

FUTURE OF PARKING IN BOSTON

**ADDRESSING THE NEED TO PROMOTE ECONOMIC OPPORTUNITY,
ENHANCE COMMUNITY ACCESS, AND REDUCE PARKING DEMAND**







ACKNOWLEDGMENTS

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A Better City is a diverse group of business leaders united around a common goal—to enhance Boston and the region's economic health, competitiveness, vibrancy, sustainability and quality of life. By amplifying the voice of the business community through collaboration and consensus across a broad range of stakeholders, A Better City develops solutions and influences policy in three critical areas central to the Boston region's economic competitiveness and growth: transportation and infrastructure, land use and development, and energy and environment.

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LETTER FROM THE COMMISSIONER

To the Residents, Workers, Business,
and Property Owners of Boston:

The City of Boston Transportation Department (BTD) is pleased to have collaborated on this valuable effort with A Better City (ABC) and the Barr Foundation with supportive representation from the Metropolitan Area Planning Council (MAPC), the Medical Academic and Scientific Community Organization (MASCO), and the Massachusetts Institute of Technology Media Lab, as well as City staff from the Boston Environment Department, the Boston Planning and Development Agency, and the Mayor's Office of New Urban Mechanics.

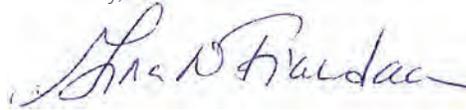
Parking issues are a significant part of the overall transportation challenge that Boston is facing. The Future of Parking in Boston reflects sound analytics and proven strategies that are designed to be implemented today and in the near future. The effort supports and builds upon what BTD has already begun to implement with the successful launch of the ParkBoston payment app, DriveBoston—a program to support and encourage car-sharing in our neighborhoods, the installation of smart meters, and the expansion of Hubway. These and other recent City of Boston initiatives work to optimize the use of valuable curbside and off-street parking to enhance access for all modes of travel, promote economic

opportunity, and reduce overall parking demand. With these actions, we aim to facilitate safe and functional streets and respond to climate change.

Our on-going efforts and the new initiatives described in this report are currently under review and warrant additional conversations with the community at large. Fortunately, we know that technological advances help us to do our job better and more efficiently. This report outlines options that can further improve the parking experience, even as we embrace our City's efforts to increase walking, biking, and transit riding.

We have a great opportunity to make transportation work better for all of us. I encourage you to participate and work with BTD, A Better City, and our multiple partners over the coming months and years as we review and test the recommendations outlined in this report.

Sincerely,



Gina N. Fiandaca, Commissioner
Boston Transportation Department



EXECUTIVE SUMMARY

TOW ZONE



**HP-V PLATE
PARKING ONLY**



BTD T-4

2
HOUR

**PARKING
METER
LIMIT**

8am to 8pm
Except Sunday

PAY
MULTI-SPACE
METER TO PARK



BTD

Portions of This Block
Are Regulated By
Multi-Space Parking
Meters



**Pay Meter and
Display Receipt Inside
Vehicle Curbside Window**

BTD MS-3

EXECUTIVE SUMMARY

This report, prepared by Nelson\Nygaard Consulting Associates Inc., is intended to serve as a guide for the city's neighborhoods and policymakers and includes strategies based on nationwide best practices that:

- Reduce parking demand by promoting walking, bicycling, and public transportation.
- Increase the accessibility and efficiency of parking through innovative signage and marketing.
- Minimize congestion and infrastructure wear-and-tear generated by truck parking, loading, and unloading.
- Support zoning amendments that promote public transportation use, shared parking strategies, non-motorized travel, and reduced parking demand.
- Improve efficiency in parking facility usage, cost, space-availability, and revenue collection through the use of new technologies.

The recommendations of this report are structured around three primary City policies:



These policies are supported by multiple strategies and organized around several initiatives. The six key initiatives are to:

1. **Support Small Businesses**
2. **Increase Housing Affordability**
3. **Improve Residential Neighborhoods**
4. **Expand Demand Reduction Programs**
5. **Enhance Tools for Management**
6. **Provide Equitable Transportation Funding**

WHY IS THIS IMPORTANT?

Parking policy affects the livelihood of Bostonians, the success of businesses, and the health of our environment. Today, Boston's parking policies are not aligning well with the needs that parking is intended to serve.

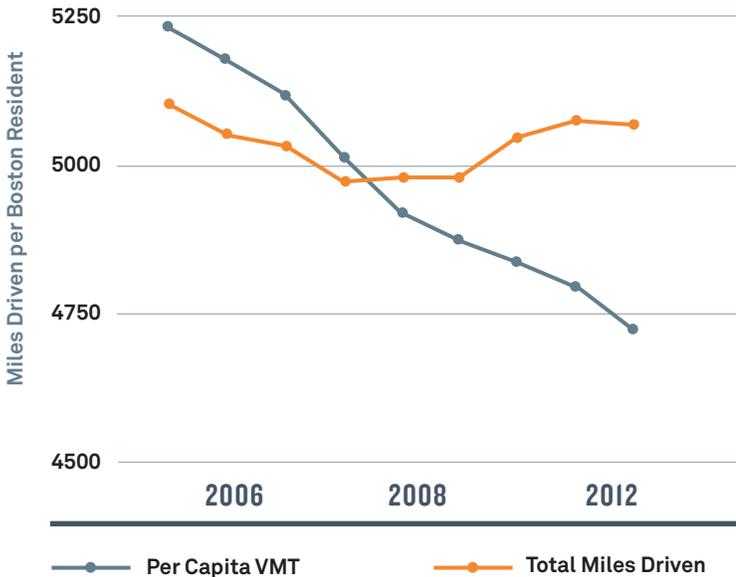
PARKING IS NOT SERVING RESIDENTS WELL

Even though automobile ownership and the amount of cars registered in Boston have been plummeting, the demand for on-street parking and resident parking permits is growing. The private market has reacted well to market demand, but continued free or cheap public on-street parking policies have streets flooded, forcing residents to make difficult decisions and compromising them when any adversity arises, such as the winter of 2014–2015.

