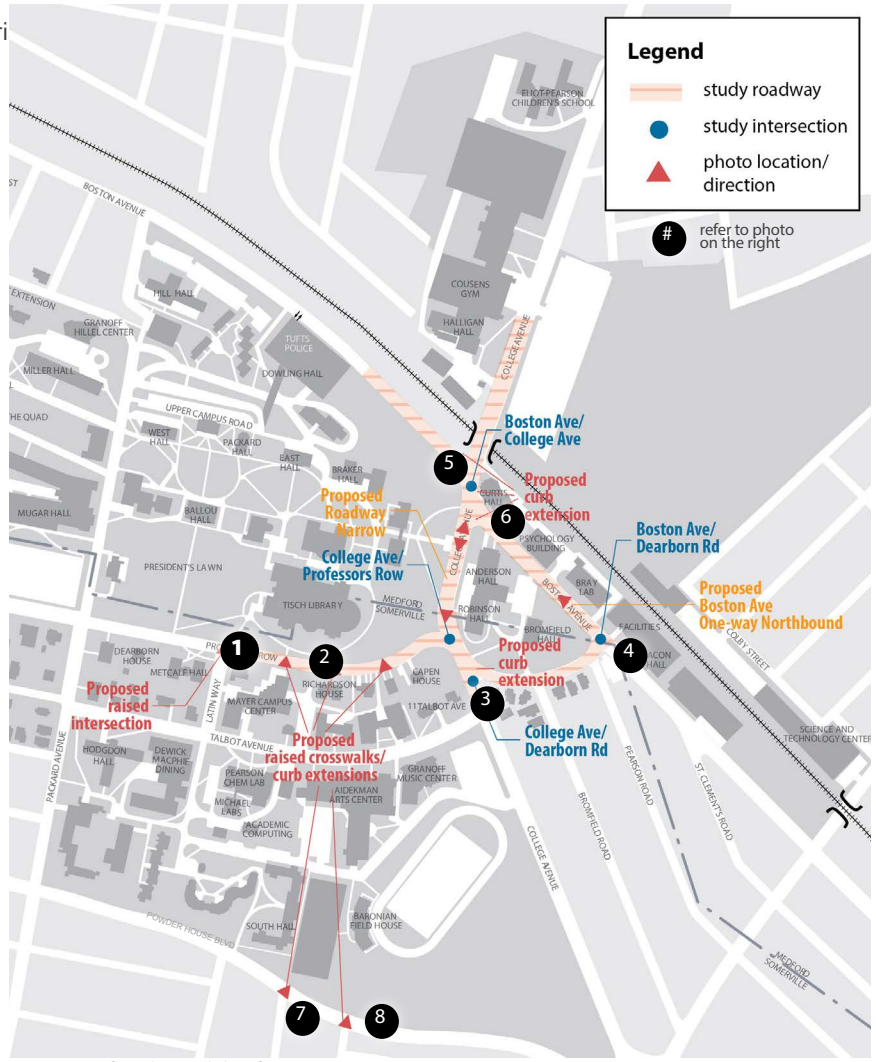
The darker the shade of blue, the greater the degree to which the strategy meets established goals.

Intensity, Metrics, and Cost

These projects should advance comprehensively and take place in the near through mid-term (FY2016-2020) and in coordination with construction of the Green Line Station.

- **Metrics:**
  - » % of Protected/Enhanced Pedestri Crossings in and around campus
  - » Bicycle Counts on Boston Avenue

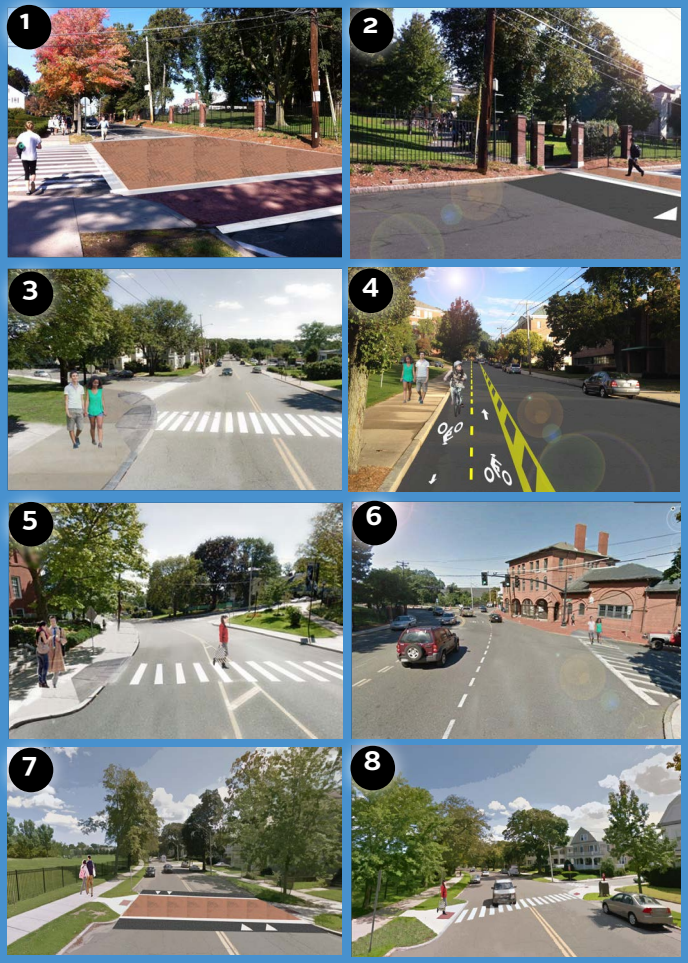
- **Cost**: $$$$ (Over $100K)



Location of multimodal safety concepts

Multimodal Safety Concepts

Credit: Nitsch Engineering



1E. INSTALL BICYCLE LANES CONNECTING TO CAMPUS

Issues and Opportunities

- The University has a growing bicycle program, represented by the popularity of Tufts Bikes at the Medford/Somerville Campus.
- However, there are significant gaps in the bicycle infrastructure/lanes connecting to all three campuses indicated by responses to the 2014 Transportation Survey which ranked designated bicycle lanes highest for bicycling preferences.
- Amongst both staff and faculty, bicycle mode share ranges from 0% at the Grafton campus to 4% at the Medford/Somerville campus.
- Many employees live within biking distance: 30% of Grafton employees live in North Grafton, Westborough, Grafton and Shrewsbury. 20% of main campus employees live in Medford and Somerville.

Strategy

- Promote bicycling as a viable commute option amongst staff and faculty living locally by working with local municipalities to prioritize bicycle lanes connecting to campus.
- Work with the City of Somerville to expand the extensive network of shared lanes.
  - » Work with City of Medford and newly formed Bicycle Advisory Committee to prioritize bike lanes on key routes connecting to campus.
  - » New bicycle lanes could link campus with the trails along the Mystic River and Alewife Brook Trail.
- Work with Boston Bikes (the City's Bicycle Planning Division) to connect the Boston campus to the City's growing bicycle network.

Next Steps

- Work with Tufts students to prioritize existing and potential future high-demand bicycle routes to each campus, field assess right-of-way widths, pinch points and develop conceptual bicycle lane plans.
- Work with Medford and Somerville to identify priority arterials for bicycle lanes.
- Broker meeting with Tufts Shared Services and Boston Bikes.
- Work with Grafton Planning Department to coordinate with neighboring communities to implement bicycle lanes.

Campus

MEDFORD/SOMERVILLE
BOSTON GRAFTON

Score

20-24

Goals Met

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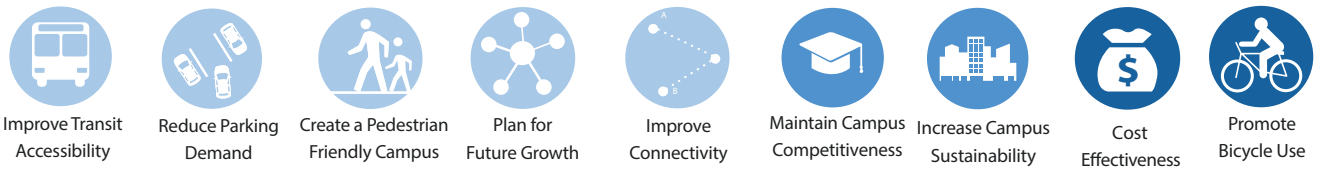


Intensity, Metrics, and Cost

Planning can happen immediately with implementation in the near to mid-term starting in FY2016 and going through FY2020.

- Metrics:
  - » Number of protected bicycle lanes connecting directly to campus and number of bike boxes at campus intersections
  - » Staff/Faculty bicycle mode share (4% faculty, 4% staff at M/S, 0% at Grafton)
- Cost: $-$$$ (depending on whether simply a striped lane or cycle track)

Depending on available right of way and overall traffic volumes, there are a number of different bicycle lane typologies that could be installed on roadways surrounding campus.

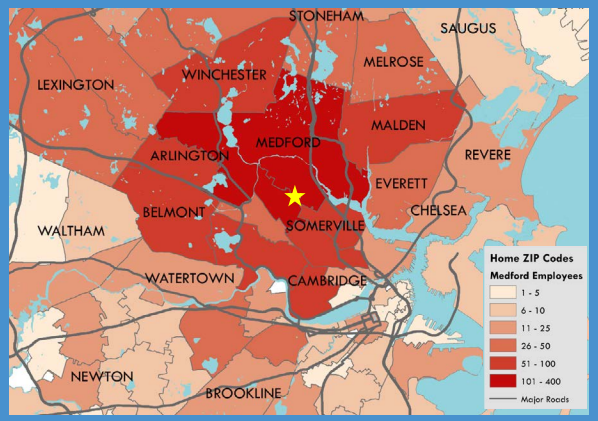
Buffered Bike Lane, Credit: Steven Vance

Cycletrack

Bike Lane

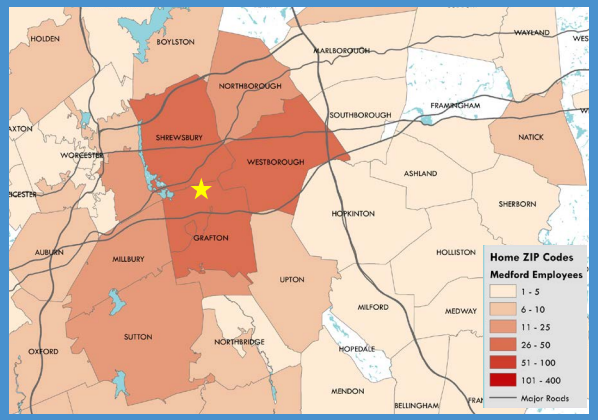
Green-Painted Bike Lane

Medford/Somerville Employee Zip Codes



A high proportion of employees live within biking distance of the Medford/Somerville campus.

Grafton Employee Zip Codes



A high proportion of employees live within biking distance of the Grafton campus.

1F. STAFF & FACULTY T-PASS SUBSIDY

Issues and Opportunities

- Institutions in the Longwood Medical and Academic Area (LMA), including the Colleges of the Fenway, offer an average 50% T-Pass subsidy to staff and faculty. The LMA has a transit mode-share of 50% compared to 13% at the Medford/Somerville campus.
- Staff and faculty transit mode share at Medford/Somerville is currently 11% and 12% respectively and 0% at the Grafton campus.
- Boston employees receive a 25% T-Pass subsidy capped at $40 per month with over 73% of staff and faculty enrolled. As these numbers suggest, direct monthly transit subsidies incent employee transit use.
- Offering a T-Pass subsidy gives a competitive advantage over other employers.

Strategy

- Offer a 50% T-Pass subsidy to staff and faculty at all three campuses. At a minimum, extend 25% subsidy currently offered to Boston campus employees to staff and faculty at Medford/Somerville and Grafton.
- Replace the $40 monthly cap with a $100 cap, comparable to other Boston academic health centers. Both Beth Israel Deaconess Medical Center and Brigham and Women's Hospital in the Longwood Medical and Academic Area offer 50% transit subsidy capped at $115 and $125 per month respectively.

The program would provide the following benefits:

  - » Greater equity between the Tufts Health Sciences Complex which currently offers a 25% subsidy and the Medford/Somerville and Grafton campuses which do not offer a subsidy.
  - » Increased employee transit mode share.
  - » Reduced pressure on future parking supplies.
  - » Subsidized passes have been shown to reduce vehicle ownership.

Next Steps

- Establish the program as a University-wide policy.
- Identify potential funding sources including revenues generated through restructured parking rates.
- Rolling out a T-Pass subsidy program requires working with payroll and Human Resources and potentially a third party vendor that can help to administer the program.
- Promote the Guaranteed Ride Home program to provide enrollees in the subsidy program with the ability to get home via taxi or other car service in the case of a personal emergency.

Intensity, Metrics, and Cost

The timeframe for this strategy stretches from mid to long-term to coincide with Strategy 1C. Restructure Parking Rates which would provide a potential funding stream.

