

# College Hill Parking Task Force Providence, RI

Findings and Recommendations  
April 2008

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# EXECUTIVE SUMMARY

Following the submission of Brown University's Institutional Master Plan in the summer of 2006, the City Plan Commission requested that Brown take the lead in gathering College Hill stakeholders to address parking and traffic issues. In response, Brown invited representatives from College Hill institutions, neighborhood groups, city departments, and Rhode Island Public Transit Authority (RIPTA) to form the College Hill Parking Task Force (Task Force). The Task Force met more than 15 times in 2007 and early 2008.

From the start, all stakeholders have been willing participants, and a great deal of progress has been made. Substantial agreement exists on many issues and the Task Force has worked to develop a fact-based analysis and decision-making process. This process has led to the development of planning principles that helped form (and test) the findings and recommendations contained within this report.

The College Hill Parking Task Force is a broad-based coalition of College Hill institutions, neighborhood groups, city departments, and RIPTA devoted to finding workable solutions to improve

The Task Force's process has been extremely positive and productive, notwithstanding the expected competing interests and opinions. Compromise and a willingness to listen to each other have proven this effort to be a healthy and productive endeavor. This report shows that there are enough common interests among the members to support recommendations that

## Task Force Members

Brown Athletics/Moses Brown Neighbors	Brown University
College Hill Neighborhood Association	Fox Point Neighborhood Association
Jewelry District Association	Moses Brown School
Department of Planning and Development	Providence Police Traffic and Parking Enforcement
Department of Public Works (DPW)	Rhode Island School of Design (RISD)
Traffic Engineering	Wheeler School
Thayer St. District Management Association (DMA)	Rhode Island Public Transit Authority
Rhode Island Judiciary (Licht Judicial Complex)	Vanasse Hangen Brustlin, Inc.

(See Appendix A, page 35 for names of members)

benefit the whole community. College Hill, like many other neighborhoods in Providence, supports a mix of residential,

educational, and commercial uses. This mix is generally complementary and supportive. The Task Force envisions a lively area that employs a variety of measures to improve parking and traffic conditions in the years to come.

Many important and successful initiatives are already in place to reduce local parking demand, encourage greater use of public transportation, and improve pedestrian and vehicular safety. However, the Task Force believes more can be done, especially as a concerted, integrated plan.

### **Key Findings:**

- Adequate on-street and off-street parking supply exists to meet current demands but a more effective management program is required
- Designating enough all-day and long-term, on-street parking will reduce traffic congestion
- Curb use and traffic control signage is both confusing and inconsistent
- Many intersections and a few major streets operate poorly, causing unnecessary congestion, delays and safety issues
- Pedestrian behavior (jaywalking, failure to obey signals) leads to traffic congestions and safety concerns
- A better system for accommodating the vehicular servicing of businesses and institutions is needed

There are no viable singular solutions to city neighborhood parking crunches. Rather, improvements will be the result of multiple, closely integrated, and monitored solutions, yielding incremental gains.

The process taken by the Task Force is well-documented in this report with the hope that it can be seen as pilot program for addressing neighborhood concerns about parking and traffic in other Providence neighborhoods. While findings and recommendations in each neighborhood may be different, the Task Force believes the process is highly transferable.

The Task Force offers the following findings, planning principles, and recommendations to improve safety, traffic flow, and short-term<sup>1</sup>, long-term and all-day<sup>2</sup> parking conditions on College Hill.

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<sup>1</sup> Short-term parking is typically less than 3 hours; The Task Force recommends that in the future, short-term be designated as 2 hours or less.

<sup>2</sup> Long-term parking is defined as most of the workday, typically after 10 a.m. All-day parking is defined as the full workday. All-day parking is not meant to imply overnight parking.

## Summary of Recommendations:

1. Implement a comprehensive plan for on-street parking (page 22)  
(The Task Force developed a proposed parking map that details the location, proposed use and number for all on-street parking spaces in the target area. See page 24)
  - a. Street-by- street designations of short-term, long-term (most of the workday) and all-day (primarily the workday hours of 8 a.m. – 6 p.m.) parking areas
  - b. Provide short-term spaces for resident guest/service day-time use
  - c. Install parking meters in the core of the target area
2. Increase the use of public transportation (page 27)
  - a. Strengthen institutional support for RIPTA
  - b. Investigate stops and route changes to increase ridership
  - c. Increase promotion of public transportation, shuttle options, satellite lots and incentives
3. Reduce institutional and commercial parking demand (page 28)
  - a. Enhance institutional support for carpooling/ridesharing programs
  - b. Move Brown undergraduate overnight permit parkers off College Hill
  - c. Increase incentives and support for bicycle commuting
  - d. Develop educational outreach programs to promote public transportation and emphasize a more pedestrian-friendly environment on College Hill
4. Improve safety and efficiency of College Hill streets (page 30)
  - a. Improve street markings and signage for specific intersections and crosswalks
  - b. Improve center-line and lane markings on Angell and Waterman streets
  - c. Institute “yellow curb” areas to improve visibility and provide for improved turning areas and intersections
  - d. Create a consistent and clear delivery program/schedule for Thayer Street
  - e. Upgrade traffic signal timing along the Angell and Waterman corridor
5. Increase parking enforcement (page 32)
  - a. Add more patrols
  - b. Explore efficient technologies such as electronic boots and mobile time-stamping photo technology
  - c. Work with institutions to get parking tickets paid

The Task Force believes that success of the plan depends on successful integration of all recommendations.

Some examples:

- 1.) Efforts to increase the use of public transportation, off-street lots and satellite parking will be significantly hampered if free on-street parking continues to be plentiful.
- 2.) An inadequate supply of all-day on-street parking could cause all-day parkers to use short-term spaces, causing congestion as parkers “shuffle” to a new spot every few hours.
- 3.) Neighborhood residents need a system to allow short-term visitor parking on the streets if areas are open to all-day parking.

*The success of any individual recommendation relies heavily on successful implementation of other recommendations.*

### **Benefits of the Recommendations:**

- Reduction of traffic and congestion by increasing the number of all-day parking spaces (Eliminate the “shuffle”)
- Stronger incentive to use public transportation, shuttle systems, and other demand management initiatives by metering core of target area
- Funding source (meter revenue) for recommendations and other traffic improvements
- Increase in short-term parking to support Thayer Street commercial area
- Designation of short-term parking spaces in neighborhoods to support resident needs
- Improved pedestrian and vehicular safety through improved signage, traffic light synchronization, and pavement markings

## Self Funding

The Task Force estimates that the revenue from roughly 100 hundred new parking meters – employing a mixture of multi-space and single head units - is ample to cover the costs associated with the recommendations.

Assuming ten-hour weekday parking at 70% utilization and a rate of \$1.00/hour for short-term and \$0.50/hour for long-term and all-day, the annual revenue from these new meters should be in the range of \$900,000 (see page 33). This revenue is sufficient to cover the initial capital costs, installation and maintenance on the meters, and to improve signage and pavement markings. Further, increased enforcement is likely to pay for itself in increased revenue from tickets.

**Task Force  
recommendations are  
relatively inexpensive and,  
with the implementation of  
meters in selected areas,  
can be self-funding**

## Next Steps

The Task Force recommendations will clearly have impacts on many members of the community; successful implementation will require a coordinated and sustained effort.

As a first step, the Task Force recommends the following:

- Disseminate report to Task Force member organizations for review and letters of support (March 2008)
- Stakeholder meeting with Task Force institutions to review the report and discuss findings and recommendations (April 2008)
- Task Force meetings with Mayor, Planning and Development Department, and other groups to coordinate with other planning efforts and initiatives (April/May 2008)
- Refine implementation costs and responsibilities (Spring 2008)
- Conduct open community meetings (Spring 2008)
- Publish implementation schedule (late Spring 2008)
- Continue Task Force meetings every three to six months to monitor progress and refine recommendations

# College Hill Parking Task Force

## A Report of Recommendations and Findings

### TASK FORCE APPROACH

#### Background

The College Hill Parking Task Force’s broad goal is to find ways to improve parking and traffic conditions on College Hill. This report identifies what the Task Force has learned and offers recommendations for improvement for College Hill to address age-old problems associated with parking and circulation in an urban environment.

Gathering the major stakeholders has been a major first step and is critical to finding workable solutions that respect the needs of all community members. Further, the Task Force members feel that the thoughtful process it has used to identify and approach issues can be applied to other neighborhoods. Rather than just focus on College Hill, the process of identifying problems, gathering relevant data, developing planning principles, and offering findings and recommendations is one which is

The approach and recommendations of the Task Force are transferrable to other neighborhoods

transferrable and beneficial to other neighborhoods. Further, it is the hope of the Task Force that these recommendations support and enhance the Providence’s Transit 2020 vision, as well as the new comprehensive plan for the city.

Through the first half of 2007, the Task Force met every other week (holding more than fifteen 90-minute sessions). In a truly collaborative manner, the group successfully identified problems, solutions, and potential funding resources. Additionally, the group drafted a set of workable priorities with timetables.

Most of the recommendations in this report are relatively inexpensive and focus on improved signage, pavement markings and consistent

#### Approach

- Gather the right stakeholders
- Establish goals
- Assess the current conditions/problems
- Determine the supply
- Estimate demand
- List findings
- Articulate planning principles
- Formulate recommendations
- Estimate costs

enforcement. The recommendation to install parking meters in strategic areas is a critical element to create an incentive to use public transportation and off-street parking, and provide a source of revenue to fund improvements. While more work needs to be done to refine the costs, the Task Force believes its recommendations can be self-funding.