PARKING IS ABOUT ECONOMIC DEVELOPMENT

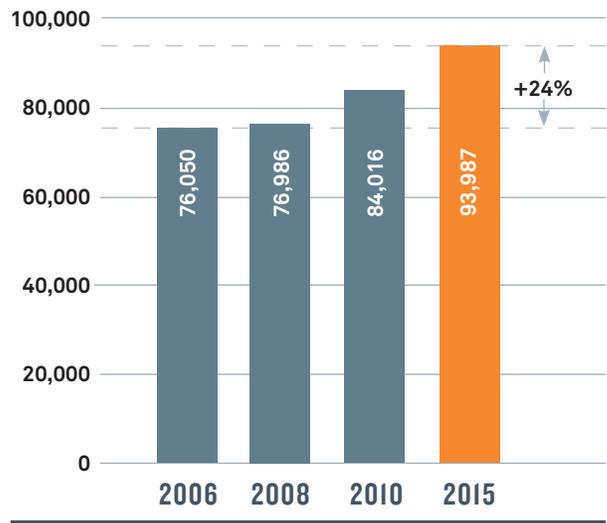
While downtown has seen parking construction decline relative to current development, the rest of the city is subject to antiquated zoning requirements that create too much parking and drive up the cost of development—especially the cost of housing. Meanwhile, out-of-date parking policies and curbside management practices in business districts are hurting merchants, preventing customers from finding available parking, and not encouraging them to travel by other modes.

FIGURE 1: Miles Driven Per Person and Total Miles Driven



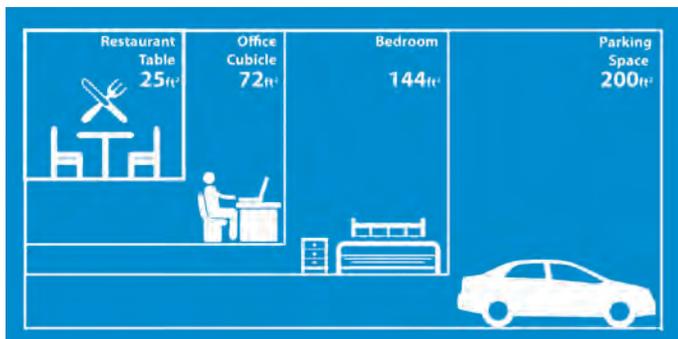
Source: Boston Globe

FIGURE 2: Boston Residential Parking Permits



Source: City of Boston

FIGURE 3: Parking Is About Economics



Source: © Nelson\Nygaard

GOVERNMENT IS NOT MAKING PARKING EASY

Parking policies and management are currently governed by no less than a dozen different agencies without a coordinated policy, parking functions in a confused manner:

- The Boston Environment Department (BED) controls commercial parking growth.
- The Boston Transportation Department (BTD) regulates parking supply and enforces on-street parking.
- The Boston Fire Department (BFD) requires annual licensure for garages.

- The Inspectional Services Department (ISD) requires parking according to antiquated regulations.
- The Economic Development Industrial Corporations (EDIC) builds new parking supply in lieu of other modes.
- The City Council effectively limits rate changes.
- Historically, State law limits the utility of parking revenues.

PARKING POLICIES IN BOSTON ARE OUT OF DATE

- Resident permits are divorced from supply, with many Bostonians forced to seek expensive off-street alternatives.
- Current meters and time-limited parking do not produce enough front-door access for business to reach their customers, who wind up paying high garage rates, risking a ticket, or simply leaving the city for goods and services.
- The disparity between on-street and off-street prices and enforcement fines encourages high demand for the limited amount of on-street parking.
- Efforts to freeze commuter parking have not been matched with limits on private parking nor sufficient incentives to promote transit and other alternatives.

WHY NOW?

Boston is experiencing increasing development and population at a time when interest in a comprehensive multimodal transportation approach to travel is at an all-time high. Parking use provision management and cost are central to transportation policy and individual travel choices. Citywide and neighborhood efforts like the Go Boston 2030 Mobility Action Plan, the Greenovate Boston 2014 Climate Action Plan Update, and the South Boston Waterfront Sustainable Transportation Plan all recognize the centrality of parking and its outside role in the transportation system. In order to make citywide transportation and parking options more equitable, improve Bostonians' quality of life, and acknowledge the tremendous popularity and cost savings of walking, biking, transit, and shared transportation, it is clear that some current parking policies work against these goals and must be changed.

THE COST OF PARKING CONSTRUCTION HURTS OUR ECONOMY

High parking construction costs crowd out Boston's ability to improve the form and function of its neighborhoods and new developments while driving up the cost of goods and services. This impacts residential housing construction cost the most, working in opposition to the City's goal of adding 53,000 affordable housing units by 2030.

FIGURE 4: How Much Does Parking Increase My Rent?