- **Metrics:**
  - » Transit Mode Share 10% faculty, 11% staff.
  - » T-Pass subsidy participation rates.
- **Cost**: $$$$ (Over $100K)

Campus

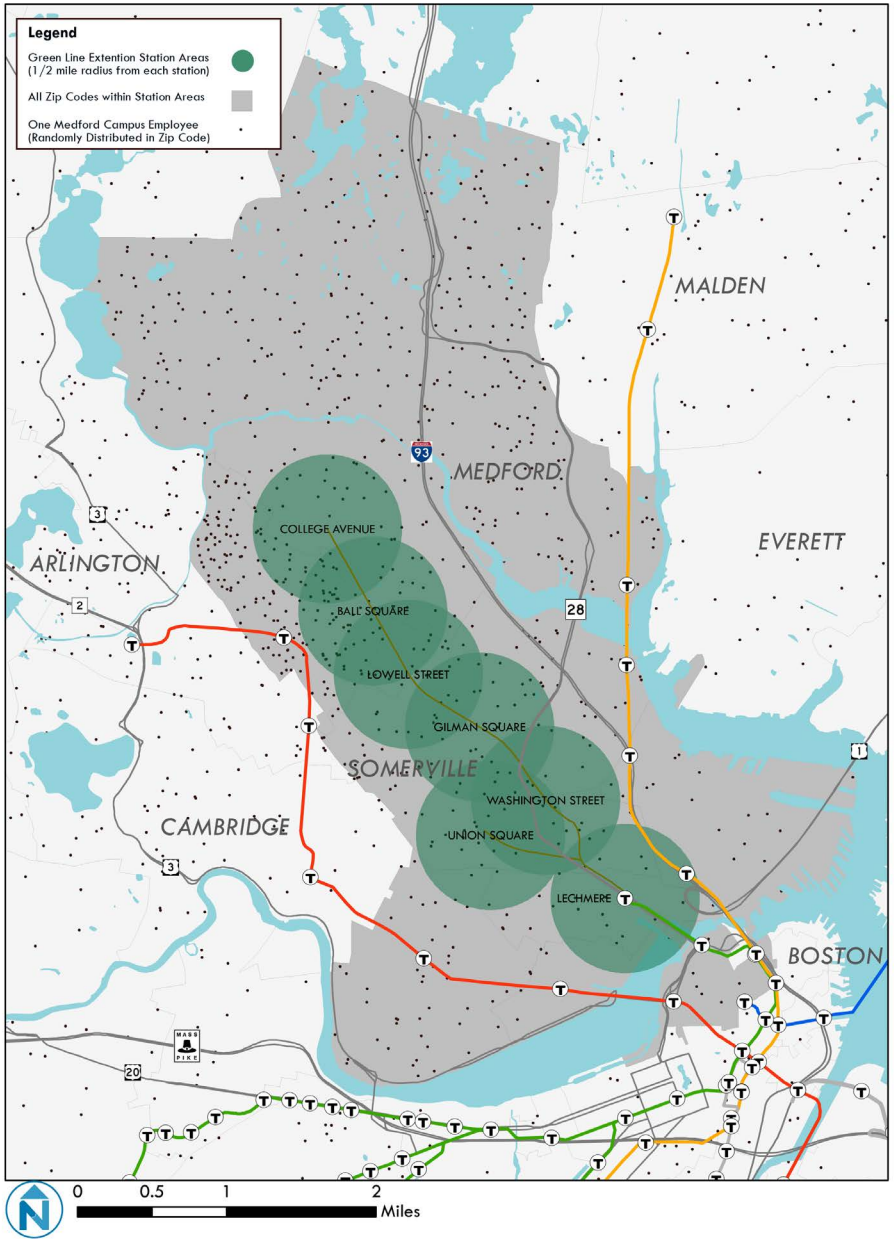
MEDFORD/SOMERVILLE
BOSTON GRAFTON

Score

20-24

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.



800 employees live within areas served by the future Green Line extension

T-Pass Subsidy Local Best Practice

Many employers in greater Boston offer a direct T-Pass subsidy to monthly pass holders. Harvard University and the Colleges of the Fenway, including Wheelock College, Emmanuel College, Simmons College and Mass College of Pharmacy and Health Sciences, all offer direct subsidies, up to as high as 75%.

Many Longwood and Academic Medical Area employers provide a T-pass subsldy Credit: MASCO

1G. COLLEGE AND BOSTON AVENUE INTERSECTION IMPROVEMENTS

Issues and Opportunities

- The construction of the new College Avenue Green Line Station will bring the heart of the Medford/Somerville campus to within a 5-10 minute walk of public transportation.
- The intersection of College and Boston Avenues currently acts as a barrier, limiting the convenience of this walk.
- The MBTA is currently planning modifications to the intersection as part of future Green Line Station plans.
- The University is actively working with traffic engineers VHB and Nitsch Engineering to develop concepts to improve pedestrian safety, circulation and access through the intersection.

Strategy

- Build on current concepts which seek to reduce the number of traffic movements in front of the station, relocate traffic movements to existing or new intersections, widen sidewalks, shorten pedestrian crossings and add pocket parks, for example at Anderson Hall. This includes potentially taking out all traffic signals and curbs and making it a "shared space" similar to some European streets.
- Plan for intersection enhancements such as sidewalk widenings to accommodate components of a new Mobility Hub such as bikeshare stations, directional signage and kiosks.
- To ensure that plans for this intersection are fully supportive of the University's multi-modal goals, the following should also be considered:
  - » **Pinch-Point at Southwest corner:** Sidewalk widths at the Boston Avenue and College Avenue intersection are narrow – particularly at the southwest corner, next to Main Campus - and should be widened to meet minimum standards.
  - » **Bicycle Lanes/Bike Boxes:** Plans for the intersection should incorporate a bicycle lane on Boston Ave (see Strategy 1D) and bicycle boxes which help to improve the visibility of cyclists at intersections.
  - » **Bus Stop Enhancements:** Widening the sidewalks present an opportunity to enhance existing bus stops. For example, the stop just south of intersection on College Avenue heading southbound currently has no amenities such as seating or a shelter (see Strategy 2E).

Next Steps

- Collaborate with the Town of Medford, MBTA and traffic engineers to reconfigure the College and Boston Avenue intersection.

Intensity, Metrics, and Cost

Planning should happen in the short-term with implementation to coincide with construction of the new Green Line Station in the FY2018-2022 timeframe.

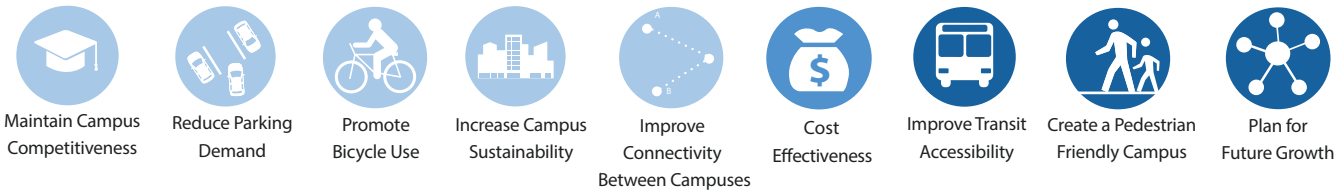
- Metrics:
  - » Students conduct pre and post reconstruction evaluations to assess number of vehicle/pedestrian conflicts
  - » Tufts University Police can assist with providing observations and if available, crash data
- **Cost**: $$$$ (Over $100K)

Campus
MEDFORD/SOMERVILLE

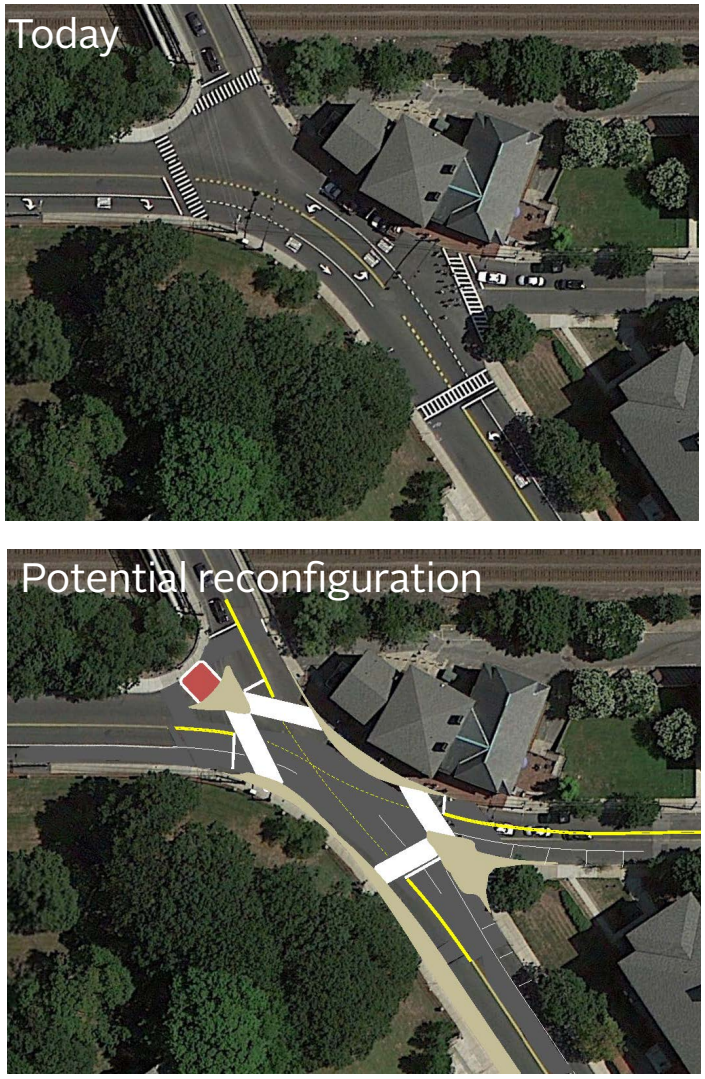
Score
20-24

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.



Boston Ave/College Ave
Suggested Intersection Redesign



Credit: Nelson\Nygaard Consulting Associates

Bike Boxes

This intersection could also be enhanced for bikes through the application of bike boxes. Bike boxes are a designated advance stop area for cyclists at signalized intersections. They not only help cyclists to gain visibility but they also provide a safe area to rest during the red signal phase.

1H. SHUTTLE PLANNING

Issues and Opportunities

The University shuttle system consist of three primary routes: Davis Square Shuttle (the "Joey"), Boston Ave Shuttle and SMFA/NEC Shuttle.

Davis Square Shuttle:

- Heavy ridership, but a circuitous route
- Lack of clarity regarding T.A.B. stop
- Potential to better serve off-campus neighborhoods with high student populations
- Overlaps with MBTA Routes 94 and 96
- Limited Schedule
- Only operates during semester
- More convenient to share stops with MBTA

The Boston Avenue Shuttle:

- Low ridership
- Excess layover time – could be used to expand service coverage
- Overlaps with the MBTA Route 80
- High cost of $15 per rider per day compared to $7 for the NEC/SMFA shuttle and less than a dollar for the Davis Square shuttle

NEC/SMFA Shuttle:

- Provides alternative to a three-seat MBTA ride entailing a bus to Davis Square, a trip on the Red Line, and a transfer to the Green Line.
- During peak hours, MBTA service may be faster, even with the transfers

Campus

MEDFORD/SOMERVILLE

Score

20-24

Strategy

Davis Square Shuttle:

- Only stops at Davis Sq./Main campus - The T routes are more direct, but the Joey Route passes through neighborhoods north of Davis Square that have high concentrations of Tufts students. The routing of the T service does not serve these students well for trips to Tufts, so the Joey service could provide additional stops to serve Tufts populations in local neighborhoods. There is also a lack of clarity as to whether the stop at T.A.B. on Holland Street is an official stop. The stop is listed on passenger schedules and shown on the Shuttle Services website, but bus drivers rarely stop at it.

The Boston Avenue Shuttle:

- Determine what market this shuttle is intended to serve with its very limited schedule.
- Determine what proportion of the existing riders are destined to the Colby Science and Technology building and Halligan Hall – both destinations that are not served by the MBTA.
- If few riders are travelling to these locations, offer a free bus pass in place of the service and work with the MBTA to improve the frequency of afternoon and evening service on Routes 80 and 94. Also work with MBTA to see if Route 80 could be re-routed to continue to Harvard Street.

NEC/SMFA Shuttle:

- Compare travel time, number of transfers, and fare between a Tufts and NEC/SMFA shuttle and MBTA services during peak and off-peak periods.
- If the primary benefit is the fare, consider subsidized T passes for students egistered at the remote campuses.

*Stand-Alone Campus Circulator:**

- The campus is hilly and partially divided by railroad tracks. A circulator could serve intra-campus trips and provide feeder service to/from the radial MBTA routes that operate on the periphery of the campus.

Shuttle Information:

- Add a static map to the Administrative Services website that riders can use when the routes are not running. The Tufts website currently shows routes on a real-time vehicle locator map, which is very useful, but the system is not active when the routes are not running.

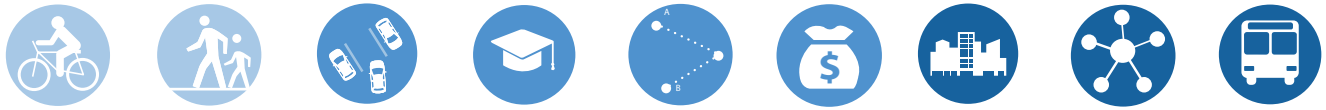
Next Steps

- Work with a transit consultant to complete an evaluation of the shuttle system (a scope and budget is included with this report)

* A campus circulator shuttle service provides service between different destinations on campus.

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.



Intensity, Metrics, and Cost

Potential adjustments to shuttle service can be worked on in the near term to mid-term with high potential cost savings. The University should complete a shuttle service analysis.

- Metrics:
  - » Shuttle cost/rider/day
  - » Rider satisfaction

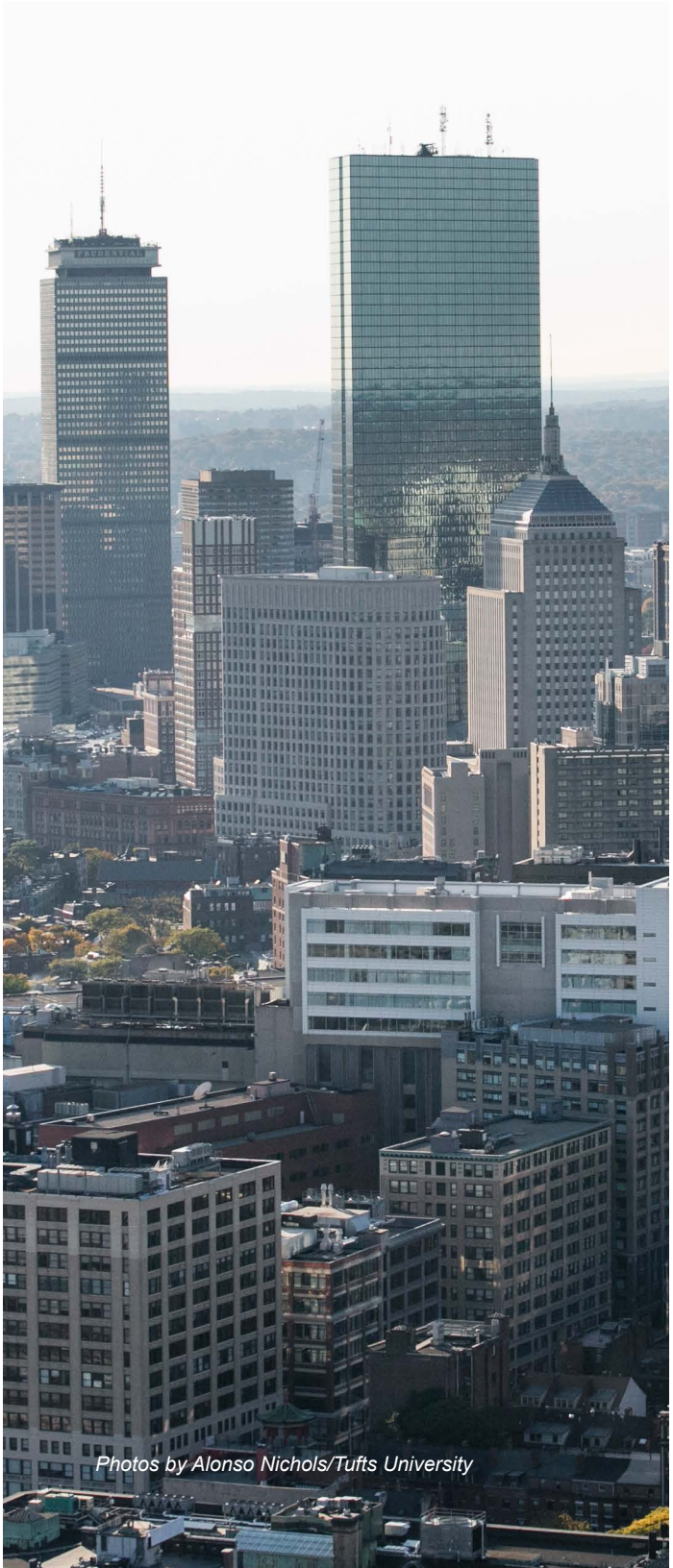
- Cost: $32,000 (basic study) to $46,000 (includes optional and discretionary tasks)

Credit: Tufts University

Shuttles and TDM

The University shuttle system is a key component of the TDM plan and provides three primary functions:

- "Last-mile" connector linking the Red Line to Main Campus
- Potential to link neighborhoods along Holland Street with high concentrations of students to the Main Campus
- Inter-campus shuttle linking remote Tufts properties and the Tufts Campus to partner institutions



Photos by Alonso Nichols/Tufts University

PRIORITY STRATEGIES

2A. EXPAND TDM PROGRAMS

Issues and Opportunities

33% of faculty drive alone to Boston. Subsidized parking is often cheaper than a commuter rail ride. Over the longer-term, parking rates can be restructured and TDM programs expanded to include strategies such as parking cashout and a more generous T-subsidy program.