The Task Force acknowledges that there are no magic solutions to parking and congestion problems. Healthy disagreements remain among members about how specifically to solve certain problems, yet the members emphatically agree that improving parking and traffic flow requires a comprehensive, long-term, and integrated approach that links solutions together. Gains will be incremental - no one solution will solve all of our problems. However, these gains will be real and meaningful to both the community and the city.

## **Gathering Stakeholders**

As a condition of Brown University's 2006 Institutional Master Plan approval, the City Plan Commission requested that Brown take a lead role in gathering the key stakeholders on College Hill and developing a comprehensive approach to identifying and addressing parking and congestion issues.

Formed in November 2006, the College Hill Parking Task Force is composed of representatives of the major colleges, secondary schools, neighborhood groups, city departments (public works, traffic, planning, and police), and RIPTA (See Appendix A, page 34). After a few early meetings, the Licht Judicial Complex became an essential addition to the group, as it is a major employer and has many daily visitors to the complex.

## **Setting a Goal:**

The College Hill Parking Task Force was formed with the goal of making recommendations to the city, institutions, businesses, and residents that improve vehicular and pedestrian safety, traffic flow, and both short-term and all-day parking on College Hill.

While broad in nature, these goals are interrelated and cannot be effectively addressed individually. Early in the group discussions, vision and mission statements were articulated to help guide and provide perspective for the findings and recommendations.

### ***Task Force Mission:***

*The College Hill Parking Task Force is a group of representatives from College Hill neighborhood organizations, area institutions, city departments, and various state agencies formed to collectively and collaboratively recommend tangible solutions to improve parking conditions, reduce traffic congestion, and improve circulation through increased demand management, changes to the management of the on-street parking supply, consistent enforcement, and other methods to improve vehicular and pedestrian travel.*

## ***Vision***

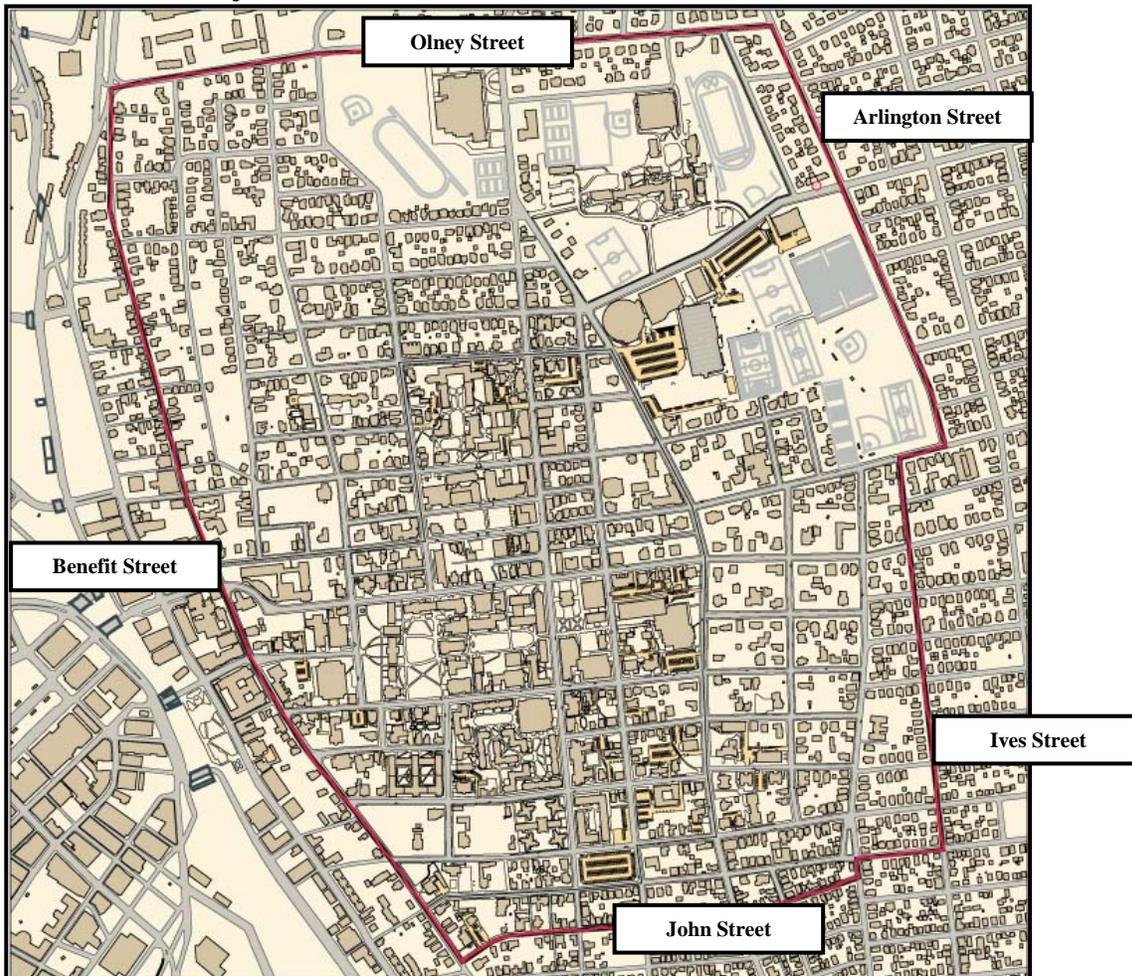
*The College Hill Parking Task Force sees College Hill as a dynamic, diverse, and closely knit community, whose residents, schools, businesses, students, employees, and visitors benefit from a logical, concerted, and comprehensive approach to public transportation, parking supply management, and improved traffic coordination. The Task Force envisions a thriving area that: uses incentives and fees to reduce parking demand; regulates and enforces the on-street parking supply to support a mix of uses; and manages traffic flow (pedestrian, vehicular, and bicycle) to maximize safety and improve throughput.*

## **Assessing Current Conditions and Defining the Problems:**

College Hill currently has a relatively uncoordinated approach to on-street parking and traffic management. As in many cities, on-street parking regulations in Providence have some logic and rationale but are not consistently applied. Many current regulations are the result of localized solutions developed over many years.

### **Defining the Target Area**

To start, the Task Force defined a target area of focus. Bounded by Benefit, Olney, Arlington, Ives, and John streets, the target area is roughly one square mile and loosely adheres to the boundaries of Ward 1.



## Inventory of Existing Initiatives

Each of the institutions was asked to submit a list of existing initiatives they sponsor. The Task Force felt it was very important to acknowledge that ongoing efforts in demand management, support for public transportation, and close working relationships with city departments are a critical foundation upon which to build.

### Public Transportation Initiatives

- RIPTA
  - 45 daily trips from Kennedy Plaza to Thayer Street; serve 1,300 passengers/day within target area
  - Monthly passes (\$45) and RIPTix are flexible and affordable for College Hill employees students
  - Park 'n' Ride lots around the state accommodate commuters traveling to and from the city
  - Commuter Resource RI – A package of RIPTA services and benefits offered to employee through employers
  - Incentive programs for areas affected by construction (Keep Eddy Moving)
- Institutional support for RIPTA is strong:
  - Brown – Full subsidy for faculty, staff and students (UPASS)
  - RISD – Full subsidy for faculty, staff and students (UPASS)
  - Wheeler – Working on UPASS participation once swipe card technology is implemented; participation in carpool/rideshare program
  - Moses Brown – RIPTA passes sold in bookstore
  - State of Rhode Island – State employees can elect to have a tax-deferred payroll deduction taken from their biweekly pay check to purchase RIPTA passes



### Demand Management Initiatives

Brown and RISD

- Manage/sponsor: safeRIDE, a Brown/RISD nighttime shuttle
- Offer nighttime, on-call shuttle service to off-campus locations
- Brown provides shuttle service (every 10 minutes) to downtown locations and the hospitals
- Brown sponsors Zip Car, a private hourly rental car service (3 cars)
- Guaranteed Ride Home for all students,



- o faculty, and staff
- o Brown rental agreements with Enterprise Rent-A-Car provide students discounted rates (and allow renters under 25 years old)
- o Provide incentives for carpooling, including reduced parking rates and priority parking space selection
- o Brown limits student parking in off-street lots (currently only around 250 total student permits; freshman and sophomores are not allowed to enter the permit lottery)
- o Brown manages a visitor lot (paid) for both Brown visitors and Thayer Street patrons on the corner of Brook/Waterman
- o Brown use of off-campus parking lots for construction worker vehicles for all major projects

#### Licht Judicial Complex

- o Remote parking for jurors with shuttle bus service (80 to 100 people participate per day)
- o Downtown garage spaces for union employees

#### Moses Brown and Wheeler

- o Jointly manage busing program from South County and will add another bus in 2008
- o Moses Brown only allows student cars (must be registered) on campus after 3 p.m.
- o Moses Brown made significant physical improvements to facilitate bus loading/unloading on campus
- o Moses Brown added parking on campus to relieve on-street parking needs
- o Wheeler – Researching organizations such as WalktoSchool-USA.org and Bikedowntown.org to heighten awareness and convey health and lifestyle benefits
- o Created HOV parking spaces as an incentive for carpooling
- o Working with RIPTA to educate faculty and students about travel alternatives
- o Enrolled in RIPTA carpooling web site
- o Created faculty-staff "Google map" to promote carpooling
- o Wheeler added 40 off-street spaces (completed August 2007)
- o Promote "walk/bike" to work days
- o Improved drop-off/pick-up protocols to improve traffic flow around school
- o Subsidize RIPTA bus passes for faculty and staff

#### **Enforcement**

- o Providence Police – Parking enforcement has increased the number of enforcement officers on College Hill (roughly one quarter of all tickets in Providence are in target area)
- o Heavily used parking areas in core of College Hill are patrolled regularly
- o Shifts will be extended to cover more of the workday

- Mobile units cover neighborhoods and respond to problem areas as needed
- Officers will rotate assignments so favoritism is minimized

## Understanding Traffic and Pedestrian Flows

Based on the data collected as part of the Brown Institutional Master Plan Transportation Study, over 70 percent of the vehicular traffic accesses the Brown University campus area along the arterial roadways: Angell, Waterman, and Hope streets. In addition, Thayer and Brook streets are both collector roadways which provide access to the Thayer Street retail area and connections to various on-street and off-street parking areas.