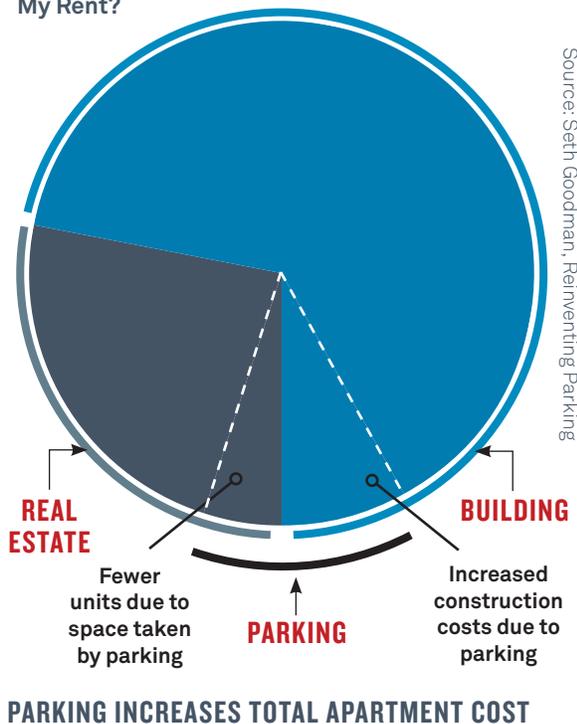
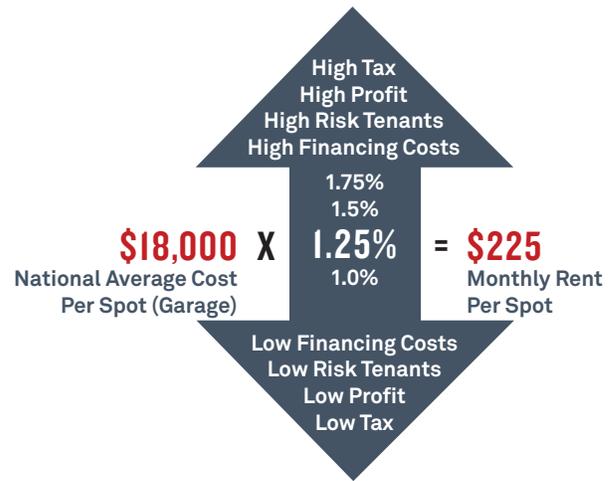


FIGURE 5: How Construction Cost Affects Rent (Varies)



DATA-DRIVEN TECHNOLOGY IS CHANGING TRANSPORTATION

Private entrepreneurs are already challenging Boston's age old policies with advances in mobile data, real-time availability, multi-modal trip planning and more. As new "smart" meters come to additional Boston neighborhoods, Boston's parking management system should integrate with the demand of today's users.

STATE OF THE PRACTICE

Boston once led the nation in progressive transportation and parking policy. Now, low-priced on-street parking is considered normal, while overall policies and neighborhood concerns mostly focus on parking supply and not enough on a balanced transportation system.





“HIGH PARKING CONSTRUCTION COSTS CROWD OUT BOSTON’S ABILITY TO IMPROVE THE FORM AND FUNCTION OF ITS NEIGHBORHOODS AND NEW DEVELOPMENTS WHILE DRIVING UP THE COST OF GOODS AND SERVICES.”

FIGURE 6: The Price of On-Street Parking Meters in US Major Cities’ Downtown



Source: Nelson/Nygaard

■ Tiered Pricing

A NEW FRAMEWORK FOR PARKING POLICY IN BOSTON

To revise Boston's parking policies, the City must begin by reiterating who and what the system was intended to serve. Today's complex parking system has become an obstacle to residents, employees, and visitors alike, not a convenient way to access homes and businesses. Resident parking permits

are intended to control spill-over parking from commercial districts, but in Boston they serve to discourage customers and act as barriers between neighborhoods. Meter fees act only as a small, incremental levy, while ineffectively providing access to businesses and services. Development policies mostly consider accommodating future parking demand at a time when driving is declining. A new focus is needed for Boston.

BOX I: A New Framework for Parking in Boston



PROMOTE ECONOMIC OPPORTUNITY

Access to jobs, services, businesses, goods, and more is a fundamental function of parking. Spaces in prime retail locations must be available to customers in a user-friendly fashion supported by technology, not enforcement. The parking system should support the vitality of commercial districts, both in terms of business access as well as investment in travel amenities that also promote transit, biking, and walking access. The high cost of building new supply must be realized, spread across more users, and separated from the cost of necessary housing to keep a reasonable amount of driving access affordable to all.

KEY INITIATIVES

- **Support Small Businesses**
- **Increase Housing Affordability**

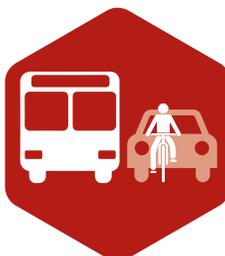


ENHANCE COMMUNITY ACCESS

Parking should be designed not for the sake of storing a car but as part of a system through which to gain access to needed destinations. Where destinations are walkable, bikeable, served by transit, etc., parking access should only be for those who need it most – those who cannot use other means or are visiting for only a short time. Where destinations rely on a vehicle, policies should rationally accommodate drivers, with higher regard to those who share rides when capacity is limited.

KEY INITIATIVE

- **Improve Residential Neighborhoods**



REDUCE PARKING DEMAND

As stewards of our planet, we must recognize the impact that parking supply has on climate change. Providing parking alone takes land and resources. Too much parking makes driving and emitting greenhouse gas emissions too plentiful, but just limiting parking is not enough. Parking policy needs to direct resources equitably to non-polluting modes of travel while supporting incentives that reduce trip-making.

KEY INITIATIVES

- **Expand Demand Reduction Programs**
- **Enhance Tools for Management**
- **Provide Equitable Transportation Funding**

RECOMMENDED POLICY: PROMOTE ECONOMIC OPPORTUNITY

Parking is closely linked to local economic prosperity. If poorly managed, it can be over-utilized and costly for patrons. If well managed it can create needed availability, provide revenues for district enhancements, and support the success of both a particular main street as well as an entire neighborhood.

Parking is essential to business, with every metered space serving the customers that are essential to business vitality. However, when spaces are not available and do not turn over, businesses suffer. Smarter curb management can help Boston's merchants and employers.