Strategy

Evaluate mode share and cost impacts of expanding TDM programs:

- Parking cash out is a program where commuters receive a financial incentive to not drive alone to and from work. Tufts should evaluate the cost and benefit of paying people not to drive to work ("cash out") versus the opportunity costs of not having to construct more parking;
- Increase T-Pass subsidy from $40 monthly cap to a $100 cap, comparable to other Boston academic health centers. Both Beth Israel Deaconess Medical Center and Brigham and Women's Hospital in the Longwood Medical and Academic Area offer 50% transit subsidy capped at $115 and $125 per month respectively.

Next Steps

Coordinate with Mass Rides to promote NuRide and Tufts Shared Services to promote ABCTMA to employees and evaluate parking cash out.

Metrics, and Cost

- Faculty Drive Alone Share (33%)
- $$ - $$$$ (Depending on level of TDM programs)

ABC TMA
A BETTER CITY TRANSPORTATION MANAGEMENT ASSOCIATION

The Boston campus currently has access to services offered through ABC TMA.

Campus
BOSTON

Score
15-20

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

2B. INSTALL ADDITIONAL SECURE BIKE PARKING AND ON-CAMPUS HUBWAY STATION

Issues and Opportunities

The existing 34-space bicycle cage at the Tremont Garage is convenient for the University, however it is currently over-subscribed and many cyclists are forced to lock bicycles to fences and meters, impacting the public right of way and obstructing the sidewalk. There are no Hubway Stations directly on campus - the nearest Hubway Station is a 10 minute walk. In addition, there is not enough bike parking on Harrison Avenue.

Strategy

Install additional bicycle parking at the Tremont Street Plaza where there is currently a large amount of underutilized space. Install additional Hubway Stations on-site including at the Tremont Street Plaza and on the University side of campus in the Harrison Avenue vicinity.

Next Steps

Work with Tufts Shared Services to identify siting for additional bicycle parking on-site and with the City of Boston to install additional street racks.

Metrics, and Cost

- Number of secure bicycle parking spaces (34)
- $-$$$ (Depending on bicycle parking type and volume)
- Number of on-campus Hubway stations (0)
- $$$ ($60,000 + per Hubway station)

Campus
BOSTON

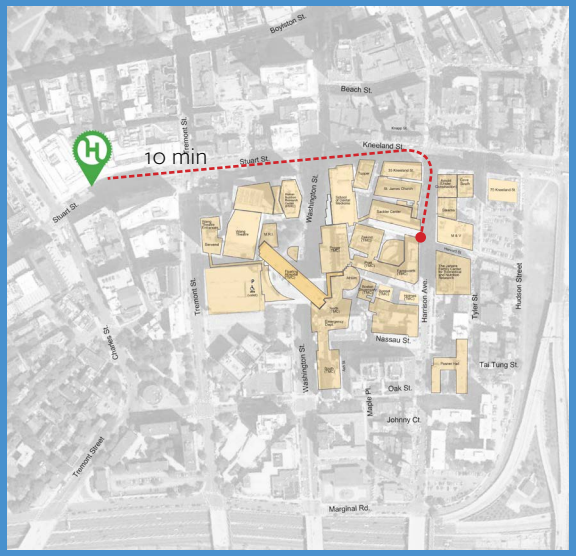
Score
15-20

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

- Create a Pedestrian Friendly Campus
- Plan for Future Growth
- Improve Connectivity Between Campuses
- Reduce Parking Demand
- Maintain Campus Competitiveness
- Improve Transit Accessibility
- Increase Campus Sustainability
- Cost Effectiveness
- Promote Bicycle Use

Hubway bikeshare station



Access to Bikeshare (Walking Times)

Working off-site can significantly reduce employees' commute travel. A twice-a-week teleworker reduces commute trips by 40%. For staff and faculty living further from campus, car mileage reductions, travel times and costs can be reduced. A telecommute program that reduces 10% of vehicle trips may reduce 15% of vehicle mileage for all employees if participants have longer than average commutes.

Source: Victoria Transport Policy Institute's TDM Encyclopedia

2C. CREATE A UNIVERSITY-WIDE POLICY FOR TELECOMMUTING/TELE-LECTURING

Issues and Opportunities

68% of staff and faculty at the Medford/Somerville campus drive alone, generating congested roads around campus at peak hour. The university currently does not have an official telecommute policy.

Strategy

Create policies and procedure for issuing laptops and supporting software to staff and faculty to allow remote working.

Adopt a formal policy to promote working from home when travel to campus is unnecessary. The policy might address:

- Which job categories are suitable
- Employee qualifications for telecommuting
- Equipment and support needed, e.g. IT
- Criteria to evaluate telecommuting employee performance
- Periodic review of the arrangement

Telework may require changes in management practices that reduce the need for employees to be in the office together. More outcome-oriented management practices could be based on performance instead of the amount of time spent in the office. If there are unresolved concerns about telecommuting within an organization, it can be helpful to start with a pilot project.

Next Steps

Work with Human Resources and Department Heads to develop policies and practices. Draft a policy to promote telecommuting and tele-lecturing and advertise the logistics through a university-wide commuting webpage.

Metrics, and Cost

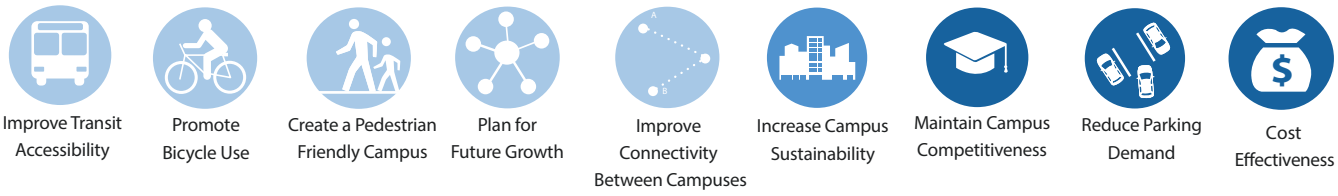
- Staff faculty drive alone mode share (68%, M/S)
- Number of telecommuters
- $ (Mostly administrative)

Campus
MEDFORD/SOMERVILLE
BOSTON GRAFTON

Score
15-20

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.



2D. AUDIT BICYCLE PARKING AND ESTABLISH CAMPUS WIDE STANDARDS FOR BICYCLE RACKS

Issues and Opportunities

The University completed bicycle audits in May and September 2014 assessing the number of spaces, number of bikes parked and types of racks provided at the Medford/Somerville and Grafton campuses. Based on site visits, Nelson Nygaard observed that some bicycle racks are in undesirable locations, far from entrances, with low visibility and are being used for other purposes, for example, securing trash barrels.

Strategy

It is recommended that the University update the campus-wide audit to assess the suitability of bicycle rack locations in terms of visibility and convenience to users.

Next Steps

Add criteria to bike survey including convenience, visibility, whether there is a sufficient number of spaces, and proximity to main building entrances.

Metrics, and Cost

- Number of bike racks in convenient/visible locations.
- $ (Mostly administrative)

Campus	Score
MEDFORD/SOMERVILLE	15-20
BOSTON	
GRAFTON	

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

Some bike racks are being used for other purposes, blocking bike parking capacity and visibility.

Some bike racks are in undesirable locations far from entrances and on non-solid ground.

2E. UPGRADE BUS STOPS

Tufts bus stop without setback, Credit: Google

Tufts bus stop with setback, Credit: Google

Issues and Opportunities

Many existing bus stops at Tufts provide no amenities such as weather protection and lighting. For example, the southbound stop on College Avenue, just south of the intersection with Boston Avenue, serving MBTA Routes 80, 94 and 96 and located near to the Memorial Steps opposite Anderson Hall, is in a prominent location but has no amenities.

Strategy

In order to support drive alone reductions, identify opportunities to provide space on campus to pull back fence lines in order to accommodate shelters, seating and amenities.

Next Steps

Work with the MBTA and local municipalities to assess sidewalk conditions for suitability to install bus shelters. Some locations, such as the stop pictured, could use Tufts land.

Metrics, and Cost

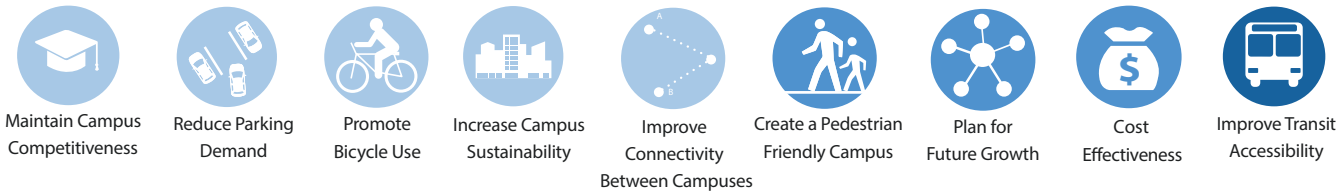
- Number of campus bus stops with amenities
- Boarding counts by bus stop (if available from the MBTA)
- $ (May require easement on University property)

Campus
MEDFORD/SOMERVILLE

Score
15-20

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.



2F. DEVELOP A CAMPUS-WIDE BICYCLE PLAN

Issues and Opportunities

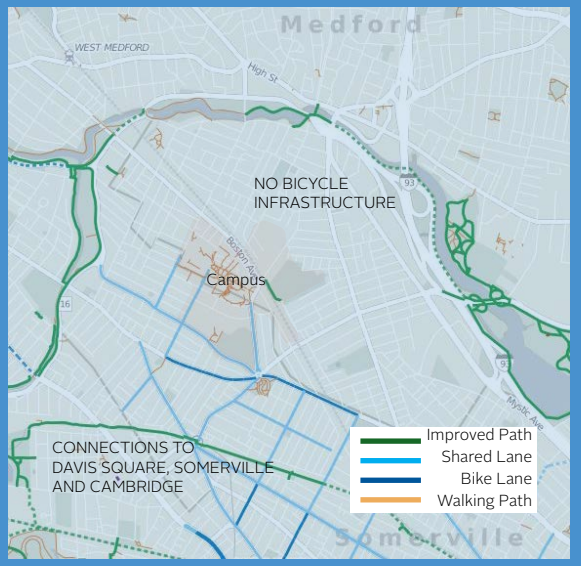
There are currently no dedicated bicycle lanes or bicycle boxes on interior campus roads. According to the Nitsch Multi-Modal Study, interior campus roads, such as Professor's Row and Talbot Avenue, tend to encourage speeding car traffic and could instead become one-way or closed to most traffic and accommodate bicycle lanes. Bicycle mode share amongst faculty and staff is only 4%, which could be much higher given that 20% of main campus employees live in Somerville and Medford within biking distance of campus. The 2014 Transportation Survey ranked designated bicycle lanes highest for bicycling preferences.

Next Steps

Develop a comprehensive campus-wide bicycle plan that addresses not only on-campus bicycle paths but also connections to the local and regional bicycle network (see strategy 1E.).

Metrics, and Cost

- Bicycle Mode Share (currently 4% staff, 4% faculty)
- # Accidents Involving Bicycles
- $$$ ($50,000 - $100,000 to develop a campus-wide bicycle plan)



A campus-wide bicycle plan for the Medford/Somerville campus would address gaps in the local bike network.

Strategy

Build on existing Nitsch strategies to install bicycle lanes on campus roadways.

Campus
MEDFORD/SOMERVILLE

Score
15-20

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

- Reduce Parking Demand
- Improve Transit Accessibility
- Improve Connectivity Between Campuses
- Cost Effectiveness
- Create a Pedestrian Friendly Campus
- Plan for Future Growth
- Maintain Campus Competitiveness
- Increase Campus Sustainability
- Promote Bicycle Use

"On January 1, 2009, the bicycle commuting reimbursement was added to the list of qualified transportation fringe benefits covered in section 132 (f) of the Internal Revenue Service Code (26 U.S.C. sec. 132(f)).

Any employer.. may provide a reimbursement of up to $20 per month for reasonable expenses incurred by the employee in conjunction with their commute to work by bike. The reimbursement is a fringe benefit paid by the employer; the employee does not get taxed on the amount of the reimbursement.

The bicycle commuter benefit is restrictive:

- *An employee cannot choose to reimburse themselves with pre-tax income, the reimbursement must be paid by the employer;*
- *An employee cannot receive both the transit and bicycle fringe benefits in the same month; and*
- *An employee cannot receive both the parking and bicycle fringe benefits in the same month."*

Source: League of American Bicyclists

2G. OFFER A $20/MONTH BICYCLE REIMBURSEMENT BENEFIT

Issues and Opportunities

A growing number of employers offer an employee bicycle subsidy. Reimbursement covers expenses incurred for the purchase of a bicycle, bicycle improvements and repair and storage. The benefit supports existing bicycle commuters and provides support for other TDM strategies such as the bike buddies program.

Strategy

Institute a $20/month bicycle reimbursement benefit.

Next Steps

Work with Human Resources and payroll.