During peak periods, there are almost twice as many pedestrians as vehicles on Thayer Street

The existing pedestrian volumes along Thayer Street are among the highest in the City of Providence. As an example, during the peak season there are almost twice as many pedestrians as vehicles crossing the intersection of Angell and Thayer streets.

## Evaluating Intersections

70% of vehicular traffic accesses the core of College Hill through Angell, Waterman, and Hope streets

Many intersections on College Hill are vital crossroads for pedestrian and vehicular traffic. Sidewalks, crossing signals and signs certainly help make College Hill a relatively safe place to walk.

However, many intersections function poorly due to a lack of traffic signal coordination, poor pavement markings, inconsistent

ent traffic enforcement and jaywalking. As a result, both safety and efficiency are compromised at some intersections.

The signalized intersections along Angell, Waterman, and Hope streets were initially designed to run coordinated with each other due to the relatively close spacing of the intersections. However, over time the coordination has not been maintained. As

**Common intersection problems:**

- Lack of traffic signal coordination
- Poor pavement markings and signage
- Inconsistent enforcement
- Jaywalking
- Inadequate provisions for turning trucks and buses

The lack of synchronized traffic light signals causes unnecessary congestion, pedestrian and vehicular delays, pollution and wasted

a result, the progression of vehicles through the corridors can be poor and the queue lengths at some of the intersections often extend through adjacent intersections.

In addition, all of the traffic signals in the area are not actuated and operate on fixed time intervals regardless of actual vehicular or pedestrian demand. As a result, there are unnecessary delays to both vehicles and pedestrians throughout the day.

The Task Force identified hot spots, intersections and streets that would benefit from a series of improvements (see Appendix B - Hot Spots, page 35).

**Determining the Supply**

The Task Force spent a considerable amount of time understanding the existing parking conditions within the target area. A map was created to detail existing parking regulations and parking supply on a street-by-street basis.

The following table shows the current breakdown of on-street parking spaces by use within the target area (see Existing Condition Map on page 15):

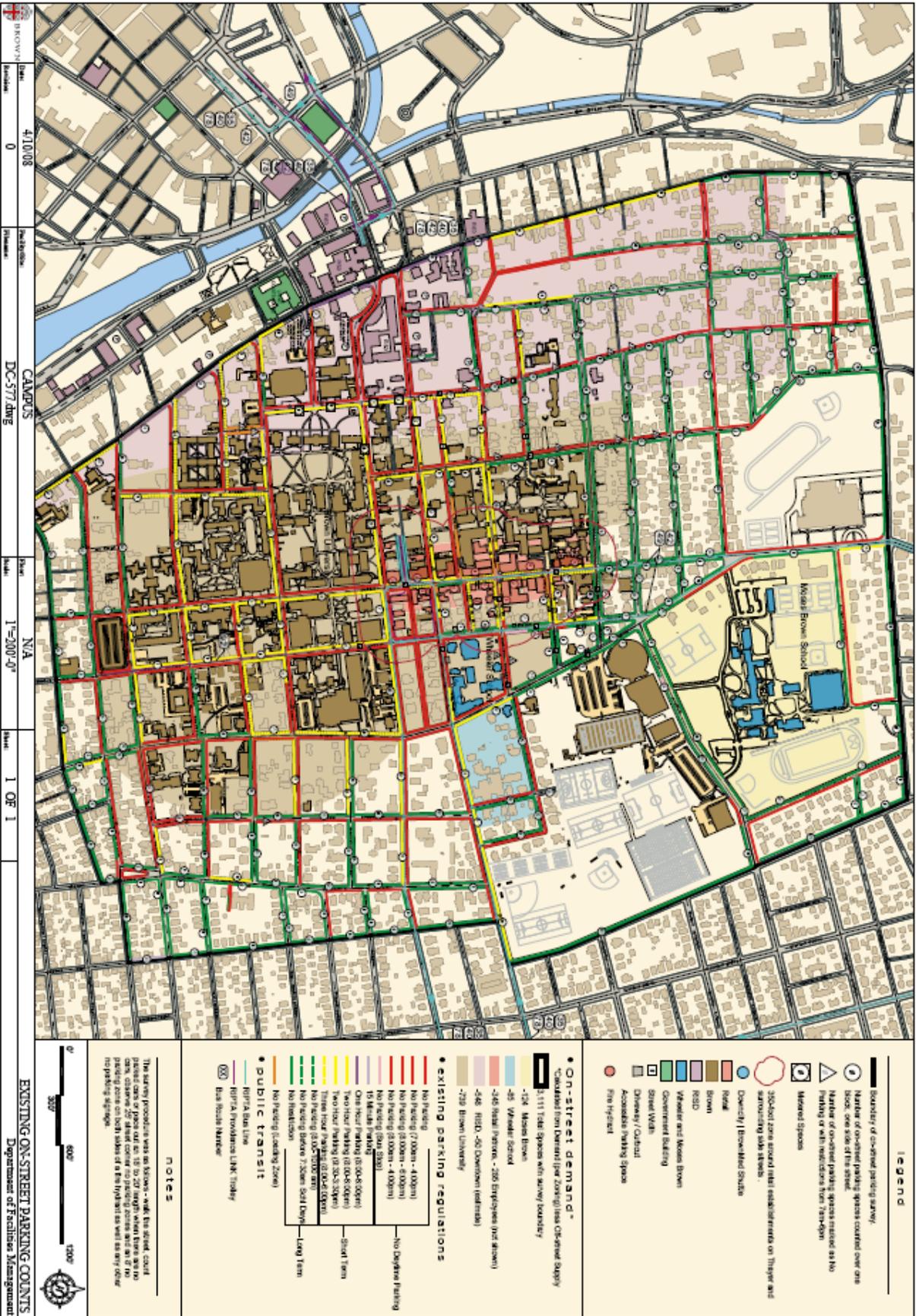
**Existing On-Street Parking Supply (Spring 2008)**

<b>Existing</b>	<b>Number Of Spaces</b>
Unrestricted	1,351
Long-term (with restrictions) <sup>3</sup>	682
Short-term (less than 3 hours) <sup>4</sup>	920
Short-term metered <sup>4</sup>	93
<b>Total On-Street Spaces</b>	<b>3,046</b>

All institutions and businesses are required by zoning ordinance to provide off-street parking (based on ratios of employees, students and customers) unless there is a waiver/variance. The total number of off-street spaces by institution follows. It must be noted that some Brown and RISD off-street spaces are not in the target area; however, both institutions have employees and students who work and study outside the target area as well.

<sup>3</sup> Most long-term spaces prohibit parking from 8-10 a.m. For the existing conditions, the Task Force defined "long-term" as available for most of the workday but with some restrictions.

<sup>4</sup> Most short-term spaces are 3 hours or less; metered spaces are currently limited to 2 hours.



## Off-Street Parking Supply

<u>Existing</u>	<u>Number Of Spaces</u>
Brown <sup>a, b</sup>	2,566
RISD <sup>a,b</sup>	450
Moses Brown <sup>b</sup>	166
Wheeler <sup>b</sup>	63
Licht Judicial Complex <sup>c</sup>	164
Thayer Street Businesses <sup>d</sup>	75
<b>Total</b>	<b>3,484</b>

(See Appendices C and D for more detail, pages 37-38)

- a. *Brown and RISD have employees who work outside the target area and have off-street parking spaces outside the target area. Supply figures represents total.*
- b. *Supply counts are from FY06 or FY07 inventories as reported by each school.*
- c. *The Licht Judicial Complex houses the Rhode Island Supreme and Superior Courts as well as other executive branch agencies. The Judiciary leases approximately 64 spaces in a downtown garage for union members and provides remote parking with shuttle service for approximately 100 jurors per day. Counts are from FY08.*
- d. *Thayer Street businesses have approximately 75 off-street spaces for customer and/or employee parking. Count is from 2008 field estimate.*

## Total Parking Supply

<u>Existing</u>	<u>Number Of Spaces</u>
Off-street	3,484
On-Street	3,046
<b>Total</b>	<b>6,530</b>

## Estimating Day-time Parking Demand (using zoning ordinance ratios)

The Providence zoning ordinance requires institutions and businesses to provide off-street parking spaces based on the number of employees, students (off-campus and on-campus), or square feet. The following table shows the total demand of each of the major stakeholders, where appropriate using the zoning ordinance as a guide:

<b>Stakeholder</b>	<b>Number Of Spaces</b>
Brown <sup>a</sup>	3,305
RISD <sup>a</sup>	998
Thayer Street - Customers <sup>b</sup>	345
Thayer Street – Employees <sup>b</sup>	285
Licht Judicial Complex – Visitors <sup>c</sup>	213
Residential (visitors, service) <sup>d</sup>	200
Moses Brown	124
Licht Judicial Complex – Employees <sup>d</sup>	114
Downtown overflow	100
Wheeler	85
<b>Total (all day and short-term)</b>	<b>5,768</b>

(See Appendices C and D for more detail, pages 37-38)

- a. *Brown and RISD have employees and student who work/study outside the target area (downtown and Jewelry District) and have off-street parking spaces outside the target area.*
- b. *The Task Force used industry standard/professional guidance to estimate the number of Thayer Street employee and customer parking needs.*
- c. *The Licht Judicial Complex is primarily outside the target area and most employees (~342) and daily visitors (~1,700) park downtown or on South/North Main Street. Some number of visitors and employees park in the target area. The figures are best guess estimates for demand in the target area.*
- d. *The Task Force estimates approximately 3 spaces per block in the residential neighborhoods may be required for day-time short term use. This number may need to be refined.*

## KEY FINDINGS

### **There is adequate on-street and off-street supply but it needs more effective management**

Overall, there is an adequate supply of on-street and off-street parking to meet the demand for all-day parking within the focus area, but more effective management of the supply is required. Specifically, a change in the ratio of short-term (less than 3 hours) and all-day (full workday, beginning prior to 10 a.m.) spaces could better match the demand for on-

#### **Target Area Estimates:**

Supply: 6,500 spaces  
Demand: 5,800 cars

street spaces.