Building more parking supply is not always the best answer. At over \$20,000 per space, the cost of parking construction works in opposition to reducing the cost of doing business and providing housing.

Better regulations and management practices can make parking work more efficiently, reducing business expenses while improving housing affordability. A well thought-out parking strategy can support multiple economic development initiatives.

Focusing on parking availability, before the amount of parking supply, is the key to local economic success.

KEY INITIATIVES

- Support Small Businesses
- Increase Housing Affordability

OTHER INITIATIVES

- Make Paid Parking Easier and Worthwhile
- Provide User-Friendly Mobility Information
- Support Parking Technology Innovation

“BETTER REGULATIONS AND MANAGEMENT PRACTICES CAN MAKE PARKING WORK MORE EFFICIENTLY, REDUCING BUSINESS EXPENSES WHILE IMPROVING HOUSING AFFORDABILITY.”



RECOMMENDED POLICY: ENHANCE COMMUNITY ACCESS

Enhancing community access is a fundamental goal of good parking policy. Parking should be managed strategically to meet the mobility needs of all Bostonians, making it easier to get to work and back when other travel options are unrealistic, allowing needed front-door access to essential services, permitting residents better access to educational and recreational opportunities, and smartly accommodating transit, biking and walking without displacing the most valuable parking spaces.

A wide range of parking supply options should be provided both on-street and off-street which offer multiple travel choices, including space for carshare services, vanpools and bicycles. Commercial loading zones should be regulated flexibly to mitigate double-parking and eliminate idling pollution. Technologies should also be adopted to better manage the system and provide needed information about options and parking availability to residents.

KEY INITIATIVES:

- Improve Residential Neighborhoods

OTHER INITIATIVES:

- Manage Curb Space More Flexibly
- Prioritize High Occupancy Vehicle Parking
- Update Commercial Loading Access
- Expand Real-Time Parking Availability Displays
- Establish Improved Parking Design Guidance
- Improve Bicycle Parking and Access



RECOMMENDED POLICY: REDUCE PARKING DEMAND

Good parking policy is essential to achieve the transportation components of the City's climate initiatives, including the Boston Climate Action Plan. This is especially true of measures that minimize incentives to drive (such as the parking freeze), support lower levels of private vehicle ownership, and increase curbside spaces dedicated to modes with lower emissions per capita—including ridesharing, taxi services and bicycling.

By removing hidden developer and employer parking subsidies and using the market to determine pricing, a carefully managed parking supply will also reduce the financial and behavioral incentives for auto travel.

Innovative and adaptable parking design standards can help meet sustainability and climate action goals through the integration of low impact design (LID) measures such as stormwater management, the use of pervious materials and parking lot landscaping.

In the near future, parking policymaking and management should be data-driven, based on regular monitoring and reporting.

KEY INITIATIVES:

- Expand Demand Reduction Programs
- Enhance Tools for Management
- Provide Equitable Transportation Funding

OTHER INITIATIVES:

- Offset New Development Impacts





Offset New Development Impacts

- Promulgate transit-oriented maximums
- Eliminate any remaining minimums citywide
- Consider cap on all non-shared parking
- Initiate an impact fee for exceeding maximums
- Facilitation of shared parking lease agreements
- Consider a municipal sharing district



Electric Vehicle Parking/Charging

Strategically locate on-street parking spaces for zero-emission vehicles along with charging infrastructure.



Price Parking to Demand

Pilot a variable on-street pricing system at locations and times of highest demand, in order to match availability goal.



Commercial Loading Access

Update loading zone management strategies that mitigate congestion and improve air quality.



Expand Demand Reduction Programs

Coordinate TAPA TDM measures with APCC permit application and approval process; enforce the TAPA reporting requirement and create a user portal for monitoring.



Support Parking Technology Innovation

Local business and industries addressing parking and transportation technology or reduce carbon emission should be encouraged with appropriate policy support.



Flexible Curb Management

Revise curb ordinances to allow future flexibility to accommodate innovations of technology and automobile industry.



Car Share Network Expansion

Partner with more car share vendors to be highlighted for Special Permit requirements and offer license or bid for dedicated on-street spaces.



User-Friendly Mobility Info

Create web/app platform providing parking location, availability, regulation, price, & other travel options, etc.



Garage Design

Off-street parking facilities should be subject to design requirements that encourage ground floor activities.



Real-Time Parking Availability Display

Expand electronic real-time availability displays in high-demand parking areas and provide a webstream platform.



Reclaim On-Street Spaces

Where utilization data supports it, flex curbside space for valet parking, peak hour bus/bike lanes, parklets, outdoor dining, etc.