Metrics, and Cost

- Program Enrollment (0)
- $$-$$$ (Depending on enrollment)

Campus	Score
MEDFORD/SOMERVILLE	15-20
BOSTON	
GRAFTON	

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

2H. DEVELOP A PERSONALIZED EMPLOYEE MYCOMMUTE INTRANET SITE

Issues and Opportunities

Other than NuRide, Tufts does not have a way for employees to track their commuting costs, VMT or CO2 emissions. Increasingly, institutions are using personalized commuter software as a way for employees to track their commuting habits and to communicate the health and financial benefits of using non-motorized transportation. Software can be tied to parking gate technology providing the University with data on garage usage and commuting patterns.

Strategy

Install MyCommute software to track commutes, organize and disseminate commuter information. Typical features provided by MyCommute software include:

- Commute information and program matching to meet affiliate needs;
- Performance tracking (transit ridership, bicycle use, etc.);
- Central location for information, incentives, travel profiles, etc.;
- Personal commuter calendars (links into performance measurement);
- Platform for ridematching and shared parking brokerage;
- Dynamic real-time transit and parking updates (including rider alerts for transit or shuttles);
- Supplemental mobile phone app interface for transportation information on the fly and commuter calendars en route;
- Trip planners;
- Parking management and revenue collection;
- Transportation benefit management and distribution (staff/faculty only); and
- Environmental and health benefits tracking.

Next Steps

Explore potential platforms and software providers such as Luum.

Metrics, and Cost

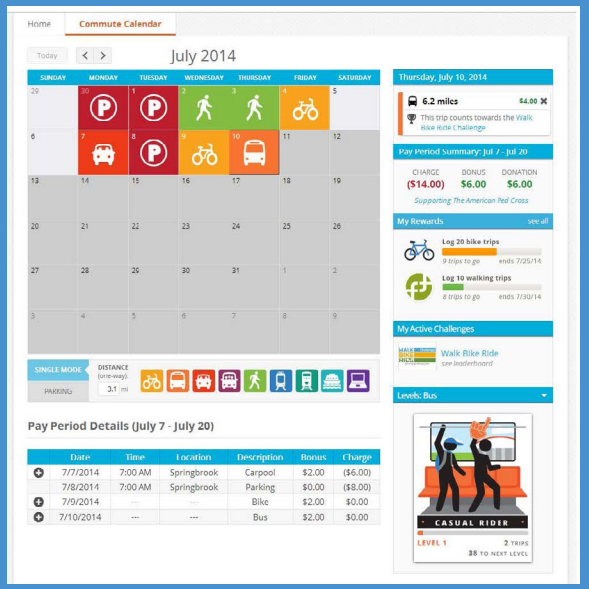
- CO2 saved
- VMT reduced per capita
- $$$ (Costs to run this software are $3-$4 per person per year).

Campus
MEDFORD/SOMERVILLE
BOSTON GRAFTON

Score
15-20

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.



Sample commuter calendar, Credit: Luum and Seattle Children's Hospital

Pre-Tax T-Pass Benefits

- Save on transit costs
- Convenient automatic deduction from payroll
- Pass reloads automatically each month
- Easy to enroll
- Decreases taxable income

21. INCREASE STAFF AND FACULTY ENROLLMENT IN PRE-TAX T-PASS DEDUCTION

Issues and Opportunities

The current pre-tax T-Pass participation rate is 4.4% of employees at the Medford/Somerville Campus and 0% at the Grafton Campus. 38% of employees at the Medford/Somerville campus are unaware of the pre-tax T-Pass program.

Strategy

The University should at a minimum target the 11% of staff and 10% of faculty at Medford/Somerville that currently take transit to ensure that they are aware of the pre-Tax participation program.

Next Steps

Work with Human Resources to promote awareness and increase enrollment in the pre-Tax T Pass program especially at the Medford/Somerville campus and Grafton campuses.

Metrics, and Cost

- Increase Pre-Tax T-Pass Participation Rate (4.4%) to better match transit mode share (10%)
- $ (Mostly administrative)

Campus
MEDFORD/SOMERVILLE
BOSTON GRAFTON

Score
15-20

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

2J. INCREASE AWARENESS OF A BETTER CITY TDM (ABC TMA) PROGRAMS

Issues and Opportunities

89% of employees are unaware of A Better City's programs such as carpool and walk to work incentives. There are 0 participants in the carpool program. With additional promotion, the university can make better use of the ABC TMA membership.

Strategy

Promote A Better City TDM programs through a central commuting website and other media.

Next Steps

Descriptions of these programs can be included in a TDM Clearinghouse website (see Strategy 2L, below).

Metrics, and Cost

- 89% employees unaware of ABC TMA Programs
- ABC provides free promotional materials

Campus
BOSTON

Score
15-20

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

- Maintain Campus Competitiveness
- Improve Transit Accessibility
- Improve Connectivity Between Campuses
- Create a Pedestrian Friendly Campus
- Reduce Parking Demand
- Promote Bicycle Use
- Plan for Future Growth
- Increase Campus Sustainability
- Cost Effectiveness

Case Study

CommuteWorks, the Transit Management Association (TMA) for Colleges of the Fenway, promotes TDM programs at annual employee benefits fairs, during Earth Day and at an annual "CommuteFest" event with a raffle, prizes, live bands and food trucks.

Source: MASCO

2K. PROVIDE END-OF-TRIP-FACILITIES SUCH AS SHOWERS AND LOCKER ROOMS

Bicyclist showers, Credit: Divulgação


Lockers at the Chicago Bike Station
Credit: www.learnfitness.com/2012/06/im-thinking-of-commuting-to-chicago-by-bike/

Issues and Opportunities

The new building planned at 574 Boston Avenue in Medford will contain showers and lockers. However, the lack of these amenities at other University buildings can be a major barrier to walking and cycling to and from campus.

Next Steps

Collect information on existing showers and locker opportunities on campus and promote on commuter page. Adopt a policy that end-of-trip facilities are included in all new buildings, retrofits, and modernizations.

Strategy

Adopt a policy to construct showers, locker rooms, and changing facilities in all new campus facilities as well as retrofitting existing buildings as part of renovation plans. In the meantime, Tufts can promote the locations and logistics of existing showers and storage areas through information on a central commuting website.

Metrics, and Cost

- Number of showers and lockers per campus.
- $0 - $$$

Campus
MEDFORD/SOMERVILLE
BOSTON GRAFTON

Score
15-20

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

2L. WORK WITH WORCESTER REGIONAL TRANSIT AUTHORITY (WRTA) TO EXPAND SERVICE

Issues and Opportunities

The Worcester Regional Transit Authority (WRTA) currently runs the Route B between the Grafton MBTA Station and Grafton Common, twice in the morning and twice in the afternoon. WRTA is re-evaluating the system and plans service changes in FY'16. Serving colleges is a priority for the WRTA. With 30% of Grafton employees living in North Grafton, Westborough, Grafton and Shrewsbury, there may be latent demand for expanded WRTA service in these towns.

Next Steps

Determine demand for WRTA shuttle services to campus, first focusing on administrative staff and others with a regular 9-5 schedule that might support an expanded peak hour service.

Metrics, and Cost

- WRTA Bus frequency to campus/ridership.
- $

Strategy

Work with WRTA to extend Route B to the Grafton Campus and potentially align schedules with the Worcester/Framingham line commuter rail service at Grafton Station.

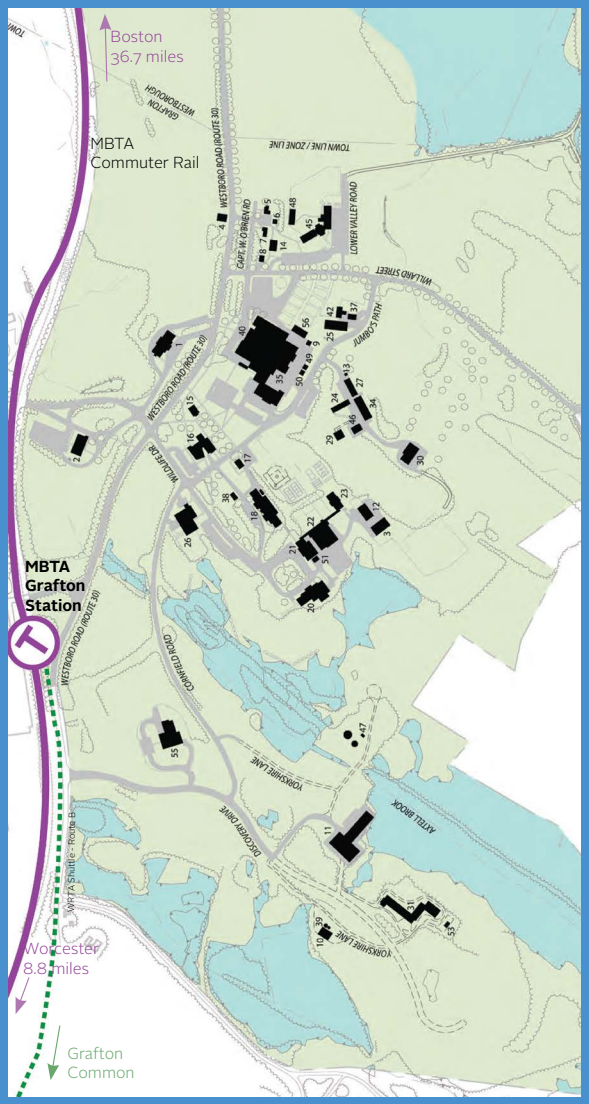
Campus
GRAFTON

Score
15-20

Goals Met

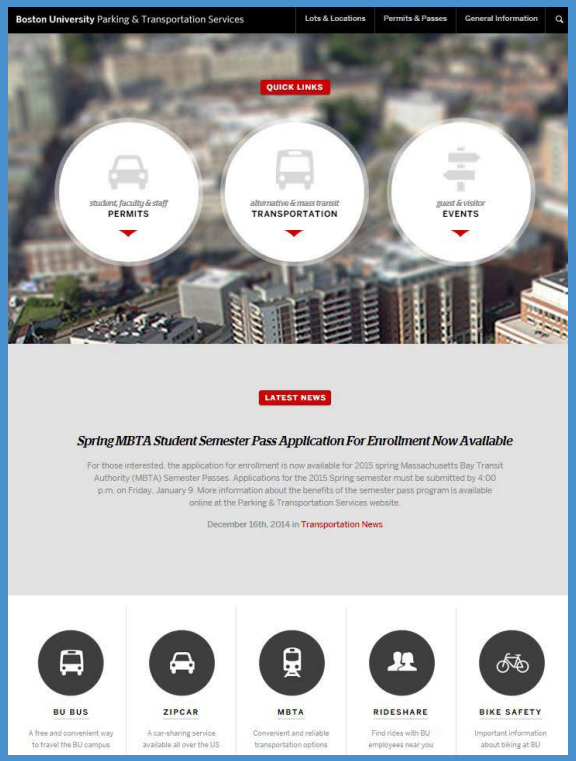
The darker the shade of blue, the greater the degree to which the strategy meets established goals.

- Promote Bicycle Use
- Create a Pedestrian Friendly Campus
- Improve Connectivity Between Campuses
- Maintain Campus Competitiveness
- Reduce Parking Demand
- Increase Campus Sustainability
- Cost Effectiveness
- Plan for Future Growth
- Improve Transit Accessibility



The Worcester Regional Transit Authority runs the B Route close to the Grafton MBTA commuter rail station.

2M. ESTABLISH A TDM CLEARINGHOUSE



Sample TDM-oriented parking and transportation web-page at Boston University, Credit: www.bu.edu/parking

Issues and Opportunities

There is low awareness of many of the existing TDM programs including: T-Pass pre-tax purchase, Zipcar, Hubway bikesharing and Emergency Ride Home. The Health Sciences Complex is also part of A Better City Transportation Management Association (TMA) which provides a comprehensive list of traditional TDM programs such as carpooling benefits, guaranteed ride home and walk/bike incentives. The Medford/Somerville and Grafton campuses are served by MassRides, the Mass DOT program to promote the use of commute options.

Strategy

The University should develop a centralized transportation information clearinghouse in the form of a transportation, parking and TDM website and a campus access mobile app.

Next Steps

This strategy could coordinate with the branding of a MyCommute intranet site. Work with HR/ Communications Department to establish the content for a central clearinghouse. This kind of work typically requires the expertise of a web developer.

Metrics, and Cost

- TDM Program Awareness (measured by annual commuter survey).
- $$ ($10,000 - $15,000)

Campus
MEDFORD/SOMERVILLE
BOSTON GRAFTON

Score
15-20

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

2N. PROMOTE GOSAFE WALKING ESCORT SERVICE

Issues and Opportunities

Pedestrian conditions near Boston's Health Sciences Complex matter not only to those who walk from the neighborhood but also to those who take transit and those who drive and park in remote lots. Though a shuttle service is provided, better use of the existing GoSafe service provided by Tufts University Police Department (TUPD) could encourage higher usage of transit during times when employees and students feel unsafe and at night.

Next Steps

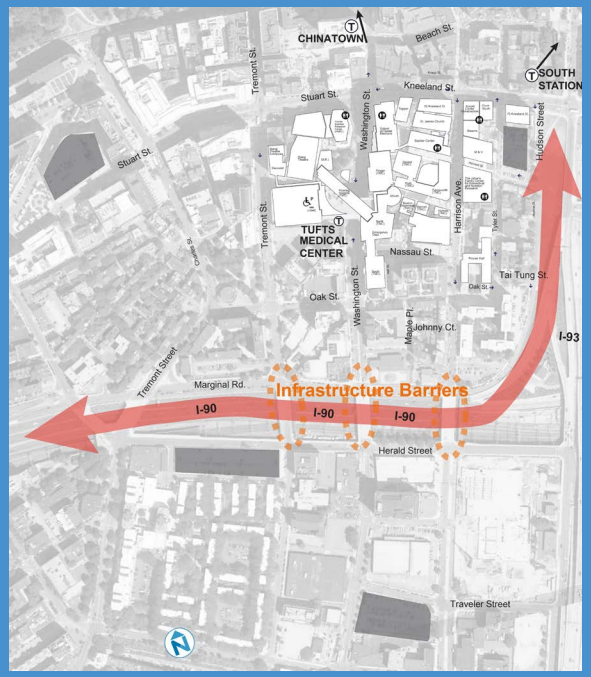
In the immediate term, promote the GoSafe walking escort service in FY2016-2017.

Metrics, and Cost

- Walk mode share (1% staff, 3% faculty)
- $ (Assume purchase of 1 or 2 bicycles for police use)

Strategy

Promote the GoSafe walking escort service, currently operated by the University Police. The nightly walking escort service should be structured so that officers have bicycles for their return trip.