There are nearly 6,500 parking spaces (off and on-street) in the target area to meet a total estimated demand of just under 5,800 cars. Analyzing the existing conditions reveals that of the 3,000 on-street spaces, approximately 1,000 are designated for short-term parking and approximately 2,000 are either unrestricted or allow all-day parking with some restrictions (e.g., after 10 a.m.) (See Appendix E page 39 for totals of parking spaces by type of regulation and area.) Demand estimates however show a much higher need for all-day parking. In short, many people are using short-term spaces and moving their cars several times throughout the day in areas that can be designated as all-day parking. Further, there unrestricted spaces in commercial areas used by all-day parkers that would be better allocated for short-term use.

The Task Force found that the designation of - short-term, long-term (with restrictions), and all-day (metered and non-metered) - and the allocation of on-street spaces should be based on the needs of the area. The Existing On-Street Parking Conditions Map on page 15 depicts with shaded colors the estimated parking demands in various sections of the target area.

### **Designating enough all day on-street parking reduces congestion**

Drivers looking for on-street parking cause a significant amount of traffic. Some industry studies suggest as much as 30 percent of traffic is caused by drivers looking for parking spaces.<sup>5</sup>

Free, short-term on-street parking leads to the “shuffle” and provides little incentive to take RIPTA or move to paid off-street lots

Currently many of the on-street parking spaces (approximately 500) around institutions, defined by the Task Force as the “Core” (see map on page 15 and Appendix E on page 38) are designated as short-term. The original goal of the short-term designation probably was to discourage all-day parking in the area. However, the reality is employees and students use these spaces for all-day parking and move their cars every few hours to a new short-term space; the result is the “shuffle” noted above.

The Task Force believes that allocating more all-day parking spaces around the Core (see Proposed Plan map on page 23) can reduce the negative effects of the “shuffle” and encourage more staff to park near the institutions instead of parking all day on the unregulated residential streets, thereby reducing the impact on the neighborhood.

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<sup>5</sup> P.A Allen, 1993; D. Shoup, NYT Op Ed March 2007; Transportation Alternative Study (NYC) February 2007.

### **The dilemma of free on-street parking**

Free on-street parking comes at a cost. Satellite parking facilities, off-street parking, public transportation, and other alternatives for a sustainable future will remain underutilized as long as they are undermined by the continuing availability of free on-street parking. Without restrictions on free on-street parking -- short-term, long-term, and all-day -- effective demand management becomes impossible.

The lure of free parking is strong, routinely prompting such wasteful and costly efforts as "doing the shuffle" (moving a car every few hours, all day, every day). Many commuters will walk a considerable distance for a free space, especially students and cost-sensitive employees. These groups should be good candidates for public transportation.

It is clear that on-street parking will not be adequate to provide for College Hill's future needs. Restricting free on-street parking is essential to establishment of a viable, long-term solution.

### **Thayer Street parking supply deficit**

There is a significant shortage of short-term parking spaces within a reasonable walking distance to support Thayer Street businesses based on industry standards for on-street and off-street parking.

Thayer Street certainly derives a significant portion of its business volume from students and employees who live and work within walking distance. However, it has been a long-term complaint by patrons and business owners that there are simply not enough parking spaces to adequately support the businesses.

Key to improving the functioning of the area is to establish as much short-term parking as possible within a reasonable walking distance to create turnover. The Task Force used industry standards of roughly 350 feet walking distance to define the area best suited for short-term parking.

Patron parking demand for Thayer Street business was calculated by using industry standards. Additionally, employees require all-day parking, and currently many use unrestricted or short-term spaces ideally allocated to patrons.

A parking garage was discussed by the Task Force as a means to provide more supply in the Thayer Street area; however, there was strong disagreement among many members about the efficacy of a garage. Notwithstanding the impact of a garage on the residential neighborhood, there are no viable proposals to construct and manage such a parking facility at this time.

## **Curb use and traffic control signage is confusing and inconsistent**

Overall, there is a plethora of different types of signs, spacing, location, and unique regulations. Often signs are difficult to interpret. Recent efforts by the City's Traffic Engineering Department to install new signage (type, spacing, message) on Thayer Street is an example of bringing consistency; however, there is still much work to be done.

## **Many intersections and a few major streets operate poorly, causing unnecessary congestion and safety issues**

Many intersections and a few major streets operate poorly, causing unnecessary congestion and safety issues (see Appendix B - Hot Spots, page 35).

- Signal timing not synchronized
- Vehicles often "block the box," which affects the cross street flow of traffic
- Inadequate turning radii and clear areas at intersections for RIPTA buses and trucks
- Poor markings for major pedestrian crossings

## **Pedestrian behavior causes problems**

Poor pedestrian behavior (jaywalking and crossing against "Don't Walk" indicator lights) causes increased congestion and exposes people to unnecessary danger.

Vehicular congestion is exacerbated, especially on major arterials, by jaywalking and large groups of pedestrians crossing at will at mid-block, as well as at signalized and un-signalized intersections along Angell, Thayer, Brook, and Hope streets.

## **Need to accommodate servicing of businesses and institutions**

There is an inadequate system and/or number of spaces for servicing businesses and many buildings. While many on-street loading areas are designated, there has not been a comprehensive review of where and how much space is needed.

Large trucks servicing Thayer Street need adequate space to safely maneuver and load/unload with as little inconvenience to traffic flow as possible.

## **Nothing works without enforcement**

Throughout the Task Force's work, there was a resounding call for more consistent enforcement of parking regulations. There are many current initiatives

underway within the target area by Traffic and Parking Enforcement, and the Task Force finds it is critical to sustain and improve this effort.

## PLANNING PRINCIPLES

Throughout the Task Force's work, a goal was to develop planning concepts and approaches that provide clear and logical rationales for solutions. As our work progressed, we created the following principles that assisted in the development of our findings and recommendations.

1. Increased use of public transportation provides the most significant opportunity to reduce parking demand and decrease congestion
2. Pedestrian and vehicular safety can be improved by better signage, pavement markings, lighting, and parking regulations
3. Proper timing of traffic signals will help improve traffic flow along the major streets
4. Residential neighborhoods must continue to provide all-day parking but not at the expense of residents
5. Reducing the demand to drive to College Hill can decrease congestion and increase the availability of parking spaces
6. Success of Thayer Street will be improved by providing short-term spaces within a reasonable walking distance
7. Increasing the cost of parking (both on-street and off-street) will help reduce demand and encourage the use of alternative means of transportation
8. Costs and availability of on-street parking and off-street parking need to remain in balance so that institutions do not have to resort to building large-scale parking garages to meet their needs
9. Designation of all-day parking in certain areas will reduce congestion by minimizing the "shuffle" (drivers moving to new short-term spaces every few hours)
10. Enforcement of regulations is essential to the success of any parking plan

# RECOMMENDATIONS

The Task Force believes that the success of its recommendations will be dependent on implementation efforts that understand the importance of how all the pieces are integrated. In short, the success of any individual recommendation relies heavily on successful implementation of other recommendations. Some examples: 1) Efforts to increase the use of public transportation will be significantly hampered if free on-street parking is plentiful. 2) An inadequate supply of all-day on-street parking will cause all-day parkers to use short-term spaces, causing congestion as parkers shuffle to new spots every few hours. 3) Neighborhood residents need a system to allow short-term parking on the streets that also accommodate long-term and some all-day parkers.

The following recommendations are divided into short-term (one year or less) and long-term (more than one year.) The recommendations, when agreed upon by the various stakeholders, will require more detailed implementation plans, schedules and funding sources.

## 1. Implement a comprehensive plan for on-street parking

A significant portion of the Task Force's findings, planning principles and recommendations were explored through large scale maps that showed streets, institutions, existing parking regulations, and supply/demand counts.

Members live and work in the target area and found visual displays an extremely helpful tool. The Proposed Plan map (see page 24) contains the details for the proposed locations, numbers and designations of on-street parking spaces. This proposal has been viewed carefully by the Task Force but it realizes that there will be important adjustments as input and feedback is received by the larger community.

In developing this plan, the Task Force found it critical that the entire target area be viewed as a whole. From the onset, members recognized the need to have a comprehensive approach to ensure that a solution in one area did not just shift parking and traffic problems into other areas.