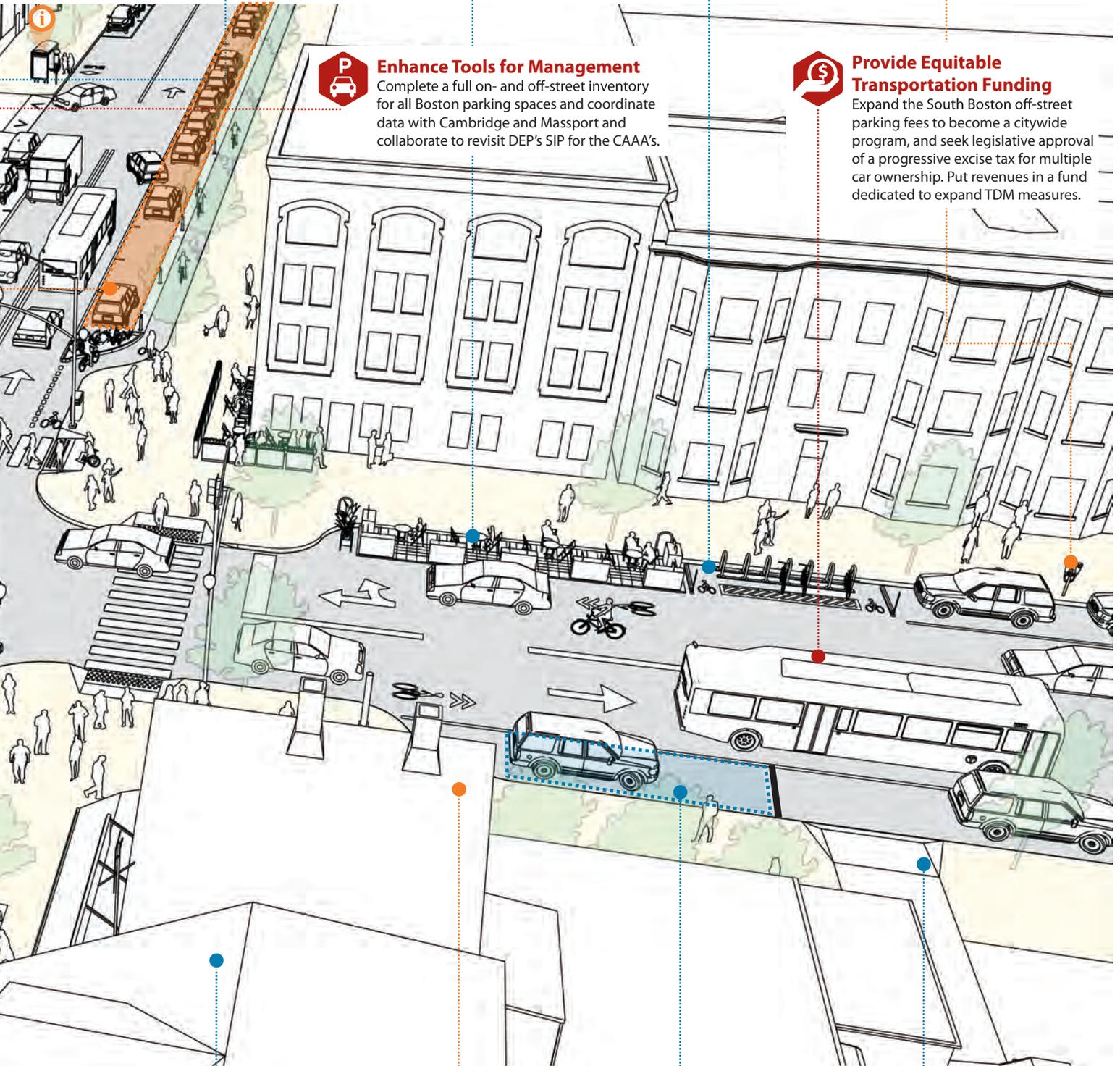
Improve Bicycle Parking/Access

Expand high-quality on-street bicycle parking corrals where bike and auto parking demand is highest.



Parking Revenues to Enhance Districts

Capitalize on the recently enacted law of Parking Benefit Districts (PBD) and the improvements eligible for funding with PBD revenues.



Enhance Tools for Management

Complete a full on- and off-street inventory for all Boston parking spaces and coordinate data with Cambridge and Massport and collaborate to revisit DEP's SIP for the CAAA's.



Provide Equitable Transportation Funding

Expand the South Boston off-street parking fees to become a citywide program, and seek legislative approval of a progressive excise tax for multiple car ownership. Put revenues in a fund dedicated to expand TDM measures.

Bike Share

Continue to expand the Hubway bike sharing system and expand funding partnerships.



Residential Parking Permits

Adopt an escalating RPP fee per household to limit abuse and dedicate revenue to neighborhood improvements.



Increase Housing Affordability

Reveal and unbundle the true cost of parking to building tenants that may help to discourage car ownership.



On-Street Carpool/Vanpool Parking

Carpool/vanpool preferential parking should be provided on-street at key locations.



Design Guidance

Promulgate improved placement standards for curb cuts, crosswalks, and on-street parking and encourage active use of ground floor.

RECOMMENDED KEY INITIATIVE: SUPPORT SMALL BUSINESSES

The City uses its parking policies to help create inviting business districts and get customers from their car to the curb and to the store as quickly as possible. Several major American cities have learned that demand-responsive parking pricing and technology is the single most effective strategy for harnessing the power of the market and the laws of supply and demand to maximize the value of City's parking assets. Drivers should be charged a fair market value for the parking they use, which automatically creates the needed curbside availability.

Boston has recently initiated a program to update all of its old meters with the latest "smart" meters that take credit cards and expand pricing in busy commercial districts. In 2015, ParkBoston was launched to allow people to pay for metered parking by smart phone. The successful program will soon be offered citywide and become the platform for adjusting prices more fairly in response to demand.

While increasing the cost of parking in response to demand will improve parking availability and convenience, merchants and other commercial district stakeholders may fear that increasing prices will drive customers and visitors away. Although increased customer access will mitigate this fear, it will be important to demonstrate the value of market rate public parking by sharing a percentage of meter proceeds with Boston's Main Streets Districts programs.

RECOMMENDATIONS

- To attain broad-based support of stakeholders, it will be critical to create a **communications plan** about the benefits of performance-based parking: to make parking more convenient, to reduce frustration and vehicle miles spent on "circling", and to find revenues to enhance neighborhood environment.
- Set a **Parking Availability Goal** (i.e. 10–15% available per block face in busy areas) and pilot performance-based pricing, allowing customers to get desired front-door access to businesses. Prices may be much higher on desirable blocks and lower than today's rates on most others.