Boston Campus - Barriers to Walkability

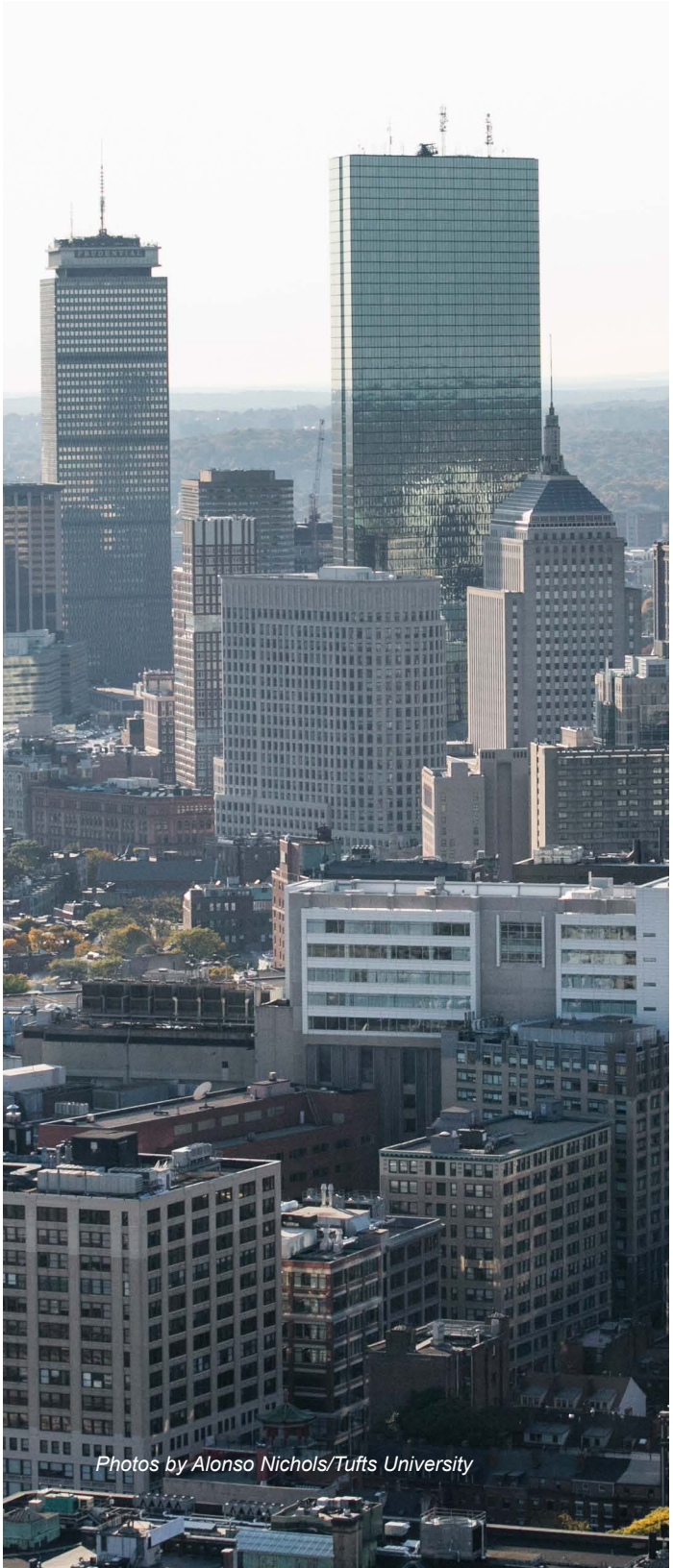
Campus
BOSTON

Score
15-20

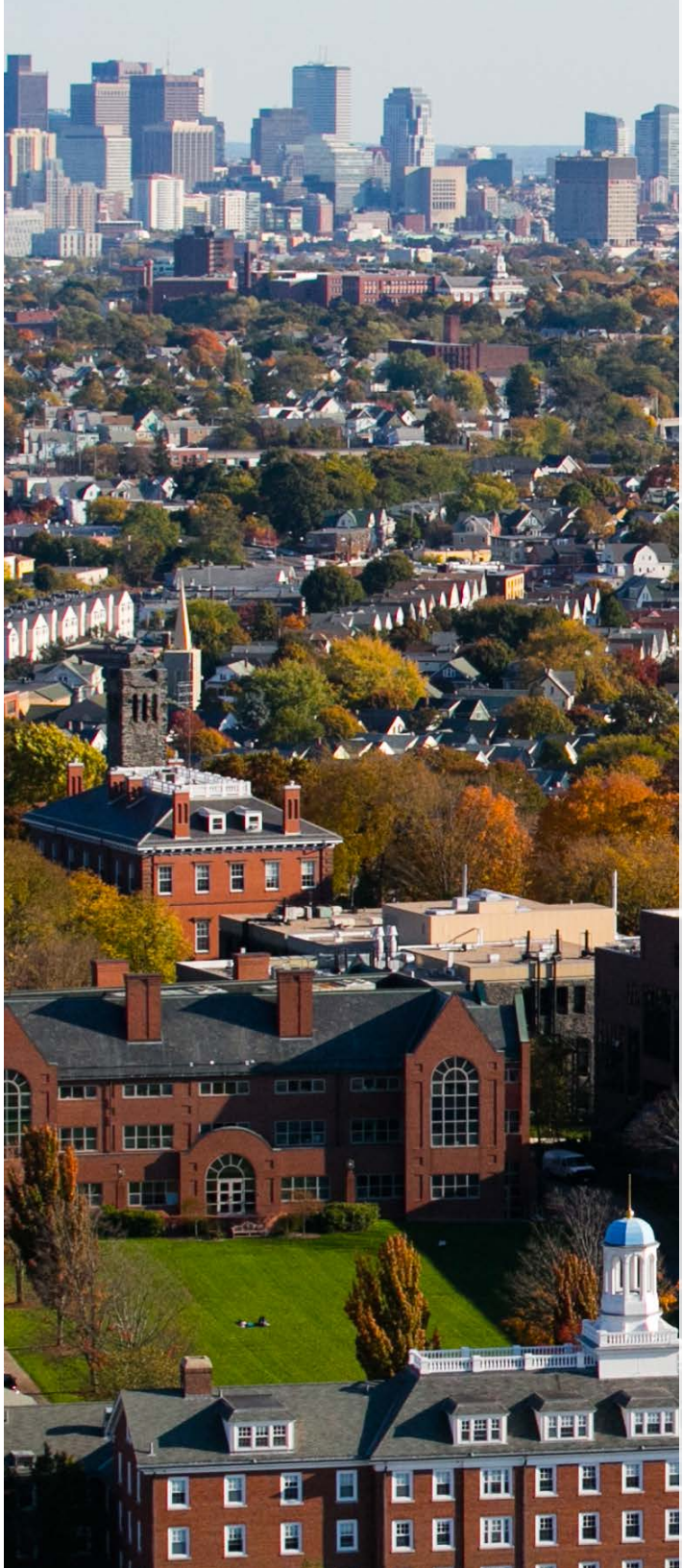
Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

- Maintain Campus Competitiveness
- Promote Bicycle Use
- Improve Connectivity Between Campuses
- Reduce Parking Demand
- Plan for Future Growth
- Increase Campus Sustainability
- Cost Effectiveness
- Improve Transit Accessibility
- Create a Pedestrian Friendly Campus



Photos by Alonso Nichols/Tufts University



SECONDARY STRATEGIES

3A. INCENTIVIZE VANPOOLS/CARPOOLS

University of Michigan faculty and staff may participate in a Vanpool program for an efficient commute to and from work.
Credit: www.pts.umich.edu

Issues and Opportunities

The University currently offers carpool/vanpool parking in the Dowling Garage and behind the Academic Quad. Carpool passes come with the opportunity to park near to employee office(s)/ work locations. Currently there is one carpool on campus taking advantage of the program.

Strategy

To incentivize additional carpools, the University might consider providing a limited number of gas cards on a first come, first serve basis to registered carpoolers. Gas card incentives are typically offered for anywhere between 3 and 6 months with 3-5 day parking passes per month as a back-up for carpool participants. TMAs in the Boston area provide $35 - $50 gas cards per month, per carpool.

Next Steps

Work with Administrative Services to develop a pilot carpool incentive program.

Metrics, and Cost

- Carpool, vanpool, rideshare participation.
- $ ($2,000 - $3,000 assuming a pilot program with a max of 10 carpools)

Campus
MEDFORD/SOMERVILLE
BOSTON GRAFTON

Score
10-14

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

- Promote Bicycle Use
- Improve Transit Accessibility
- Create a Pedestrian Friendly Campus
- Improve Connectivity Between Campuses
- Maintain Campus Competitiveness
- Plan for Future Growth
- Increase Campus Sustainability
- Reduce Parking Demand
- Cost Effectiveness

3B. DEVELOP A "BIKE BUDDIES" PROGRAM

Issues and Opportunities

Bicycle mode share is 4% for both staff and faculty at the Medford/Somerville campus and 2% and 3% for Boston staff and faculty. 20% of employees live in Medford and Somerville, well within cycling distance. Many "would-be" commuter cyclists are reluctant to try cycling on roads in mixed traffic.

Strategy

A bike buddy program can help overcome these anxieties by pairing experienced cyclists or designated "bicycle captains" with less experienced cyclists. Consider implementing a women-specific ride to campus.

Next Steps

In Medford/Somerville, identify an on campus cycling organization that may be able to provide support or administer a Bike Buddies program by assigning members in different neighborhoods to lead rides to campus.

Metrics, and Cost

- Bicycle Mode Share Medford/Somerville: 4% staff, 4% faculty, Boston: 2% staff, 3% faculty
- $ (staff time, promotion)

Campus

MEDFORD/SOMERVILLE

BOSTON

Score

10-14

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

Case Study

The University of Denver offers a Bike Buddy Program providing less experienced cyclists the opportunity to learn from mentors who have volunteered to teach others the best bike routes, what to wear and rules of the road. Riders meet at designated locations along a planned route so they can be "picked up" along the way and join the ride to campus. Bike Buddies programs are becoming more common in all US cities, such as Portland, Oregon's "Bike Train" program.

Half of students are unaware of the discounted MBTA semester pass

Source: Tufts Annual Commuter Survey (2014)

3C. INCREASE AWARENESS OF DISCOUNTED STUDENT SEMESTER T-PASS

Issues and Opportunities

Half of students are unaware that they can purchase a discounted MBTA semester pass, although 70% of students take the MBTA regularly. Potential barriers to greater awareness about the program include a lack of clear information on Tufts web pages and the limited timeframe within which passes can be purchased, before most students are on campus. The Medford/Somerville campus currently offers discounted single-trip T-Passes through the Office of Campus Life.

Next Steps

Promote discounts on the web and in student orientation materials.

Metrics, and Cost

- Discounted T Pass Participation Rate (0.5% students)
- $ (staff time, promotion)

Strategy

Include clear information about semester pass prices on the web and on Tufts shuttles; improve information in the new student orientation and evaluate participation in the discounted single-trip MBTA tickets program at the Medford/Somerville campus (offered through the Office of Campus Life) to assess demand for discounted semester pass and student enrollment patterns.

Campus
MEDFORD/SOMERVILLE

Score
10-14

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

3D. INSTALL FRONT-LOADING BIKE RACKS ON CAMPUS SHUTTLES

Issues and Opportunities

Tufts shuttles currently do not have the capacity to carry bikes. Installing front-loading racks improves the convenience of cycling to campus, offers cyclists the option of a shuttle ride home in bad weather and encourages riders that live beyond walking distance to the shuttle stops, effectively expanding the bicycle commuter market from those areas within riding distance of campus to areas within riding distance of a shuttle stop.

Strategy

Explore feasibility of installing front-loading bike racks on new fleet of buses.

Next Steps

Determine compatibility of front-loading racks with existing and future shuttle fleet models. Racks or new fleet with racks could be implemented in FY2016-2017.

Metrics, and Cost

- Number of bicycles racks on shuttles (0).
- $ ($800/bike rack)

Campus
MEDFORD/SOMERVILLE

Score
10-14

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

Case Study

Bike racks on buses come in various models. Typical racks on the front of buses can carry two to three bikes at a time, while some models on the back of buses can carry more.

3E. CREATE A "TRANSPORTATION AMBASSADORS" PROGRAM

Tufts University Eco-Ambassadors, Credit: Tufts Office of Sustainability

- **38% of employees are unaware of the Pre-Tax T-Pass program**
- **42% of employees are unaware of available car share programs**
- **75% of employees are unaware of the Emergency Ride Home program**

Source: Tufts Annual Commuter Survey (2014)

Issues and Opportunities

38% of employees are unaware of the Pre-Tax T-Pass program, 42% are unaware of available car share programs and 75% are unaware of the Emergency Ride Home program.

Strategy

Increase awareness of TDM programs within each department and in residence halls. The University should either offer students and staff the opportunity to become a "Transportation Ambassador" or further augment TDM awareness as a component of the University's existing Eco-Ambassador and Eco-Representative Programs.

Next Steps

This program can be implemented in the near-term and would require basic training either through the existing Eco-Ambassador Program or working with volunteers on a new program.

Metrics, and Cost

- Increased TDM Program awareness, All Users (varies by program)
- $ (staff time, promotion)

Campus
MEDFORD/SOMERVILLE
BOSTON GRAFTON

Score
10-14

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

3F. PROVIDE INTER-CAMPUS TRAVEL INFORMATION

Issues and Opportunities

40% of all students and staff travel between the Medford/Somerville and Boston campuses on occasion. With half of faculty and more than a third of staff driving alone, there is opportunity to save on parking costs by taking the MBTA or other mode.

Next Steps

Draft clear directions for inter-campus travel and work with webpage hosts to post this information. This strategy works with 2L. Establish a TDM Clearinghouse website.

Strategy

Provide information about transit, carshare, and bikeshare reimbursement in the Tufts Travel and Business Expense Guidelines. Post inter-campus directions on the Visiting, Maps, and Directions webpage and on the campus travel webpage (*www.campustravel.com/university/tufts webpage*).

Metrics, and Cost

- Hits on web pages.
- $ (administrative costs)

Campus
MEDFORD/SOMERVILLE
BOSTON GRAFTON

Score
10-14

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

40 % of all students and staff make travel between the Medford/ Somerville and Boston campuses on occassion

Source: Tufts Annual Commuter Survey (2014)

3G. INSTALL SELF-SERVICE BIKE REPAIR STATIONS

Case Study

Harvard University and Northeastern University have installed self-service, bike repair stations on campus.

