



New England University Transportation Center
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Year 24 Final Report

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Project Title:

Development of a “Universal” Residential Public Transportation Pass, as Part of a Comprehensive Multi-Modal Approach to Urban Parking Completed

Project Number:

MITR24-9

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The New England University Transportation Center is a consortium of 5 universities funded by the U.S. Department of Transportation, University Transportation Centers Program. Members of the consortium are MIT, the University of Connecticut, the University of Maine, the University of Massachusetts, and Harvard University. MIT is the lead university.

1. Accomplishments

Completion of Masters theses by Winnie C. Chang and Cara Elizabeth Ferrentino on “Whose Parking Space Is It? Managing Residential Parking in the Context of Urban Growth: Case Study of Cambridge, MA”, and “Cambridge in Transition: Regulating Parking in a Growing City” respectively. The abstracts of the said theses are attached herewith.

The theses have been used in the preparation of several assignments in the course 1.252J/11.540/ESD.225J, and as recourse document for students taking this course

The theses are also being used as a resource in ongoing research by two Masters' students in further analysis of the evolution of higher development densities in urban areas, and the capacity expansions in the transportation system needed to support the increased density, and the importance of economic development at greater density in resolution of Baumol Disease type problems in urban transit systems

In addition, the theses are being used in the preparation of a summary paper on the combined research products of conclusions reached in the Massachusetts Avenue living Laboratory, which will be submitted to TRB this coming year.

1A. Research Project

Project No.	PI	Project Title	Status
MITR24-9	Salvucci Murga	Development of a “Universal” Residential Public Transportation Pass, as Part of a Comprehensive Multi-Modal Approach to Urban Parking	Completed

Accomplishments under the New England UTC’s research goal

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The results of the completed research have provided useful support to the ongoing planning processes in the Kendall Square area in real time, and are being provided to the Cambridge Planning Board and the Cambridge Redevelopment Authority in their ongoing planning process for Kendall Square.

How the New England UTC’s research results have been disseminated

The results of the completed research are also being provided to the business association ABC, "A Better City" for their consideration in planning the transportation infrastructure requirements to support the economic development densification of the Seaport Innovation District in Boston.

1B. Education Projects

Accomplishments under the New England UTC's education goal

Nothing to report

1C. Technology Transfer Projects

Accomplishments under the New England UTC's technology transfer goal

Nothing to report

2. Products

Journal publications, books, or one time publications Websites, media are being pursued, but have not yet occurred.

This research is part of an interconnected series of research products about the complexity of economic development, land use densification, and mode share change in the Cambridge area which is undergoing rapid transformation and growth in a context of capacity constraints in affordable housing, transit capacity, roadway capacity, and parking availability. The series of research projects is called the "Massachusetts Avenue Living Laboratory". Related research in this effort includes completed masters theses on residential parking and transit universal passes, employee parking freezes, their strengths and weaknesses, transit capacity constraint relaxation in the context of continued roadway capacity constraint, and Baumol's disease in Public transportation, with the MBTA as a focus case. Two of these research efforts are not yet complete, and will include a synthesis paper unifying the body of work of the Massachusetts Avenue Living Laboratory.

Technologies or techniques

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This research has furthered the use of accessibility quantification in the development of land use models which are ongoing in collaboration with the Department of Urban Studies and Planning of MIT. The results of this ongoing research will be offered to journals for dissemination this coming year.

Inventions, patent applications, and licenses

Nothing to report

Other products

Nothing to report

3. Participants & Other Collaborating Organizations

Organizations that have been involved as partners:

- MBTA - transit provider for the Boston Massachusetts region
 - TfL (Transport for London) - transport provider for London, England
- TfL has provided matching funds.

Other collaborators or contacts that have been involved

Nothing to report

4. Impact

The impact on the development of the principal disciplines of the program

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This research project has resulted in added insights into the unique high tech development cluster now underway in Kendall Square Cambridge, and the Seaport Innovation District in Boston, as well as the Inner Belt development district in Somerville, providing input into the ongoing revision of zoning requirements in the cities involved. This will be an ongoing activity of the principal investigators over the next six months to a year, using the results of the completed research as inputs into the regulatory regimes now being revised.

The further development of techniques in the utilization of transportation accessibility under conditions of capacity constraint is an ongoing activity being pursued in several academic and professional venues, including particularly TRB.

The impact on other disciplines

Nothing to report

The impact on the development of transportation workforce development

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This project has had direct benefit in the education of the student involved in the thesis research, and in approximately fifty students in the Urban Transportation class 1.25J/11.540J/ESD.225J

The impact on physical, institutional, and information resources at MIT

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MIT has been actively involved in promoting and participating in the process of economic change and densification of land uses in Cambridge, and the investigators have been actively involved in these processes, including presenting testimony at public meetings of the Planning Board, City Council, and articles in the faculty newsletter. The results of the research undertaken in MITR24-6, "Kendall Square, Lessons drawn from its past to guide its future" have been directly useful in the preparation of these activities.

The impact on technology transfer

Nothing to report

The impact on society beyond science and technology

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The research undertaken in MITR24-9, " Development of a 'Universal' Residential Public Transportation Pass, as Part of a Comprehensive Multi-Modal Approach to Urban Parking" has been directly useful in supporting and shaping the economic development of the area, benefiting employees and firms and the tax base of the city and the Commonwealth.