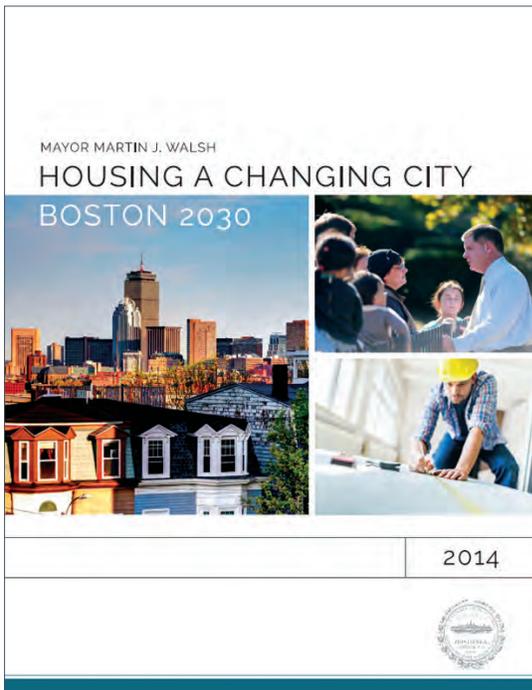


- Pilot a **Parking Benefit District (PBD)** where new on-street pricing is needed or new smart meters are installed. With administrative costs extracted, dedicate a portion of net revenues to the local Main Streets Districts program or other parking demand reduction initiatives led by the Boston Transportation Department and the Boston Environment Department.
- **Monitor parking utilization** to determine the correct price, and create real-time parking information portal available to the public through web or app platform.
- **Eliminate time limits** to reduce hassle and reliance on ticket revenues, making Boston parking more friendly and self-enforcing.
- **Capitalize on the 2016's Municipal Modernization law** that expands the potential use of parking meters revenue for public realm and transportation improvements.

**RECOMMENDED KEY INITIATIVE:
INCREASE HOUSING AFFORDABILITY**

Greater Boston is less affordable than ever, particularly when compared to the other regions against which we compete for residents and workers. Part of the challenge stems from the high cost of housing which frequently includes the cost of parking.

Many residential and commercial leases in buildings that include off-street parking often assume that the lessee will demand parking spaces, so they typically include the cost of those spaces in the total cost of the lease. Unbundling parking by requiring that parking be purchased or leased separately reduces housing costs for households that own fewer cars, and reveals the cost of storing a car to employers and residential property owners. It also encourages shared parking since property owners can lease surplus parking spaces to other building tenants. This single measure may be the most effective means for encouraging developers to “right-size” their accessory parking plans—assuming minimum requirements have been eliminated or reduced sufficiently to allow them to do so. If they have to individually sell or lease every space they build, they are unlikely to build an oversupply of parking for which they will have to cover the costs.



“UNBUNDLING PARKING BY REQUIRING THAT PARKING BE PURCHASED OR LEASED SEPARATELY REDUCES HOUSING COSTS FOR HOUSEHOLDS THAT OWN FEWER CARS.”

Some communities use zoning to require that parking be sold or leased independently from housing units or office space. Other communities require that parking be a separate line item in lease contracts, even if spaces are automatically included. Once renters become aware of what they pay for parking they may decide to negotiate changes, perhaps renting fewer spaces or trading parking spaces with other residents.

RECOMMENDATIONS

- Create clear legal guidance and language for homeowners’ associations and developers to unbundle parking from **leases and deeds**.
- **Unbundled parking fees should reflect market realities.** The Boston Transportation Department should maintain annually updated estimates of average purchase prices and monthly lease fees for parking. An amount roughly equivalent to 50% of these averages should be established as the minimum purchase price or tenant charge for parking.
- **Require unbundled parking in the zoning code** and in the City’s housing and mobility plans, especially for affordable housing developments.
- **Consider taxing parking that is currently bundled** into lease agreements.

RECOMMENDED KEY INITIATIVE: IMPROVE RESIDENTIAL NEIGHBORHOODS

The current Residential Parking Permit (RPP) program in Boston offers residents a free parking permit for every car they own, with no restrictions on the number allocated to each household. Even though the number of registered cars in Boston has been declining over the past decade as people drive less, the number of parking permits has been steadily growing—likely because they provide free front door parking.

As of January, 2015, there were almost 94,000 residential permits in Boston. A neighborhood group estimated that there are 4,000 permits for only 1,500 spots in the North End, creating a huge parking scarcity. This is not uncommon, as many of Boston's neighborhoods contain households that sometimes have more than five parking permits per household resident. There are more cars than on-street spaces in many neighborhoods making the hunt for parking a challenging burden on residents.

RECOMMENDATIONS

- Develop and distribute an **educational and information package** to gain resident support and stakeholder buy-in for improving the RPP program.
- Adopt an **escalating RPP fee** per household to limit abuse, such as \$25 for the first permit, \$50 for the second, \$100 the third, etc.
- **Extend “hybrid” RPP areas** to overlap into commercial districts during times of lower demand.
- In some neighborhood commercial zones, give permit holders **flexibility to stay longer and pay less at meters**.
- Allow **non-permit holders to park in some RPP zones** if and only when resident demand is low, such as when residents are off to work.
- **Make RPP signage simple**, streamlined and easy for all motorists to follow the rules, including enforcement hours and days excepted, length of stay allowed, non-resident visitors payment information, etc.
- Add meters in some mixed-use neighborhoods, with permit holders **exempt from paying**.
- Dedicate permit fees and fines to cover program administration cost and fund increased enforcement, with **surplus revenue used for neighborhood improvements** such as snow removal or sidewalk repair. Alternately fund rewards for car-free households, such as discounted Hubway & car share memberships, monthly T discounts, sneaker rebates, etc.
- Broker **shared parking agreements** to open up underutilized facilities for residents with permits, such as overnight parking in nearby office garages.



“THERE ARE MORE CARS THAN ON-STREET SPACES IN MANY NEIGHBORHOODS MAKING THE HUNT FOR PARKING CHALLENGING BURDEN ON RESIDENTS.”