Credit: northeastern.edu

Issues and Opportunities

The undergraduate club Tufts Bikes trains students to maintain their bikes and manages a bike workshop in the Craft Center that undergraduates have access to during limited hours.

Self-service bike repair stations allow greater convenience for simple fixes. Bike repair stations support an overall strategy to make the campus more bicycle-friendly and support mode shift away from motorized modes.

Strategy

Install self-service bike repair stations at each campus with a goal of inspiring students and employees to bike more often.

Next Steps

Work with Facilities Departments and Tufts Shared Services to identify locations on each campus near to existing bicycle parking.

Metrics, and Cost

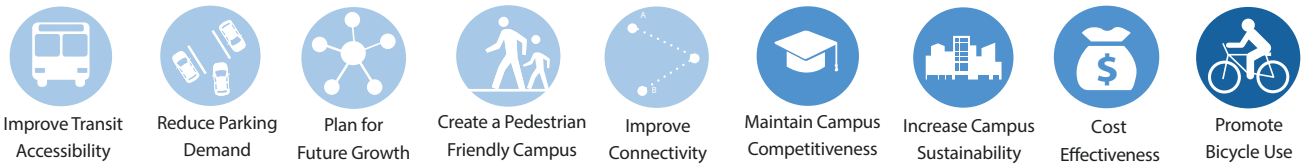
- Number of Repair Stations/Campus (0)
- $$ ($5,500. Assume 6 stations at $800/station, # of stations based on other local campuses)

Campus
MEDFORD/SOMERVILLE
BOSTON GRAFTON

Score
5-10

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.



3H. INTRODUCE HOV RIDESHARING PERMIT (3+ PERSON CARPOOLS)

Issues and Opportunities

Preferred parking spaces are currently available for carpoolers at the Medford/Somerville campus. To further encourage ridesharing, deeper parking rate discounts can be offered to carpools containing three or more commuters. This policy can be considered with 1C. Restructure Parking rates.

Strategy

Institute deeper parking permit discounts for HOV carpools with three or more persons.

Next Steps

Pilot one or two prominent locations for HOV parking.

Metrics, and Cost

- Number of discounted parking passes and preferred parking spaces
- $ (Administrative)

UC Davis carpool program is a model for innovative alternative transportation programs.
Credit: Fred Gladdis

Campus
MEDFORD/SOMERVILLE
BOSTON GRAFTON

Score
5-10

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

- Improve Transit Accessibility
- Promote Bicycle Use
- Create a Pedestrian Friendly Campus
- Improve Connectivity Between Campuses
- Maintain Campus Competitiveness
- Plan for Future Growth
- Increase Campus Sustainability
- Cost Effectiveness
- Reduce Parking Demand

Case Study

The Longwood Medical and Academic Area in Boston, which includes the Colleges of the Fenway, recently launched a "Karma Commuting" campaign that includes raffle prizes for participants that took a quiz and made a pledge to follow the rules of the road.

Credit: www.karmacommuting.com

3I. MULTI-MODAL SAFETY AWARENESS CAMPAIGN

Issues and Opportunities

Multi-modal safety awareness campaigns spotlight non-motorized modes and rules of the road. Many commuters, including cyclists themselves, are unaware that the rules of the road apply to both motorized vehicles and cyclists.

Next Steps

An initial phase would focus on the campus populations and could later expand to collaborating with local municipalities to expand the target audience beyond campus boundaries.

Strategy

Develop a multi-modal safety awareness campaign including posters, fliers and an on-line pledge to follow the rules of the road. Hold a student competition to develop promotional materials including posters and fliers.

Metrics, and Cost

- Number of safety pledges.
- $ (Marketing, raffle prizes)

Campus
MEDFORD/SOMERVILLE
BOSTON GRAFTON

Score
5-10

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

3J. DISPLAY DYNAMIC PARKING INFORMATION FOR EVENTS

Issues and Opportunities

During University events, visitors unfamiliar with campus can cause congestion on local streets looking for somewhere to park. Large events will also often result in spillover parking impacts to local neighborhoods. Dynamic signage connected to real-time information on parking availability leads drivers to event-parking facilities and directs people to available parking. This dynamic information can be displayed on the web, in conjunction with a user-friendly parking locator map, and be linked to event-related websites.

Next Steps

Evaluate real-time signage technologies based on existing and planned parking technology.

Metrics, and Cost

- Spillover parking during events/complaints from neighbors
- $ - $$ ($15,000 for a single unit)

Strategy

To improve the user experience and reduce spillover parking impacts, providing several dynamic signs would lessen frustration and provide important directional and parking availability information.

Parking information display in Cologne

Campus
MEDFORD/SOMERVILLE

Score
5-10

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

- Improve Transit Accessibility
- Promote Bicycle Use
- Create a Pedestrian Friendly Campus
- Improve Connectivity Between Campuses
- Maintain Campus Competitiveness
- Plan for Future Growth
- Increase Campus Sustainability
- Cost Effectiveness
- Reduce Parking Demand

3K. INCREASE NUMBER OF ELECTRIC VEHICLE (EV) CHARGING STATIONS

Eletric Vehicle Charging Stations in Boston University
Credit: www.bu.edu

Issues and Opportunities

The University currently has one Electric Vehicle (EV) Charging Station at Dowling Garage and has plans to install a second. EV charging stations demonstrate the University's environmental leadership, reduce greenhouse gases, noise and provide an employee benefit and incentive to purchase a green vehicle.

Strategy

Monitor use of the existing EV charging station and provide additional stations in visible locations in 2-3 pods. The number of spaces should increase based on existing usage, annual survey results, and regional EV ownership trends.

Next Steps

Install additional EV stations; explore opportunities for rebates.

Metrics, and Cost

- Number of EV Charging Stations (1)
- $ ($6,000 per station - up to $100,000 for a charger)

Campus
MEDFORD/SOMERVILLE
BOSTON GRAFTON

Score
5-10

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

- Improve Transit Accessibility
- Promote Bicycle Use
- Create a Pedestrian Friendly Campus
- Improve Connectivity Between Campuses
- Cost Effectiveness
- Reduce Parking Demand
- Plan for Future Growth
- Maintain Campus Competitiveness
- Increase Campus Sustainability

3L. MONITOR MBTA STUDENT U-PASS DISCUSSIONS

Issues and Opportunities

At the time of writing, the MBTA has announced that they will launch a pilot program of a student UPass starting January 2015 with local area universities possibly including Tufts. According to reports, students would be able to purchase a pass for half the cost of a monthly LinkPass. The funding mechanism for the participating schools is unknown.

Next Steps

Maintain stakeholder involvement in Student UPass program discussions.

Metrics, and Cost

- Presence/absence of UPass
- $37.50 per undergraduate student. All undergraduate students must participate.

Strategy

Given the financial implications of a UPass program, Tufts University should continue to monitor discussions to determine its potential cost effectiveness and mode shift benefits which would vary significantly by campus. Existing drive alone mode share for students is low at the Boston campus at 6%, 16% at Medford/Somerville and as high as 72% at Grafton.

Campus
MEDFORD/SOMERVILLE
BOSTON
GRAFTON

Score
0-4

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

- Reduce Parking Demand
- Promote Bicycle Use
- Create a Pedestrian Friendly Campus
- Plan for Future Growth
- Improve Connectivity Between Campuses
- Cost Effectiveness
- Maintain Campus Competitiveness
- Improve Transit Accessibility
- Increase Campus Sustainability

Case Study

UPass has been successfully implemented in a number of large cities including Chicago, San Francisco and Milwaukee. Programs require mandatory University purchasing of T-Passes for students in return for steep discount on passes. The program provides unlimited bus and subway rides for all undergraduates during the course of the semester.

The Milwaukee County Transit System works with local universities to offer a UPass.

3M. REQUIRE ALL CONTRACTORS TO PARK IN DEDICATED PARKING AT DOWLING GARAGE

Dowling Hall Garage

Issues and Opportunities

Contractor vehicles are frequently in the campus core. Large contractor vehicles often occupy prime parking spaces for other campus visitors. Best practice is for contractor vehicles to park away from the high-volume activity areas on campus and instead be concentrated in less-utilized lots.

Strategy

Require all contractors to park in a dedicated parking area in the Dowling Garage or other underutilized parking facility.

Next Steps

Create a University policy and communicate change with departments and contractors as needed.

Metrics, and Cost

- N/A
- $ (Administrative)

Campus
MEDFORD/SOMERVILLE

Score
0-4

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.

- Maintain Campus Competitiveness
- Improve Transit Accessibility
- Promote Bicycle Use
- Create a Pedestrian Friendly Campus
- Plan for Future Growth
- Increase Campus Sustainability
- Improve Connectivity Between Campuses
- Cost Effectiveness
- Reduce Parking Demand

3N. CRAFT A BIKE PARKING DURATION POLICY

Issues and Opportunities

There is not currently a campus-wide "illegally parked" bike policy. The Boston campus has a large number of bicycles locked to street signs and railings due to insufficient bicycle parking. Abandoned bicycles are an eyesore and are often left in high pedestrian-volume areas, causing an obstruction.

Strategy

Implement a bicycle parking duration policy to encourage bike parking turnover and preserve parking capacity, especially at high demand locations. Such a policy could be administered and enforced by Campus Police, or the university could establish an affiliate relationship with a nearby bike shops willing to adopt the abandoned bicycles.

Next Steps

Implement this program in the near term by the end of FY2016.

- Create and advertise a bicycle parking policy, which includes parking duration. The policy should define an "abandoned bicycle" (e.g. secured in the same position for 60 consecutive days) and include a reporting mechanism.
- Work with TUPD to clarify operating procedures for warning bicycle users and impounding bicycles.
- Coordinate with University's optional bicycle registration program.

Metrics, and Cost

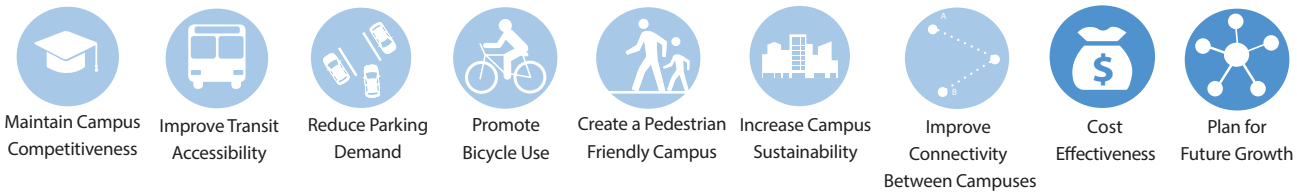
- Number of bicycles not parked at designated racks
- $ (Enforcement)

Campus
MEDFORD/SOMERVILLE
BOSTON GRAFTON

Score
0-4

Goals Met

The darker the shade of blue, the greater the degree to which the strategy meets established goals.



On-street bike parking is in high demand across the Boston campus and there is clearly not enough street racks to meet that demand. The campus can work with the city to install more racks.

IMPLEMENTATION SCENARIOS

Photos by Alonso Nichols/Tufts University

IMPLEMENTATION SCENARIOS

Each of the following three (3) tables summarizes the preceding catalytic, priority and secondary TDM strategies based on how they measure against the nine established goals and professional judgment as to overall ability to support mode shift to non-motorized modes. The strategies mix qualitative and quantitative TDM measures in a simple matrix format so that strategies can be easily weighed and compared to one another. This includes an initial assessment of potential timeframes, level of difficulty and staffing resources described as "TDM Program Intensity." As stated previously, the University has constrained financial resources, where each implementation decision will influence the University's ability to implement other strategies. Therefore it is not recommended that every proposed strategy is implemented; instead that the University should seek a balance of strategies that complement one another and are right-sized to current and potential funding. As strategies are implemented and more information becomes available, the following assessment can be revisited and the evaluation structure can be used for future updates to this TDM plan.

Priority	Goals (in order of priority)									Score	Catalytic Recommendations
	Cost Effectiveness	Create A Pedestrian Friendly Campus	Plan for Future Growth	Improve Transit Accessibility	Increase Campus Sustainability	Reduce Parking Demand	Maintain Campus Competitiveness	Promote Bicycle Use	Improve Connectivity Between Campuses		
These eight (8) recommendations scored highest based on the nine (9) established goals and are therefore "Catalytic"	3	3	4	4	3	3	3	3	3	26	1A. Install a Mobility Hub at future Green Line Station (M/S)
	3	4	3	4	3	2	2	4	2	26	1B. Invest in multi-modal accessible paths to connect Upper Campus to Boston Avenue and future Green Line Station (M/S)
	4	3	4	0	3	4	2	2	0	24	1C. Restructure parking rates and invest revenues in TDM programs (M/S, B)
	3	4	3	3	2	0	4	4	0	24	1D. Implement raised crosswalks, curb extensions on Professor's Row, College Avenue, Dearborn Avenue and a bicycle lane on Boston Ave. (M/S)
	4	2	2	2	3	2	3	4	0	23	1E. Work with Medford and Boston to install bicycle lanes connecting to campus (ALL)
	3	0	3	4	4	4	4	0	0	23	1F. Implement 50% Staff, Faculty T-Pass Subsidy Program (ALL)
	3	4	4	4	2	2	2	0	2	22	1G. (With others) Implement Pedestrian/safety enhancements at College and Boston Avenue Intersection (M/S)
	4	0	2	4	2	3	3	0	3	20	1H. Improve Joey Shuttle System (M/S)

Legend: 4 3 2 1 0 — Strongly Meets Goal — Does Not Meet Goal

Metrics/Baseline	TDM Program Intensity				Notes
	Baseline		Moderate	Aggressive	
	Small funding gains; existing staff time		Substantial funding gains; new staff	Maximized funding outlook; new staff	
	Immediate	Near-term	Mid-term	Long-term	
	FY2015	FY2016-2017	FY2018-2022	FY2023 and beyond	
Transit Mode Share (10% faculty, 11% staff), # Choices at future Green Line Station					Mobility Hubs provide seamless connection for different transportation modes including car share, bicycle share and real-time transit information (M/S)
Walk + Bike Mode Share (10% faculty, 12% staff), Pedestrian Counts on Boston Ave.					There is currently limited accessible pedestrian and bicycle paths connecting campus to Boston Avenue (M/S)
Drive Alone Mode Share (54% faculty, 68% staff at M/S, 33% faculty at B), Parking Spaces/Capita					Dowling, Cousens and 200 Boston Ave. lots are underutilized, surface lots are oversubscribed, prices are below peers, revenues not covering expenses (M/S)
% of Protected/Enhanced Crossings, Bicycle Counts					Sidewalks and roadways require ADA and pedestrian upgrades to improve safety and connectivity to neighborhood and future Green Line (M/S)
# of Protected Bicycle Lanes Connecting to Campus, Bicycle Mode Share (4% faculty, 4% staff at M/S)					There is a lack of bicycle infrastructure/lanes at both the Medford/Somerville to the north, in Medford and at the Boston campus where there are currently no bike lanes connecting directly to campus. Designated bicycle lanes ranked highest for bicycling preferences in the transportation survey
Transit Mode Share (10% faculty, 11% staff at M/S)					11% staff/faculty transit mode share at M/S, lack of employee transit subsidy at M/S and comparatively low 25% subsidy at Boston campus are less competitive with other employers/institutions - Princeton offers 50%
Walk Mode Share (26% all users) Transit Mode Share (13% all users)					Boston/College Ave. heavily-traveled now by pedestrians, will be more in future with the Green Line Extension
Shuttle Cost/Rider/Day ($14.83 Boston Ave. Shuttle)					Joey Shuttles overlap with MBTA services (including buses 94, 96) and Boston Avenue shuttle has low ridership - costing $14.83/rider (M/S)