Key considerations in the creation of the proposed on-street plan:

- o Provide short-term parking in residential neighborhoods to allow guests and services (at least three per block)
- o Maintain the existing restrictions of "No Parking 8:00-10:00 a.m. and 4:00 to 6:00 p.m." in residential and buffer areas to maximize the use of all-day metered parking in the core area and to discourage the spill-over of downtown parkers looking for free all-day spaces on College Hill.

- Provide short-term<sup>6</sup> parking around Thayer Street to support a vibrant mix of businesses
- Consider designating a number of short-term (e.g., 20 minute parking) spaces on Thayer Street to accommodate business customers with very short-term needs, such as the United States Post Office and take-out stores
- Designate short-term parking in other logical areas, such as part of Prospect Street for Brown Admissions visitors and along Congdon Street for Prospect Terrace Park visitors
- Establish more all-day parking around Core of institutions (RISD, Brown, MB, Wheeler, Licht) to reduce “the shuffle”
- Maintain the existing all-day parking (currently unregulated) in residential neighborhoods but where necessary provide short-term spaces for residential needs (e.g., guests, service vehicles, etc.)
- Establish all-day parking where possible on major corridor streets to improve traffic flow and reduce conflicts with parkers (Angell, Waterman, Hope streets)
- Maintain many areas as un-restricted (similar to current state)
- Ensure signage is consistent and maintained

## Short-term

- 1.1 Develop a logical and comprehensive plan on a street-by-street basis for short-term, long-term and all-day parking. (See map on page 23.)

### Implementation requirements

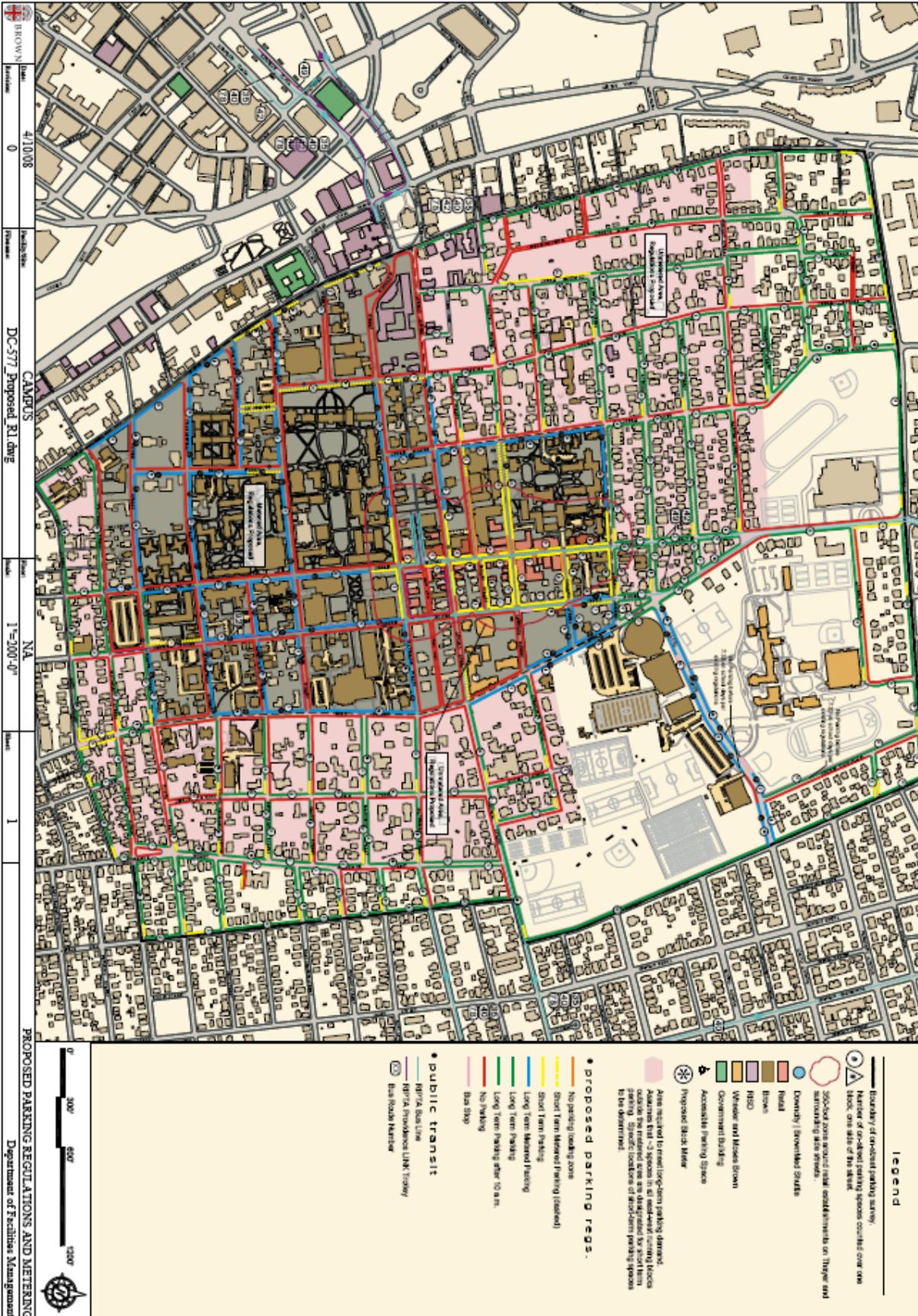
- Refine proposed space designations and parking restrictions based on other Task Force recommendations (e.g., Thayer Street 20 minute parking and servicing plan)
- Closely review with institutions and neighborhoods to confirm critical needs are addressed
- Conduct physical review of existing signs to upgrade and replace defective or missing signs as necessary
- Develop broad communication plan

### Responsibility:

- Department of Planning and Development
- Traffic Engineering
- Institutions
- Neighborhood Associations
- Traffic and Parking Enforcement

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<sup>6</sup> The Task Force recommends that in the future, all short-term parking be defined as 2 hours or less.



## 1.2 Ensure residents have an opportunity to use on-street parking and are not crowded out by all-day parkers.

Imbedded in recommendation 1.1 is the need to maintain on-street parking spaces throughout the neighborhoods so residents have some on-street day-time parking available for guests, personal vehicles, and services. We have identified approximately 200 short-term spaces, allocating about three spaces for each block. Additionally, parking restrictions (No Parking 8-10 a.m. and No Parking 4-6 p.m.) should be maintained in the residential areas where they currently exist. These restrictions discourage some all-day parking in the neighborhoods, improve through-put for peak traffic periods and school drop-offs and pickups, and the early morning parking restrictions will help ensure the metered parking spaces are used first and will discourage downtown parkers from using free all-day parking on College Hill.

There are various options to ensure spaces are reserved for residential use and are not simply taken by all-day parkers:

- Designate certain parts of streets as short-term parking through signage (currently reflected in proposed plan)
- Implement a resident day-time parking permit program

It is important to note that without a permit program, there is no way to stop non-residents from using short-term spaces. Further, the “shuffle” can be perpetuated by short-term parkers willing to move to new free short-term spots every few hours.

At this stage, the Task Force believes designation of short-term parking in residential areas will suffice, but a resident permit program may provide more flexibility for residents.

Better understanding the timing of demand will also help to best manage the on-street supply. While many employees start work before 9:00 a.m., a significant number of students, employees, and visitors arrive after 10 a.m.

### Implementation requirements

- Refine amount of parking appropriate to meet resident needs
- Determine method for deciding where spaces will be located (e.g., south side, middle, or end of block)
- Further study the timing of on-street demand

### Responsibility:

- Department of Planning and Development
- Traffic Engineering
- Institutions
- Neighborhood groups
- Traffic and Parking Enforcement

## Long-term

- 1.3 Install a parking meter system to regulate short-term and all-day parking in specific areas (see map on page 24).

Installation of parking meters is the largest single and the most costly proposal and it is not a recommendation taken lightly by the Task Force. Yet, as long as on-street parking is free, public transportation and paid off-street lots are neither more competitive nor convenient. Without paid on-street parking, the effectiveness of the parking plan is significantly diminished.

New technologies such as block meters appear to be a viable solution to minimize installation and maintenance costs. Visual clutter is limited with this type of meter, as it can serve eight to twelve spaces. Block meters have been very successful in many cities due to their capacity to take multiple forms of payment, the ability to run on solar power, and their mechanical/technical reliability. The current block meter pilot program in Providence should serve as a good source of information in implementing these types of meters on College Hill.

In addition to regulating parking, meters can provide funds to pay for many of the initiatives in this report. (See Funding page 33).

Many Thayer Street landlords and merchants fear meters on Thayer Street will cause them to lose customers as paid on-street parking may put them at a competitive disadvantage with the Providence Place Mall and other retailers that offer free or highly subsidized parking. In their opinion, meters on and around Thayer Street have been tried in the past and have had a negative effect on business. Therefore it is recommended that regulated, but not metered, short-term parking (two hours or less), including areas allowing as little as 20 minutes, should be implemented. By keeping a short duration of two hours or less and consistent enforcement, the impact of the "shuffle" can be minimized. Implementation of meters for short-term parking on and around Thayer Street should be evaluated after other aspects of the parking plan are in place and are showing the intended benefits.