RECOMMENDED KEY INITIATIVE: **EXPAND DEMAND REDUCTION PROGRAMS**

There are five Transportation Management Associations (TMAs) within the City of Boston including the A Better City TMA, CommuteWorks in the Longwood Medical and Academic Area (LMA), the Allston-Brighton TMA, Seaport TMA, and TransComm, the TMA for Boston Medical Center. Each offers an array of Transportation Demand Management (TDM) programs to member organizations ranging from shuttle services to walk/bike incentives.

Transportation Access Plan Agreements (TAPAs) represent an agreement between a development project and the City of Boston and typically require developers to provide TDM measures such as subsidized T-passes and bicycle parking.

While TMAs and TAPA programs directly support reductions in driving demand, TMAs cover only parts of the City and TAPAs only govern developments that meet a minimum threshold. TAPAs are also not actively enforced or monitored. In order to effectively manage parking, a complete and accurate record of TAPAs and all citywide parking assets is under development at the BTM. This will provide the City with the opportunity to begin monitoring existing supply and better coordinate public and private parking policy and related TDM measures. The threshold for requiring TDM mitigation measures should be revisited to include different types of development and potentially smaller buildings.

RECOMMENDATIONS

- **Continue to expand partnerships with bike share and car share companies**, strategically locating new stations, sharing data, and managing curb space more flexibly.
- **Coordinate TAPA and TDM measures** with the Air Pollution Control Commission (APCC) permit application and approval process.
- **Consider new TDM measures** in TAPAs and APCC permits, learning from national and worldwide best practices that use modern technology.
- Enhance the **enforcement and monitoring** of the TDM programs through TAPA and APCC.
- Consider **hiring a TDM manager** to coordinate and ensure compliance.
- **Enforce the TAPA reporting requirement** and create a user portal for long-term monitoring and evaluation.
- Develop an **incentive program** to ensure monitoring is completed every year (e.g. a per-space fee discount with monitoring submission).
- Create **incentives for TMA membership**, such as discounted parking fees (if implemented).

RECOMMENDED KEY INITIATIVE: ENHANCE TOOLS FOR MANAGEMENT

Boston has always been a national leader in fighting climate change. The downtown parking freeze was put into place in 1976 by a Federal Implementation Plan (FIP) under the Clean Air Act, and has seen little change since it was first introduced. The Plan froze the number of publicly-available off-street spaces to 35,556 in downtown, which includes North End, Financial District, Chinatown, Back Bay, and South End neighborhoods. Limiting the availability of “commercial” parking was seen as an effective way to control the number of cars traveling into the city. However, the construction of “exempt” employee or resident-only spaces was unrestricted, allowing parking supply to continue to swell.

The transportation landscape has substantially changed since the 1970’s, and Boston’s Article 80 Transportation Access Plan Agreements (TAPAs) have led the way in introducing more effective methods for managing vehicle miles traveled (VMT), including car share services, T passes, bike parking, and other transportation demand management measures. This focus must grow.

RECOMMENDATIONS

- Provide a **full on-street and off-street inventory** of all Boston parking spaces and regulations to better manage supply while helping residents and visitors identify where to find parking and avoid a ticket.

- Create incentives or mandates for **regular data reporting** by parking operators and make such reports transparent.
- Collect a **regular report of parking rates and daily availability** at each operator’s facility.
- Make better use of existing parking supply by becoming a resource and facilitator of **shared parking agreements**.
- **Expand City staff capacity** to maintain the inventory, promote shared parking, and monitor private entities’ compliance with TAPAs, parking freeze permits, and monitoring reports, creating an on-going renewal process. Staffing can be funded through a citywide expansion of the nominal parking impact fee already in place in South Boston.
- Coordinate data with the City of Cambridge and Massport, and collaborate to revisit the **Department of Environmental Protection’s FIP and the State Implementation Plan for the Clean Air Act**.
- Develop a process to **support parking innovation**, where new companies can partner with the City in exchange for reporting, data and evaluation.



RECOMMENDED KEY INITIATIVE: PROVIDE EQUITABLE TRANSPORTATION FUNDING

The cost of parking is one of the reasons why Boston has a high cost of housing. Road maintenance and construction is heavily subsidized by State and local dollars. Transit receives only a fraction and biking almost none. A policy to reduce driving must have commensurate funding. The City should revisit its social and economic return on transportation investment.



According to the 2012 Census of Governments, local governments in Massachusetts expended a combined \$18.3 million on parking facilities, but realized a combined \$43.8 million in revenue. Some of these may come in the form of parking fines. There may be an expectation for transparency in where such dollars are invested.

Ensuring funding is equitable across modes is not tantamount to the creation of a zero sum-game. In fact, it is recognizing that the complex transportation system needs support from all angles. For example, all drivers become a pedestrian after they park their car. Also, although the City of Boston doesn't control the trains and buses, they are responsible for the streets and sidewalks, which are also used by transit riders. Funding improvements that benefit multiple types of trips can be a widely agreeable priority.

Additionally, the MBTA needs to be brought in as a partner to reprioritize station parking pricing and policies that encourage a greater utilization of its transit system—particularly trips that would otherwise strain Boston's parking supply.

At both the Commonwealth and local levels, transportation finances and investments are a persistent concern. Many policy makers are currently paying attention to the reforms at the MBTA and the future levels of funding for the Commonwealth's transportation services. Although a transportation funding reform package was passed in 2013, State voters repealed the indexing of the gas tax the following year. As a result, there is an ongoing need for new and innovative revenue sources that are not regressive, if equitable transportation funding is ever going to be possible. The political and social interest in the issue should create momentum for innovation in the future.