Priority	Goals (in order of priority)									Score	Priority Recommendations
	Cost Effectiveness	Create A Pedestrian Friendly Campus	Plan for Future Growth	Improve Transit Accessibility	Increase Campus Sustainability	Reduce Parking Demand	Maintain Campus Competitiveness	Promote Bicycle Use	Improve Connectivity Between Campuses		
These fourteen (14) recommendations scored well against a few of the goals such as cost effectiveness										19	2A. Expand TDM programs and help reduce demand for constructing and leasing new parking (B)
										19	2B. Install additional secure bike-parking at the Tremont Street plaza and an on-campus Hubway Station (B)
										18	2C. Continue to work on University-wide policy for telecommuting/telelecturing (ALL)
										18	2D. Audit bicycle parking and establish campus-wide standards for bicycle racks (ALL)
										18	2E. Work with MBTA and cities of Somerville and Medford to upgrade bus stops (M/S)
										18	2F. Develop a campus-wide bicycle plan (M/S)
										17	2G. Offer a $20/month bicycle reimbursement benefit (ALL)
										17	2H. Develop a personalized Employee MyCommute intranet site (ALL)
										16	2I. Increase staff and faculty enrollment in pre-tax T-Pass deduction (ALL)
										16	2J. Increase awareness of A Better City TDM programs at Health Sciences Complex (B)
										16	2K. Construct end-of trip facilities such as showers and locker rooms (ALL)
										16	2L. Work with Worcester Regional Transit Authority (WRTA) to expand service (G)
										16	2M. Establish “TDM Clearinghouse” website (ALL)
										15	2N. Promote Go Safe walking escort service to off-site parking lots and South Station (B)

Legend: 4 3 2 1 0

Strongly Meets Goal — Does Not Meet Goal

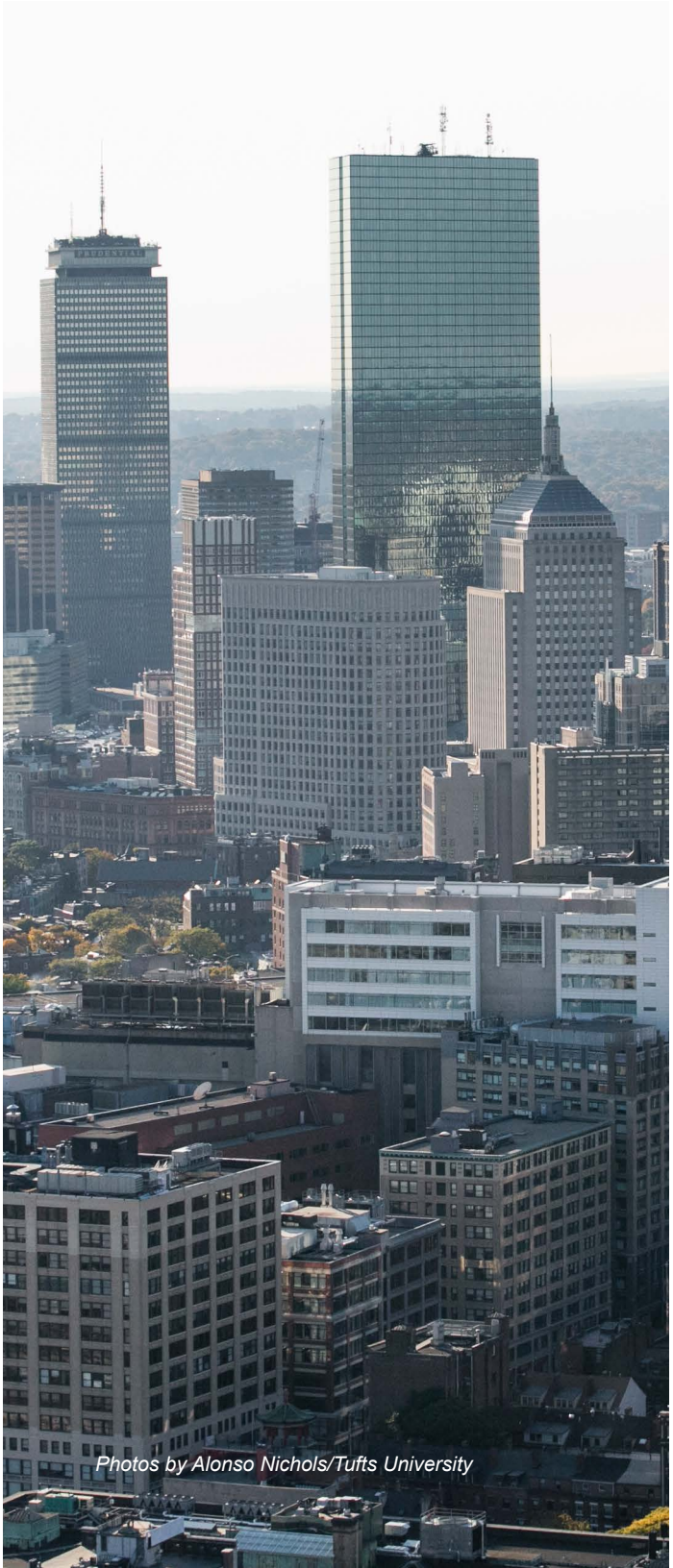
Metrics/Baseline	TDM Program Intensity				Notes
	Baseline		Moderate	Aggressive	
	Small funding gains; existing staff time		Substantial funding gains; new staff	Maximized funding outlook; new staff	
	Immediate	Near-term	Mid-term	Long-term	
	FY2015	FY2016-2017	FY2018-2022	FY2023 and beyond	
Faculty Drive Alone Share (33%)			■	■	Parking is below market-rate (an employee benefit), plans to construct new parking and need to reduce pressure on supply (B)
# Secure Bicycle Parking Spaces (34), # of on-campus Hubway Stations (0)	■	■			The existing 34 secure bike parking spaces at the Tremont Garage are currently over-subscribed (B)
Staff/Faculty Drive Alone Mode Share (68% at M/S)		■			68% drive alone mode share at M/S and congested roadways at peak hour, no University-wide policy on telecommuting (M/S, B)
# of Bike Racks Meeting Minimum Standards	■	■			Many Medford/Somerville bicycle racks are far from entrances and not visible, Boston campus bike rack supply exceeds demand, and Grafton has seven old style racks (all campuses)
Boarding Counts by Bus Stop		■			Bus stops surrounding campus are currently minimal, with no weather protection and limited lighting (M/S)
Bicycle Mode Share (currently 4% staff, 4% faculty), # Accidents Involving Bicycles		■	■		Interior campus roads (e.g., Professors Row and Talbot Ave) are high-speed and could become one-way and accommodate bike lanes
Program Enrollment (0)		■	■	■	Low bike mode share - 4% for both staff and faculty at M/S, 2% of Boston staff and 3% for Boston faculty
CO2 saved, VMT reduced per capita		■	■		No centralized/streamlined site for employees to track commuting costs, VMT and C02 emissions (all campuses)
Pre-Tax T-Pass Participation Rate (4.4%) to Match Mode Share (10%)	■	■	■	■	Only 4.4% of M/S employees and 0% of Grafton employees are enrolled in the pre-Tax T-Pass program.
ABC TDM Program Awareness (89% employees unaware)	■	■			Survey shows 89% of employees unaware of ABC TDM programs (B)
# Showers and Lockers per Campus		■	■	■	Lack of showers, lockers for bicycle commuters (all three campuses)
WRTA Bus Frequency	■	■			WRTA is currently working with URS to explore service enhancements (G)
TDM Program Awareness (measured by annual commuter survey)	■	■	■	■	Low of awareness of existing TDM programs for example, 42% of employees unaware of car share and 75% of employees unaware of Emergency Ride Home (M/S)
Walk Mode Share (1% staff, 3% faculty)		■			Boston employees feel unsafe walking to and from Health Sciences Campus after dark

Priority	Goals (in order of priority)	Score	Secondary Recommendations
	Cost Effectiveness; Plan for Future Growth; Increase Campus Sustainability; Reduce Parking Demand; Maintain Campus Competitiveness; Improve Connectivity Between Campuses	14	3A. Incentivize Vanpools/Carpools (ALL)
	Reduce Parking Demand; Maintain Campus Competitiveness; Promote Bicycle Use	14	3B. Develop a "Bike Buddies" Program to encourage bicycle commuting (M/S, B)
	Cost Effectiveness; Plan for Future Growth; Improve Transit Accessibility; Increase Campus Sustainability; Reduce Parking Demand; Promote Bicycle Use	14	3C. Increase awareness of discounted student semester T-Pass (M/S)
	Plan for Future Growth; Improve Transit Accessibility; Increase Campus Sustainability; Reduce Parking Demand; Maintain Campus Competitiveness; Promote Bicycle Use	13	3D. Install frontloading bike racks on campus shuttles (M/S)
	Cost Effectiveness; Plan for Future Growth; Increase Campus Sustainability; Reduce Parking Demand; Maintain Campus Competitiveness; Promote Bicycle Use	11	3E. Create a Departmental and Residential Hall "Transportation Ambassadors" program (building on existing outreach program) (ALL)
These fourteen (14) recommendations scored lowest against the goals but are effective especially when implemented in combination with catalytic and primary recommendations	Cost Effectiveness; Create A Pedestrian Friendly Campus; Improve Transit Accessibility; Increase Campus Sustainability; Maintain Campus Competitiveness; Promote Bicycle Use; Improve Connectivity Between Campuses	11	3F. Provide information on non-SOV transportation options for inter-campus travel (ALL)
	Increase Campus Sustainability; Reduce Parking Demand; Maintain Campus Competitiveness; Promote Bicycle Use	9	3G. Install self-service bike repair stations (ALL)
	Cost Effectiveness; Plan for Future Growth; Increase Campus Sustainability; Reduce Parking Demand; Maintain Campus Competitiveness	9	3H. Introduce HOV ridesharing permit (three or more person carpools) (ALL)
	Cost Effectiveness; Create A Pedestrian Friendly Campus; Maintain Campus Competitiveness; Promote Bicycle Use	8	3I. Multi-modal safety awareness campaign in coordination with host community (ALL)
	Cost Effectiveness; Plan for Future Growth; Increase Campus Sustainability	7	3J. Deploy a dynamic parking utilization software package and real-time electronic parking wayfinding signs for high parking-demand events (M/S)
	Increase Campus Sustainability; Maintain Campus Competitiveness	6	3K. Increase number of Electric Vehicle (EV) charging stations (ALL)
	Improve Transit Accessibility; Increase Campus Sustainability; Maintain Campus Competitiveness	3	3L. Monitor MBTA Student U-Pass Recommendations (ALL)
	Cost Effectiveness; Reduce Parking Demand	3	3M. Require all contractors to park in dedicated parking at Dowling Garage (M/S)
	Plan for Future Growth	2	3N. Craft a bike parking duration policy (ALL)