Meter rates were discussed by the Task Force; a rate of \$1.00 per hour seems appropriate for short-term parking areas. Rates for all-day parking areas, however, are more problematic in that they need to be high enough to encourage people to take public transportation or use off-street lots but

Implementation of meters on and around Thayer Street should be evaluated as other recommendations demonstrate the intended benefits

cannot be so high that people will instead drive to residential neighborhoods where parking is free (e.g., Fox Point, east of Arlington or north of Cushing). An hourly rate of \$0.50/hour (\$4.00 for an eight hour day) should be considered, as it is considerably higher than the cost of public transportation (especially for employees of institutions that subsidize RIPTA UPASS) but not overly punitive and certainly affordable for occasional use.

Implementation requirements

- o Thorough review of available technologies and viable options
- o Investigation of meter purchase and installation
- o Rate/financial proforma
- o Installation

Responsibility:

- o Department of Planning and Development
- o Office of the Mayor
- o City Council
- o Traffic Engineering
- o Traffic and Parking Enforcement

## **2. Further increase the use of public transportation**

Probably the most obvious means to reduce parking needs and traffic congestion is to promote greater use of public transportation. This recommendation is fundamental to helping College Hill (and other city neighborhoods) accommodate growth and changes.

The institutions on College Hill already support public transportation; however, more can be done by the colleges, secondary schools, businesses, and neighborhood groups to promote more use of RIPTA.

Short-term

- 2.1 Call for stronger institutional and business support for RIPTA through continued/enhanced subsidy of UPASS (RIPTA's University Pass Program) and better promotion of available public transportation routes, schedules and fares.

Implementation requirements

- o Continuing and/or enhancing commitments
- o Stronger promotional and educational programs
- o Approving resources

Responsibility:

- Brown - RISD - Moses Brown
- Wheeler School - RIPTA - Rhode Island Judiciary
- Neighborhood associations
- Thayer Street District Management Association

- 2.2 Work with local neighborhood associations to disseminate RIPTA information through businesses, meetings, signage, and websites. Include links to RIPTA on neighborhood association websites.

Implementation requirements

- o Develop a plan for regular promotion of RIPTA information and regular monitoring/review

Responsibility:

- o RIPTA
- o Neighborhood associations

Long-term

- 2.3 Investigate the addition of RIPTA stops throughout College Hill as ridership grows (e.g., the addition of East Bay/Barrington route stopping on Thayer Street to accommodate more East Bay commuters) and the viability of adding more satellite “Park’n Ride” options for regular commuters to the city.

Implementation requirements

- o Assess potential ridership levels and financial requirements
- o Develop broad communication plan with institutions
- o Approve resources

Responsibility:

- Brown - RISD - Moses Brown
- Wheeler - RIPTA - Rhode Island Judiciary
- Neighborhood associations
- Thayer Street DMA

### **3. Increase promotion of ways to reduce institutional and commercial parking demand**

Successful initiatives already exist to reduce the demand for on-street parking on College Hill. Section III Demand Management Initiatives (see page 10) lists the many important efforts supported by institutions and RIPTA. Benefits from these efforts have been real and measurable; however, none of them alone will be a panacea.

Short-term

- 3.1 Continue to promote and enhance institutional programs for carpooling/ridesharing (Guaranteed Ride Home, preferred off-

street spaces, ride matching, car rental options, etc.); all institutions should participate in such programs.

Implementation requirements

- Gather all institutions and RIPTA to comprehensively review the existing programs
- Recommend programs that might benefit from shared resources
- Develop financial requirements
- Lobby institutions for commitments

Responsibility:

- Institutions
- RIPTA
- Department of Planning and Development

3.2 Support Brown University's plan to move undergraduate student parkers to satellite lots off College Hill.

Implementation requirements

- Identify options to accommodate student parking off College Hill
- Adjust shuttle routes and schedules
- Incorporate into Parking Plan submitted to Department of Planning and Development and City Plan Commission

Responsibility:

- Brown
- Department of Planning and Development

3.3 Increase the incentives and infrastructure for bicycle commuting (incentives, covered storage options, showers, education).

Implementation requirements

- Gather all institutions to review existing programs
- Recommend programs that might benefit from shared resources
- Identify common commuting routes and target for better signage and surface markings to improve awareness and safety
- Develop financial requirements
- Lobby institutions for commitments

Responsibility:

- Institutions

Long-term

3.4 Develop educational outreach programs at public schools, local institutions, and neighborhood associations to promote public transit and emphasize a pedestrian-friendly environment.

#### Implementation requirements

- TBD

#### Responsibility:

- Department of Planning and Development
- Brown University
- RISD
- Moses Brown
- Wheeler
- Rhode Island Judiciary
- Neighborhood associations

## **4.0 Improve safety and efficiency of College Hill streets**

To address the findings and planning principles related to pedestrian and vehicular safety, it is recommended that the following series of relatively simple initiatives be implemented to improve signage, road markings, lighting, and curb-use regulations. Further, these initiatives can help improve traffic flow by increasing the capacity of roads and intersections to accommodate pedestrians and vehicles.

### Short-term

- 4.1 Improve stop-line markings, crosswalks, and signage in key intersections. (See Appendix B, Hot Spots, page 35)

#### Implementation requirements

- Prioritize intersections (short-term vs. long-term)
- Estimate resources
- Develop schedule

#### Responsibility:

- Traffic Engineering
- DPW
- Task Force

- 4.2 Install center-line and lane pavement markings on key arterials such as Angell, Waterman, and Hope streets. Proper lane markings on Angell and Waterman streets from the Henderson Bridge approaches to Main Street are recommended.

#### Implementation requirements

- Prioritize intersections
- Estimate resources
- Develop schedule

#### Responsibility:

- o Traffic Engineering
- o DPW
- o Task Force

4.3 Institute a "yellow curb" program for key intersections to improve pedestrian crossing visibility and provide adequate turning areas for buses and trucks.

Implementation requirements

- o Prioritize intersections
- o Estimate resources

Responsibility:

- o DPW
- o Traffic Engineering
- o Task Force

4.4 Develop a consistent and clear curb-side regulation program and delivery plan for Thayer Street area businesses.

Implementation requirements

- o Establish leadership through Thayer Street DMA
- o Designate sufficient on-street loading areas
- o Develop guidelines for timing of deliveries and servicing
- o Develop effective communication to businesses and servicing companies

Responsibility:

- o Thayer Street DMA
- o Institutions
- o Traffic and Parking Enforcement

4.5 Upgrade the traffic signal timing and phasing along the Angell and Waterman streets corridor.

Implementation requirements

- o Identify/finalize funding requirements
- o Complete work

Responsibility:

- o Traffic Engineering
- o DPW
- o Brown University (funding)

## 5. Enhance parking enforcement

Without consistent and fair parking enforcement, the curb use regulations and meter program could be seriously compromised. The following are suggested ideas for enhancing the existing effort to enforce parking regulations:

### Short-term

- 5.1 Increase the number of patrols throughout the College Hill area and vary routes so the full area is subject to enforcement for the whole parking day (8:00 a.m. to 6:00 p.m.)

It is believed that increased enforcement of violations will provide the revenue to support the City's additional labor costs.

#### Implementation requirements

- o Analyze the cost and benefits of using overtime versus additional staff
- o Develop plan for comprehensive patrolling of entire target area

#### Responsibility:

- o City
- o Traffic and Parking Enforcement

### Long-term

- 5.2 Continue to explore and adopt initiatives that incorporate efficient and effective technologies (intersection cameras, mobile license plate photography, electronic boots).

#### Implementation requirements

- o TBD

#### Responsibility:

- o City
- o Police Department
- o Traffic and Parking Enforcement

- 5.3 Develop a program so that seniors at College Hill institutions are not able to receive diplomas if they have unpaid parking or moving violation tickets.

#### Implementation requirements

- o Explore legality of sharing information
- o Estimate number of students effected
- o Draft policy and procedures
- o Present to institutions for approval

#### Responsibility:

- o Institutions
- o Police Department
- o Traffic and Parking Enforcement

# FUNDING APPROACH

Meters (both short-term and all-day) could provide the necessary funding to pay for themselves (installation, signage and maintenance) as well as provide resources to support many of the recommendations in this report. More work and the city's expertise on parking costs and revenues needs to be enlisted to better estimate the revenue and expenses related to parking meters. It is hoped that through meters, the recommendations below can be considered self-funding and a good example of how meters can benefit the local community and the city at large.

Below are revenue and cost estimates (See Appendices F, G, and H, on pages 39-41). A range has been provided to give an initial sense of the magnitudes and the costs relative to each other.

## Estimated Annual Revenue (rounded figures)

<b>Short-term parking*</b> (70 spaces at \$1.00/hour)	\$ 100,000
<b><u>All-day parking**</u></b> (750-800 spaces, all-day 8:00 a.m. to 6:00 p.m. at \$0.50/hour)	\$ 700,000
<b>Enforcement Revenue (incremental)**</b> (one additional full-time officer; 50 tickets/day at \$10/each)	\$ 130,000
<b>Total Estimated Annual Revenue</b>	<b>\$ 900,000</b>

- \* Assumes an eight hour day, 251 days, and 70% utilization
- \*\* Assumes a ten hour day, 251 days, and 70% utilization
- \*\*\* Assumes 251 days and average of \$10/collected fine

## Estimated One Time Costs (rounded)

<b>Meter system (purchase and installation)</b>	
(80 block meters (\$15,000 each))	\$1,250,000
(40 single head Meters (\$600))	25,000
<b>Signal timing</b>	
(Covered by Brown University)	
<b>Road markings, signage (installed)</b>	
Meter signage	65,000
Intersection and crosswalk signage	35,000
Angell and Waterman streets marking	25,000
Intersection and crosswalk markings	30,000

<b>Total Estimated One Time Cost (rounded)</b>	<b>\$1,430,000</b>
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**Estimated Annual Costs**

<b>Traffic Enforcement</b> (0.5 officer FTE or overtime plus collection costs)	\$ 50,000
<b>Block meters maintenance</b> (80 at \$50/month)	\$ 55,000
<b>Single head meters</b> (50 at \$10/month)	\$ 6,000
<b>Total Estimated Annual Costs</b>	<b>\$ 116,000</b>

Payback period to cover all one-time costs is approximately a little more than 1½ year. Therefore, all one-time and annual costs could be recaptured within two years, leaving a significant revenue stream in the future to fund other local efforts to improve parking, safety, and congestion and other quality of life issues for the neighborhoods included in the target area.