5. Additional Information

Additional information regarding Products and Impacts

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The research undertaken with the support of MITR24-9, " Development of a 'Universal' Residential Public Transportation Pass, as Part of a Comprehensive Multi-Modal Approach to Urban Parking" has been directly supportive of the education of over fifty students, many of them from diverse backgrounds, and the theses which were a direct product of the research continues to be a useful resource for ongoing research of others.

The improved balancing of economic growth with adequate relaxation of capacity constraints is directly beneficial to the improvement in travel time reliability and reduction of carbon and other harmful emissions from transportation sources.

Outputs

Nothing to report

Outcomes

Nothing to report

Impacts

Nothing to report

Whose Parking Space Is It? Managing Residential Parking in the Context of Urban Growth: Case Study of Cambridge, MA

by

Winnie C. Chang

Submitted to the Department of Urban Studies & Planning and
Department of Civil and Environmental Engineering
On May 21, 2014 in Partial Fulfillment of the Requirements for the Degrees
of Master in City Planning and Master of Science in Transportation

ABSTRACT

In the context of urban growth, how can a city approach residential parking issues? Cambridge, MA is experiencing rapid growth in real estate development and investment, shifts in demographics and travel behavior. How do these changes impact residential parking? Questions such as, "Who has a right to a curbside space?", "How much should it cost?", and "How much regulation is desirable?" trigger antagonistic reactions in the best of times. This research illustrates the complexity of parking problems and provides a framework for breaking parking disputes down to their spatial, political and institutional issues.

Three multi-block sites in Central Square (CS), Area 4/Wellington-Harrington (A4) and East Cambridge (EC) are manually surveyed for parking supplies and utilization rates. 75-95% of on-street and 6-45% of off-street spaces are occupied during night counts. Total registered vehicles (2011) in CS, A4 and EC exceed on-street parking supply. This does not necessarily indicate a physical parking problem exists. But it does illustrate that under the assumption residents have an equal right to public space, eligible vehicle owners in practice have claim to only a fraction of a curbside parking space.

'No Intervention,' 'Parking as a Public Asset' and 'Priority to Locals' are ideologies used to explore interventions, which focus on changes to the residential parking permit program, shared parking uses and tie-ins to new development approvals. The most effective ideology is managing parking as a public asset. Increasing the residential parking permit price with an income based structure is strongly recommended, in addition to greater city efforts to collect data on current parking conditions and continued campaigning by city and community representatives to ensure local interests are represented in significant projects such as the Sullivan Courthouse redevelopment.

Parking disputes can invoke impassioned reactions in the sanest of individuals. Finding a solution that addresses spatial, political and institutional issues is challenging, requires accurate information, and a willingness to attempt, evaluate and learn from errors. But it can be done.

Thesis Supervisor: Frederick P. Salvucci

Title: Senior Lecturer in Civil and Environmental Engineering

Cambridge in Transition: Regulating Parking in a Growing City

by

Cara Elizabeth Ferrentino

Submitted to the Department of Urban Studies and Planning
on May 23, 2013 in Partial Fulfillment
of the Requirements for the Degree of
Master in City Planning

ABSTRACT

Cities regulate parking to achieve a variety of goals including traffic reduction, air quality improvement, urban densification, and climate change mitigation. In the City of Cambridge, Massachusetts, parking regulation has proven to be a highly contentious dimension of local development politics. In 1973, the US EPA promulgated a cap on non-residential parking supply in Cambridge as part of efforts to bring the Boston metropolitan area into compliance with Clear Air Act ambient air quality standards. Until 1997 the City of Cambridge administered the controversial parking “freeze,” which garnered opposition from developers, businesses, and their allies within city government, as well as strong support from neighborhood activists who hoped the freeze would limit development. Debate over the parking freeze led to efforts by Cambridge planning and transportation staff to recast the parking freeze, a restriction on supply, as a suite of policies targeting demand for driving, particularly among employee commuters.

Cambridge has grown significantly over the past two decades and is poised to grow further, providing the impetus for research into the city’s experience with parking regulations and travel demand management policies. Analysis of the history, implementation, and effects of Cambridge’s parking policies yields several key conclusions. First, the City developed its parking policies in response to external federal, state and local mandates in the form of regulations, lawsuits, and petitions. These events led to debates over parking policy between three groups that in this thesis are called the local “growth coalition,” or development interests, neighborhood “limited growth” activists, and government “planned density” bureaucrats. Debates between these groups dramatically shaped the form that Cambridge’s policies now take. Second, past and current parking policies have facilitated the existence of underused parking spaces in the city, which undermine the effectiveness of policies that target commuter driving. Finally, although concerns about the impacts of parking policies on economic development still exist in Cambridge, anticipated growth presents an opportunity for the City to revisit its parking policies. Revised policies could more effectively enable the shared use of existing parking spaces, increase employee awareness of commuter benefits, and make the costs of parking more transparent and representative of their physical, social, and environmental impacts.

Thesis Supervisor: Frederick P. Salvucci

Title: Senior Lecturer of Civil and Environmental Engineering