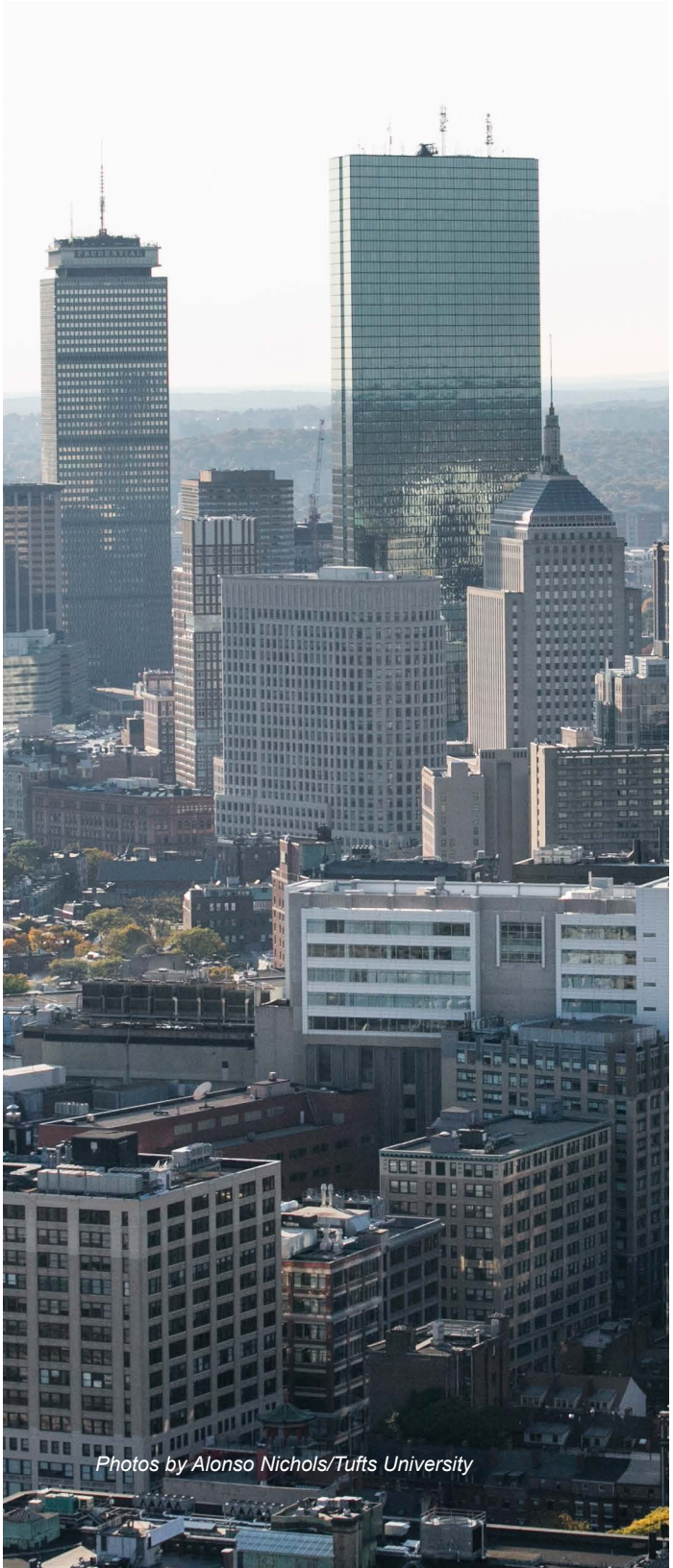
Legend: 4 | 3 | 2 | 1 | 0

Strongly Meets Goal — Does Not Meet Goal

Metrics/Baseline	TDM Program Intensity				Notes
	Baseline		Moderate	Aggressive	
	Small funding gains; existing staff time		Substantial funding gains; new staff	Maximized funding outlook; new staff	
	Immediate	Near-term	Mid-term	Long-term	
	FY2015	FY2016-2017	FY2018-2022	FY2023 and beyond	
Carpool, vanpool, rideshare participation					Surface lots are oversubscribed, there is currently limited visible parking incentives for carpooling other than in the Dowling Garage and behind Academic Quad (M/S)
Bicycle Mode Share (M/S: 4% staff, 4% faculty, B: 2%, 3% faculty					Low bike mode share - 4% for both staff and faculty at Medford/Somerville, 2% of Boston staff and 3% for Boston faculty
Discounted T Pass Participation Rate (0.5% students)					44% of M/S students are unaware of discounted T-Pass program
# of bicycles on shuttles (0)					Hard for bicycle commuters and others to travel by shuttles (B, M/S)
Increased Awareness About TDM Programs, All Users (varies by program)					Low awareness of TDM programs such as semester T-pass program and Emergency Ride Home (75% of employees unaware at M/S)
Hits on website: http://www.campustravel.com/university/tufts/					Lack of on-line information about inter-campus travel (all campuses)
# of Repair Stations/Campus (0)					Medford campus has an on-site mechanic. Other area campuses, such as Harvard University are also installing self-service, on-campus bike repair stations.
# HOV Permits (0)					Discounted parking passes and preferred parking spaces are available (M/S)
# of campus population to "sign" safety pledge					Despite growing numbers of cyclists in the Boston metro area, there is low awareness of "rules of the road" leading to conflicts between pedestrians and cars, bicyclists and cars
Spillover parking during Events/Complaints from Neighbors					Visitor events create spillover impacts to neighborhood (M/S)
# EV Charging Stations (0)					Medford/Somerville currently has one EV charging station. Another is funded for Dowling Garage and one at the Grafton campus.
N/A					The MBTA is actively exploring the viability of Universal Pass program for students (all campuses)
N/A					Surface lots near campus are in high demand and should be dedicated to vanpools, carpools and bicycle parking
# Bicycles parked outside designated racks					There is currently no campus wide "illegally parked" bike policy



Photos by Alonso Nichols/Tufts University



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POLICY REVIEW

POLICY REVIEW

This section provides a review of TDM-related municipal policies for Somerville/Medford, Boston, and Grafton.

Somerville and Medford

The Tufts TDM Plan is both supportive of and consistent with the City of Somerville Comprehensive Plan SomerVision (2012). The City's Comprehensive Plan states that "Somerville should be connected to major research universities..." and requires that "routes to major institutions including Tufts, Harvard, MIT, and Boston University" are identified and plans developed to increase access by all modes of transportation" (*Somervision Comprehensive Plan, p 90*).

- SomerVision calls for 50% of new trips to be via transit, bike and walking; and
- Transportation Demand Management is one of five priority sustainability programs.

Below is an assessment of the Transportation and Infrastructure goals of SomerVision in relation to the TDM Plan (emphasis is added):

- Create a mass transit network accessible to all parts of the city and all users, with innovative physical and informational improvements that allow for easy use and seamless intermodal connections.
  - » *The concept of a new Mobility Hub at the future College Avenue Green Line Station directly supports this goal.*
- Increase active and alternative transportation options; reduce congestion and promote workplace-based policies and incentives for mode choice, work hours, and employment location.
  - » *This is consistent with the University's efforts to promote transit, walk and bike, reduce drive alone mode share and develop a telecommuting policy.*
- Expand bike and pedestrian use by transforming existing infrastructure with accommodations for bicyclists and pedestrians, resulting in safe, accessible and well-connected networks.
- Use technology and infrastructure improvements to balance the needs of pedestrians, bicyclists, private vehicles, and mass transit; reduce congestion and pollution; decrease road space dedicated to private automobiles, and unlock economic development potential...
  - » A wide range of the strategies contained in this Plan are consistent with expanding bike and pedestrian use and using technology and infrastructure improvements. This includes multi-modal improvements (as proposed by Nitsch Engineering), concept plans for new bicycle lanes on Boston Avenue and using technology such as employee commuter calendars to incent non-motorized modes.
- Manage parking supply and demand in a flexible, rational and innovative manner.
  - » *Restructuring parking pricing and strategies to reduce spillover impacts to the neighborhood and reduce demand for parking by increasing the walk and bike mode share are consistent with this goal.*

Based on a search of City of Medford website and ordinance, there are currently no policies that relate specifically to Transportation Demand Management.

Boston

Tufts University shares the Boston campus with New England Medical Center which is subject to a Transportation Access Plan Agreement (TAPA) with the City of Boston. This requires maintaining a 52% transit mode share. Through Tufts Shared Services, the University has access to the ABCTMA programs that directly support the goals of this TDM Plan.

The City of Boston's current Transportation Plan Access Boston (2000-2010) does not explicitly mention TDM. However, the City has just initiated a Transportation Master Plan which will contain significant TDM elements.

The City's website and policies promote a wide range of transportation modes and resources including: Walk Boston, ABC TMA, car sharing/ Zipcar, bicycling and public transit, all of which are consistent with the emphasis of this TDM Plan.

Grafton

The Tufts Grafton Campus is within the Campus Development Overlay (CDO) within the Town of Grafton. A small portion of the campus also falls within the Town of Westborough. The Grafton Master Plan (2014) describes TDM-related requirements under the CDO Design Criteria which look for "facilities for meeting transportation needs, and planning for control and reduction of vehicle trips by means of ride-sharing, car-pooling, use of campus vans and MBTA facilities."

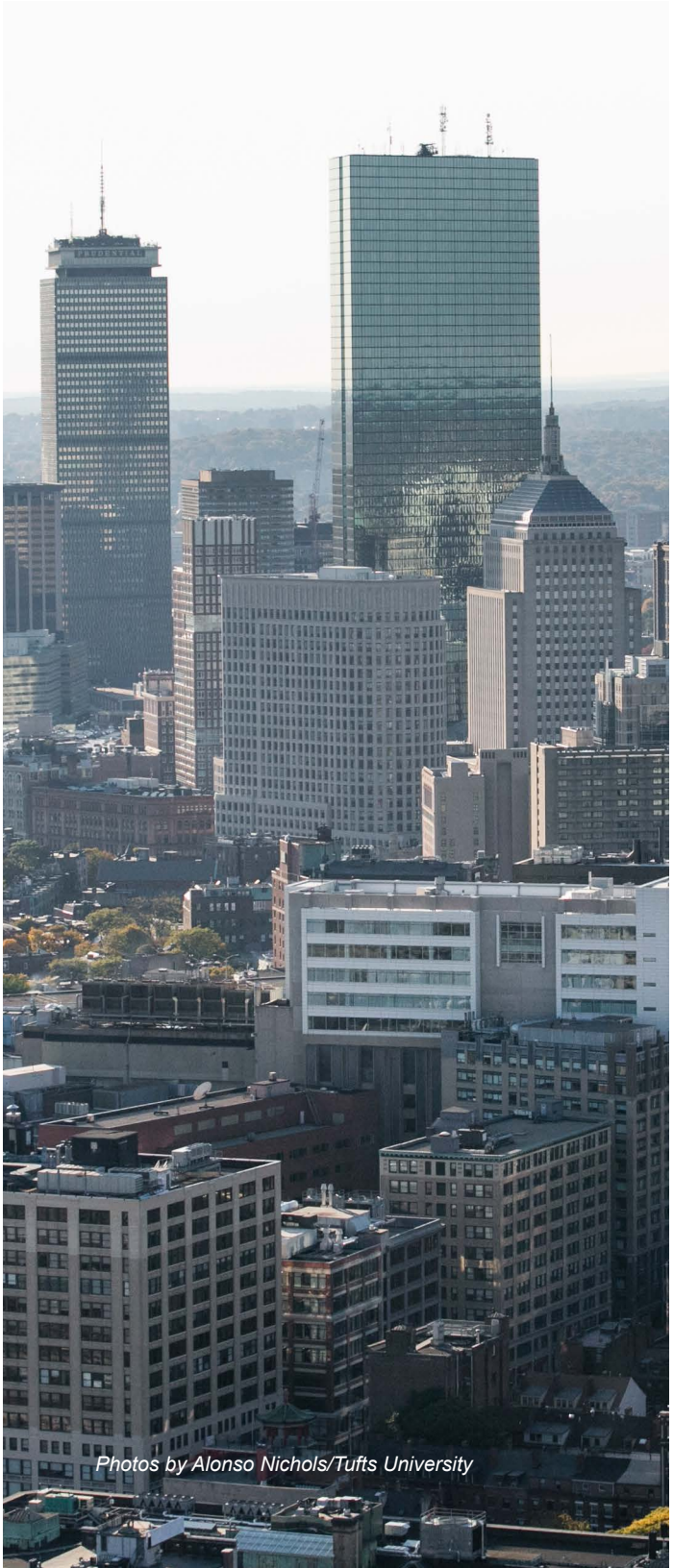
MassDOT

In 2010, MassDOT launched GreenDOT, comprehensive environmental sustainability initiative to "green" the State's transportation system with three primary goals: 1) Reduce greenhouse gas emissions; 2) Promote walking, bicycling and public transit and 3) Support smart growth development. The initiative is internal to MassDOT and responsibility for implementation includes the Aeronautics, Highway, Rail and Transit, Registry of Motor Vehicles and Shared Services divisions of MassDOT. There are three Transportation Policy and Planning goals:

- Design a multi-modal transportation system
- Promote healthy transportation and livable communities
- Triple bicycling, transit and walking mode share

In order to accomplish these goals, a number of tasks and "indicators" are described, all of which broadly support the Tufts TDM Plan including:

- Increase delivery of Complete Streets projects
- Increase bicycle parking and access to transit
- Increase total miles and connectivity of bicycle and pedestrian facilities; indicators include:
  - » *Critical pedestrian and bicycle network gaps are prioritized for project funding*
  - » *Mileage of dedicated on-road bicycle facilities doubled across the Commonwealth*
- Stabilize travel demand growth on roadways from single occupancy vehicles
  - » *TDM programs expanded 20%*
  - » *All rail stations are accessible by complete streets*



Photos by Alonso Nichols/Tufts University

BENCHMARKING

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Tufts University should continually update and track performance data for each of its transportation programs and initiatives. By developing a monitoring program, the University will better understand how programs are utilized and how travel behavior is impacted over time. Tracking mode split over time and collecting program participation rates is valuable for determining the right amount of investment in multi-modal infrastructure and TDM programs. The data provides crucial tracking of campus travel demand and the impact on vehicle volumes, parking usage and capacity and can be used to show how the University's investments in TDM are working and whether the baseline metrics are improving. In the long run the monitoring will be cost effective when compared to the cost of constructing and maintaining new parking supply. The figure below provides a list of key baseline data that the University will need to monitor. Additional detail on potential metrics is listed under each of the strategies in the preceding sections.

	EXAMPLE METRICS	BASELINE SCENARIO	COSTS TO TUFTS	PROGRAM AWARENESS	SOV REDUCTION	REDUCTION IN GHG EMISSIONS
TRANSIT	Transit Mode Share	25% all campuses	N/A	N/A	High	High
	Pre-Tax Deduction Participation Rate	4.4% of Medford employees 73% of Boston employees 0% of Grafton employees	$$	Medium	High	High
	Discounted T Pass Participation Rate	0.5% of Medford students 17% of Boston students 0% of Grafton students	$	Medium	Medium	Medium
	MBTA Service Frequency	28 peak hour buses for Medford Campus; 9-12 min. Red Line frequency 6-10 min. Orange Line freq.	N/A	N/A	High	High
	Shuttle Riders/Trip	#	N/A	N/A	Medium	Medium
	Shuttle Cost/Rider/ Day	Boston Ave: $14.83 NEC/SMFA: $7.19 Davis: $0.72	$$$	High	Low	Medium
PARKING	Drive Alone Mode Share	37% all campuses	N/A	N/A	N/A	N/A
	Parking Spaces/ Capita	0.19 parking spaces of all Tufts population	N/A	N/A	N/A	N/A
	# of Smart Parking Meters	0	$	Low	Low	Low
	# of EV Charging Stations	1	$	Medium	Low	Low
	# of Cleaner Vehicles/ Tufts Fleet	3-Jan	$$$	N/A	Low	High

	EXAMPLE METRICS	BASELINE SCENARIO	COSTS TO TUFTS	PROGRAM AWARENESS	SOV REDUCTION	REDUCTION IN GHG EMISSIONS
BICYCLING	Bicycle Mode Share	5% all campuses	N/A	N/A	N/A	N/A
	Protected Bike Lanes	0 on campus	0-$	N/A	Medium	Medium
	# of Secure Bike Parking Spaces	#				
	Number of Covered Spaces	134	$$	High	Low	Low
	Accidents Involving People Riding Bikes					
WALKING & ADA ACCESS	Walking Mode Share	19% all campuses	N/A	N/A	N/A	N/A
	# of ADA Accessible Paths on Campus	#	$$	Low	Medium	Medium
	# of Accidents Involving Pedestrians	#	$$	N/A	N/A	N/A
	% of Protected/ Enhanced Crossings	#	$$	Low	Low	Low
TDM PROGRAMS	Discounted T Pass Enrollment	24% of all employees 5% of all students	$	Medium	Medium	Medium
	Tufts Bikes Bikeshare Utilization	0.06 of checkouts/ capita (April, 2014)	$$	High	Low	Medium
	Hubway Membership	# of Memberships	$	Medium	Medium	Medium
	Zipcar Membership	4% of employees 39% of students	$	Medium	Low	Medium
	Carpool Participants	2? participants	$	Low	Low	Medium
	Vanpool Participants	4 participants at Boston Campus	$	Low	Low	Medium
	Emergency Ride Home Participants	26 participants (2012-2014)	$	Medium	Low	Low
	Video Conferencing Participants	903 audio calls 8,802 video calls (1/14/14-5/14/14)	$	Medium	Medium	Low