# APPENDIX

## A - College Hill Parking Task Force Members

### Colleges and Schools

Brown University

Moses Brown School  
Rhode Island School of Design  
Wheeler School

### Neighborhood Groups

Brown Athletics/Moses Brown Neighbors  
College Hill Neighborhood Association  
Fox Point Neighborhood Association

### City Government

Providence Police – Traffic Enforcement  
Providence Public Works Department  
Providence Traffic Engineering  
Providence Department of Planning and Development

### Other Key Stakeholders

Rhode Island Public Transit Authority  
Rhode Island Judiciary  
Jewelry District Association  
Thayer Street District Management Association

### Representative

Darrell Brown  
Deborah Dinerman  
Elizabeth Gentry  
Mike McCormick  
Brendan McNally  
Jim Nagle  
Ken Bilodeau  
Gary Esposito

Douglas Storrs  
David Nishimura  
Gwen Kangis

Sargeant Paul Zienowicz  
Bill Bombard  
Bernard Lebby  
David Everett

Tim McCormick  
Gail Valuk  
Ken Orenstein  
David Shwaery

### Task Force Facilitator/Traffic and Parking Consultants

Vanasse Hangen Brustlin, Inc.

David Bohn, P.E.  
William Ashworth, P.E., P.T.O.E.

## B - Hot Spots

Location	Major Concern	Potential Ideas to Improve
Angell Street / Waterman Street corridor	<ul style="list-style-type: none"> <li>• Signals run pre-timed and are not properly coordinated causing congestion and queues</li> <li>• Inadequate signs and pavement markings (lanes not clearly delineated)</li> </ul>	<ul style="list-style-type: none"> <li>• Signal hardware and timing upgrades</li> <li>• Improved signs and pavement markings</li> </ul>
Angell Street/Waterman Street intersections with Benefit Street	<ul style="list-style-type: none"> <li>• Signals run pre-timed and are not properly coordinated, causing congestion and queues</li> <li>• Inadequate signs and pavement markings and the lanes on the east side of Benefit Street do not line up with lanes on the west side causing drivers to jockey for position and speed through intersections</li> </ul>	<ul style="list-style-type: none"> <li>• Signal hardware and timing upgrades</li> <li>• Improved signs and pavement markings</li> </ul>
Brown's proposed "Walk" intersections with Angell Street and Waterman Street	<ul style="list-style-type: none"> <li>• Brown's proposed "Walk" will funnel significant pedestrian volume at discreet points</li> </ul>	<ul style="list-style-type: none"> <li>• Install pedestrian signals at crossings</li> <li>• Hardwire new signals with existing Thayer Street signals</li> <li>• Improved signs, pavement markings, and lighting at crosswalks</li> </ul>
Cushing Street pedestrian crossings	<ul style="list-style-type: none"> <li>• Heavy pedestrian crossings with poor pavement markings and signing</li> <li>• Parked vehicles can restrict visibility of pedestrians in crosswalks</li> <li>• Pedestrian activity to increase with proposed Brown Fitness Center on Hope Street</li> </ul>	<ul style="list-style-type: none"> <li>• Improved signs, pavement markings, and lighting at crosswalks</li> <li>• Restrict parking near crosswalks</li> <li>• Consider changing to 4-way stop control at intersection of Cushing Street and Brook Street.</li> </ul>
Angell Street/Brook Street/Meeting Street, Hope Street (block around Wheeler School)	<ul style="list-style-type: none"> <li>• Congestion during AM and PM drop-off/pick-up activities</li> </ul>	<ul style="list-style-type: none"> <li>• Develop traffic signal timings to favor key movements during peak periods for Wheeler activities.</li> <li>• Consider widening of Brook Street?</li> </ul>
Major pedestrian crossings to Brown main campus: Waterman Street, Thayer Street, George Street, & Prospect Street	<ul style="list-style-type: none"> <li>• Heavy pedestrian crossings with poor pavement markings and signing</li> </ul>	<ul style="list-style-type: none"> <li>• Improved signs, pavement markings, and lighting at crosswalks</li> <li>• Consider different pavement treatment or bump outs at main crosswalks</li> </ul>
College Street at Prospect Street	<ul style="list-style-type: none"> <li>• College Street traffic is not required to stop, but usually stops anyway</li> <li>• Heavy pedestrian crossing with poor pavement markings and signing</li> </ul>	<ul style="list-style-type: none"> <li>• Install stop sign on College Street approach</li> <li>• Improved signs, pavement markings, and lighting at crosswalks</li> <li>• Consider different pavement treatment or bump outs at main crosswalks</li> </ul>
Hope Street at Olney Street	<ul style="list-style-type: none"> <li>• Signal runs pre-timed with poor traffic signal timings during certain time periods</li> </ul>	<ul style="list-style-type: none"> <li>• Signal hardware and timing upgrades</li> </ul>
Heavy pedestrian crossings: Angell Street at Brown Street, Benevolent Street at Brook Street, Charlesfield Street at Brook Street, Brook Street at Prince Lab	<ul style="list-style-type: none"> <li>• Heavy pedestrian crossings with poor pavement markings and signing</li> </ul>	<ul style="list-style-type: none"> <li>• Improved signs, pavement markings, and lighting at crosswalks</li> <li>• Restrict parking near crosswalks</li> </ul>
Poorly marked intersections: Lloyd Avenue at Thayer Street, Bowen Street at Thayer Street, Bowen Street at Hope Street, Keene Street at Thayer Street, Keene Street at Hope Street	<ul style="list-style-type: none"> <li>• Poorly marked intersections with restricted visibility</li> </ul>	<ul style="list-style-type: none"> <li>• Improved signs and pavement markings.</li> <li>• Restrict parking near crosswalks</li> </ul>
Benefit Street at George Street	<ul style="list-style-type: none"> <li>• Wide "T" intersection makes pedestrian crossing difficult.</li> <li>• Poor visibility for turns</li> </ul>	<ul style="list-style-type: none"> <li>• Improved signs and pavement markings.</li> </ul>

**College Hill Parking Taskforce**  
**FY 2006**  
**Supply v. Demand Estimates**

	Population					Total Community	Retail SF	Demand (per Zoning) Spaces	Supply		
	Employees Faculty/ Staff EEs <sup>1</sup> Teachers	Students On Campus	Off Campus	Visitors (Daily)	Community				Off-Street Supply	On-Street Supply	Total Supply
Brown University <sup>2</sup>	2,655	954	4,825	2,997	11,431		3,305	2,566		2,566	
RISD <sup>3</sup>	516	494	1,236	1,014	3,260		998	450		450	
Wheeler <sup>4</sup>	41	131	-	818	990		85	63		63	
Moses Brown <sup>4</sup>	95	100		785	980		124	166		166	
Retail Needs - customers <sup>5</sup>							345	75		75	
Retail Needs - employee <sup>5</sup>							285			-	
Light Judicial Complex <sup>6</sup>	342				1,700	2,042	327	164		164	
Residential Needs <sup>7</sup>							200				
Downtown Spill-over <sup>8</sup>							100				
Total On-Street <sup>9</sup>								3,046		3,046	
Total	3,649	1,679	6,061	5,614	17,003	17,003	5,768	3,484	3,046	6,530	

Conversion	Ratio	%
Employees	1:3	0.33
Students On-Campus	1:8	0.13
Students Off-Campus (Univ.)	1:2	0.50
Students Off-Campus (2ndry)	1:4	0.25
Retail (spaces/SF)	1:500SF	0.002
Court Visitors	1:08	0.13

**Notes**

- Assumes highest day-time shift numbers
- Brown's figures from IMP Submission March 2006 (does not include employees at non-College Hill locations that have off-street parking e.g. hospitals)
- RISD's parking numbers are approximate and include approximately 60 parking spaces that are not on the East Side; 414 on campus students live down-city
- Secondary Schools are required to have 1 space for every 4 students of driving age
- Best estimate for Thayer Street customers; employees and off-street parking may need to be refined
- Light Judicial Complex - Assumes 1:3 ratio for employees and 1:8 ratio for the approximately 1,700 visitors/day. The visitor ratio is not from Providence Zoning but rather a professional estimate. The Rhode Island Judiciary leases ~64 spaces in downtown garage for union members and provides remote parking with shuttle services for up to 100 jurors/ per day.
- Estimated 3 spaces per block for residential visitors, service providers, etc. Figure needs to be studied and refined.
- Rough estimate of approximately 100 parker using College Hill target area for short-term and all-day parking
- From Brown analysis of on-street spaces in target area Spring 2007

**C - Supply versus Demand Estimates**

D - Summary of On-street Usage

College Hill Parking Task Force		
2/29/2008		
Summary of Estimated On Street Space Usage		
Zoning Requirements / Demand Estimates - Not met in off-street lots	# of Spaces	Comments
Brown <sup>1</sup>	739	Per Zoning
RISD <sup>1</sup>	548	Per Zoning
Thayer St. Patrons	345	Demand covered in Short-term metered area
Thayer St. - Employees	285	Estimate
Est. for short-term residential needs (~3 spaces/block)	200	Estimate
Licht Judicial Complex - Employees/Visitors	163	Estimate
Downtown Employees	100	Estimate
Wheeler <sup>1</sup>	22	Per Zoning
Moses Brown <sup>1</sup>	-	Meet zoning requirements
<b>Total On-street demand</b>	<b>2,402</b>	<b>100%</b>
<b>Total Supply in Target Area</b>	<b>3,046</b>	

<sup>1</sup> - based on Providence Zoning Requirement ratios  
 \* Note: Total demand for both Brown and RISD including staff and students who work off College Hill; both provide off-street parking lots off College Hill

## E – Summary of On-Street Parking Supply by Type and Area

### College Hill Parking Task Force

4/15/2008

#### Summary of On-street parking supply by type

Thayer Street (defined by 350')	Current State	Proposed	Importance
Short-term metered	15	-	
Short-term non-metered	164	218	
Sub-total Short-term	179	218	Gain of Short-term to create turn-over
Long-term Restricted	32	-	
Un-restricted (available for all day)	33	18	
All-Day metered	-	8	
Sub-total All Day	65	26	loss of LT
Total - for Thayer Street	244	244	
<b>Core (non-Thayer St primarily around Brown Univ.)</b>			
Short-term metered	78	69	
Short-term non-metered	450	2	
Sub-total Short-term	528	71	Loss of Short-term to stop shuffle
Long-term Restricted	68	-	
Un-restricted (available for all day)	141	-	
All-Day metered	-	678	
Sub-total All Day	209	678	Gain of all-day to stop shuffle
Total - for Core	737	749	
<b>Outer Ring (mostly residential but does include commerical and institutional)</b>			
Short-term metered	-	-	
Short-term non-metered	306	255	
Sub-total Short-term	306	255	Assign ST spaces on each block
Long-term Restricted	620	531	
Un-restricted (available for all day)	1,139	1,190	Remove ST on parts of Benefit and Angell
All-Day metered	-	89	All-day metered on Lloyd
Sub-total All Day	1,759	1,810	
Total - for Outer Ring	2,065	2,065	
<b>Total Target Area</b>			
Short-term metered	93	69	
Short-term non-metered	920	475	
Sub-total Short-term	1,013 33%	544 18%	Loss of ST in Core
Long-term Restricted	720	531	
Un-restricted (available for all day)	1,313	1,208	
All-Day metered	-	775	
Sub-total Long-term	2,033 67%	2,514 82%	Gain All-day metered in Core
Total - Target Area	3,046	3,058	

#### Definitions

Short-term: less than 3 hours

Long-term restricted: areas where there are restrictions such as No Parking 8-10, No Parking 4-6; no parking before 7:30AM

Un-restricted: areas where there are no posting and therefore any type of parking is permitted

All-day metered - areas in Core that will charge for parking from 8AM to 6 PM

No parking: areas posted with no parking any time; areas with no parking 8-4PM

F – Estimates for Number of Meters

**College Hill Parking Taskforce  
Backup Worksheets**

2/12/2008

**Total Estimate of Metered Spaces Per Map\***

Short-term	69
All Day	775
Total	844

\*From CHPTf map 2/4/08

**Allocation of Block and Single Head Meters\***

	Block Meters (1 : 9 spaces)		Single Head Meters (1:1)	
	Spaces Served	# of Meters	Spaces Served	# Meters
Short-term	0	0	69	69
All Day	775	83	0	0
Total	775	83	69	69

Total Spaces	Total Meters
69	69
775	83
844	152

\* reviewed map and it appears most new all-day parking areas around Brown campus are good candidates for block meters; typically 8-10 spaces/block meter assume that short term Thayer St is not metered

G - Revenue Estimates

**College Hill Parking Taskforce  
Backup Worksheets**  
2/12/2008

**Revenue Estimates \***

<b>Short-term meters (assume 8AM-6PM: 3.2 hour max: no charge evenings, weekends, or holidays)</b>										
	<u># Spaces**</u>	<u>Hrs/Day</u>	<u>\$/Hr</u>	<u>\$/Day</u>	<u>Occupancy*</u>	<u>Daily Rev</u>	<u>Days/Yr</u>	<u>Annual Rev</u>		
	69	8	1.00 \$	10.00	70%	386	251	96,986		
<b>All-Day meters (assume 8AM-6PM: 10 hour max: no charge evenings, weekends, or holidays)</b>										
	<u># Spaces</u>	<u>Hrs/Day</u>	<u>\$/Hr</u>	<u>\$/Day</u>	<u>Occupancy*</u>	<u>Daily Rev</u>	<u>Days/Yr</u>	<u>Annual Rev</u>		
	775	10	0.50 \$	5.00	70%	2,711	251	680,398		
<b>Total</b>	<u>843.5</u>							<u>777,385</u>		

<b>Enforcement &amp; Collection</b>	<u># Tickets/Day***</u>	<u>Ave Ticket**</u>	<u>Days</u>	<u>Total Revenue</u>
Ticket revenue	50	10	251	125,500

These are additional tickets from increased enforcement in College Hill target area

<u>Total Est. Revenue</u>	<u>902,885</u>
<b>Total Est. Revenue Rounded</b>	<b>900,000</b>

\* Occupancy (utilization) of 70% is an estimate. Need PVD actual data or professional advice to make better estimate.  
 \*\* Assumes Thayer Street area is short-term, un-metered  
 \*\*\* # of tickets/day and average ticket "collected" are estimates and need confirmation

# H – Cost Estimates

## College Hill Parking Taskforce Backup Worksheets

2/12/2008

### One Time Costs for Recommendations

#### Meter Purchase & Installation

	<u>Block Meters*</u>	<u>Single Head**</u>	<u>Total</u>
Initial Purchase & Install	\$ 15,000	\$ 600	
Total Needed	83	39	122
<b>Total Cost to Purchase &amp; install</b>	<b>1,245,000</b>	<b>23,400</b>	<b>1,268,400</b>

\* Estimate for block meters (~\$15,000/each) from Dana Paquette of Wecor Parking Consultants (reps for Parkeon meter systems) 10/07  
Parkeon meters are solar powered, take all forms of payment, have electronic "trouble notification" capability (high end, high quality)  
City of Pasadena, CA paid ~ \$7,000 each 11/06 (Google search) for 32 meters  
Traffic Engineering estimated of \$8,400 each for block meters 6/07

\*\* Traffic Engineering estimated \$600/each for single head meter (~\$400 purchase and \$200 installation) 6/07; 30 meters already exist on Prospect  
Est. of 25 new single head meters and balance of short term spaces can be serviced through block meters

#### Signage

	<u>\$/Sign</u>	<u>Ave Signs/block</u>	<u>Blocks*</u>	<u>Total</u>
Meter Signage	210	4	75	63,000

\* Count ~ 75 blocks with meters; most blocks accommodate about about 8-12 spaces; long blocks (>12 spaces) were considered as 2

		<u>\$/Sign</u>	<u>Signs/Intsctn</u>	<u>Major Intersections*</u>	
Arterial Signs	Angell	325	2	10	6,500
	Waterman	325	2	10	6,500
	Hope	325	2	2	1,300
					<b>14,300</b>
		<u>\$/Sign</u>	<u>Signs/Intsctn</u>	<u>Major Intersections*</u>	
Intersection signs		325	4	10	13,000
Cross walk signs		325	2	10	6,500
<b>Total Signage Est.</b>					<b>96,800</b>

\* Need to conduct a physical tour with professionals to see which intersections need improved signage and markings

#### Markings

		<u>\$/LF</u>	<u>Miles</u>	<u>Linear Feet</u>	
Road markings	Angell	1.50	1.5	7,920	11,880
	Waterman	1.50	1.5	7,920	11,880
					<b>23,760</b>
		<u>\$/Intersection</u>	<u># Intersections*</u>		
Intersection Markings		2,000	10		20,000
Crosswalk Markings		1,000	10		10,000
					<b>30,000</b>
<b>Total Marking Est.</b>					<b>53,760</b>

\* Need to conduct a physical tour with professionals to see which intersections need improved signage and markings

Total One-Time Costs	1,418,960
<b>Total One-Time Costs Rounded</b>	<b>1,400,000</b>
Total One Year Revenue Rounded	900,000
<b>Years required to pay back One-time costs</b>	<b>1.6</b>

### Annual Costs for Recommendations

<u>Meters</u>	<u>Block*</u>	<u>Single Head**</u>	<u>Total</u>
Monthly Maintenance	55	10	
Months	12	12	
<b>Total Annual Costs</b>	<b>54,780</b>	<b>6,000</b>	<b>60,780</b>

<u>Collection</u>	<u>Annual Salary***</u>	<u>Benefits</u>	
Part-time collector	0.5 25,000	35%	16,875

<u>Enhanced Enforcement (incremental)</u>	<u>Annual Salary</u>	<u>Benefits</u>	
One new ticket officer	25,000	35%	33,750

\* Block maintenance (\$55/month) from Wescor Parking consultants; includes modem charges and maintenance contract

\*\* Estimate of \$10/month needs confirmation; equivalent of replace 90 meters per year (\$54k/\$600)

\*\*\* Estimate for one ticket officer plus benefits; may be preferable to use overtime with existing officers

<b>Total Annual Costs</b>	<b>111,405</b>
<b>Total Annual Costs Rounded</b>	<b>100,000</b>