RECOMMENDATIONS

- **Expand the annual \$10 per space fee of off-street parking in South Boston** to become a citywide program.
- Seek legislative approval of a **progressive excise tax** for multiple car ownership and/or higher MPG (miles per gallon) ratings.
- Explore **progressive parking fines** to change the behavior of habitual violators of the City's residential or commercial parking rules.
- Explore **reassessing properties where parking is bundled into lease agreements**, rethinking parking and parking policies to lower housing costs while not over-burdening residential streets with parking demand.
- As with all taxes and parking fees, ensure there is transparency with regards to where fees go. **Put revenues in a fund that can be used to expand demand management measures and enforce the compliance of TAPAs.**

ACTION PROJECTS

The following projects are recent efforts the City has already begun to take during the course of this study which support the study's recommendations.

DRIVEBOSTON

A two-part pilot program to enhance carshare

The City of Boston envisions an urban landscape with ever increasing mobility options that allow residents and visitors to select the optimal mode of transportation for each type of trip they might take. In a region with many "car-free" households, car sharing provides an important option and opportunity for residents and visitors alike. The City believes supporting wider availability and awareness of car sharing options as an alternative to personal vehicles will in time decrease individual car ownership, make more curb space available for a range of uses, and reduce the City's rate of carbon emissions.

To advance the agenda articulated in the City's Climate Action Plan and Boston's Complete Streets, the City of Boston Transportation Department (BTD) has launched DriveBoston, a two-part pilot program focused on car share. One part of the pilot will provide opportunities for Car Share Operators (CSOs) to have dedicated spaces on City streets and in City parking lots. The second part of the program will provide opportunities for CSOs to have Free-Floating parking permits to pilot One-Way car share in Boston.

The City of Boston plans to gather significant data on usage and user behavior over the course of the pilot to assess the effectiveness and success. If the initial pilot is successful, the City may renew the licenses.

PARKBOSTON

Smart phone payment available for 8,000 spaces

During Mayor Walsh's 2015 annual State of the City address, he announced a city partnership with ParkBoston that allows drivers to feed the meters using a mobile device. All of Boston's 8,000 metered parking spaces will soon be payable by smart phone. Supported by license plate enforcement, users no longer need to leave any receipts (or their phones) on the dashboard. The application also sends a 10 minute warning to motorists before their meter runs out.

Since its January 2015 pilot in the Back Bay area, the ParkBoston app has been embraced by Boston residents and visitors. The app was downloaded more than 15,000 times and used more than 12,000 times by those parking in the area. The City will continue integrating future smart meters into the new pay-by-phone system. The installation took place by phase: first starting from Back Bay and Fenway/Kenmore area, then gradually expanding to Downtown, Beacon Hill, West End, North End, and Charlestown, and finally covering South Boston, South End, Mission Hill, Allston and Brighton.

The ParkBoston app showcases the success of using technology to make transportation easier and more convenient. It is only one of the first steps the City has taken in applying innovative and data-driven approach to inform transportation and parking policies.

SMART METERS

Credit-card payment technology

Another initiative similar to the ParkBoston app is the replacement of all of Boston's parking meters with "smart" units, allowing parkers to pay with credit cards and phone apps. The citywide upgrade lets the City better control on-street parking, and it provides the infrastructure for more progressive smart parking management, such as dynamic meter pricing based on real-time availability data and apps that let smartphone users know where to find empty spaces. Smart meters and more importantly, the data provided, will be able to handle years of technological advances and help make "smarter" parking policy decisions.

OFF-STREET PARKING INVENTORY

380,000 parking spaces citywide

A critical step through this study process is—for the first time in Boston's history—to complete a full inventory of all off-street parking spaces within the city in order to understand how many parking spaces exist and how they are used and regulated. Overall, the City of Boston has approximately 380,000 off-street parking spaces (not including small residential driveways), which is equal to approximately 0.6 parking spaces per capita. Within the Downtown Parking Freeze boundaries, there are nearly 77,800 parking spaces.

OTHER ACCOMPLISHMENTS

Recent accomplishments that the City has made include:

- Updated the parking fines to discourage illegal parking in business districts to free up parking.
- Opened up Boston Public School parking lots for overnight parking.
- Minimized parking requirements: most new developments in Boston have a parking ratio of 0.5 cars per housing unit in downtown and 0.75 cars per 1,000 square feet of commercial development in downtown.
- Launched Special Planning Area efforts in key transit-oriented neighborhoods including Dudley Square, Dorchester Avenue and Washington Street.
- Expanded Hubway from 60 stations to 106 stations with approximately 1,100 bicycles since its launch in 2011.
- Conducted a citywide off-street parking inventory.

Other early actions scheduled for the next few years that complement the recommendation of this report include:

- Piloting performance-based parking in select neighborhoods to increase parking availability.
- Creating a Parking Benefit District in each of those neighborhoods, using a portion of new revenue gained to fund local improvements.
- Using data from parking meters to show likely availability of on-street parking to drivers in real time, reducing the amount of time people are hunting for parking.
- Expanding the use of parking meters in business districts to ensure curbside availability.
- Revisiting commercial vehicle loading and parking policy and regulation.
- Reforming the Resident Parking Permit (RPP) program to enhance community access, fund neighborhood improvements and disincentivize multiple car ownership.
- Piloting shared parking agreements to open up underused off-street commercial lots for resident parking.
- Updating parking fines for parking in residential parking areas without a permit.
- Exploring other methods to unbundle the cost of parking from the price of housing.
- Expanding demand management programs.
- Expanding Bus Rapid Transit (BRT) along key routes throughout the city.
- Working with car share companies to locate city wide, using data to aid in picking locations.
- Including electric vehicle in parking requirement.
- Hiring a Director of Parking Policy.
- Creating a dynamic, digital accessible database of all downtown parking facilities.
- Streamlining and consolidating permitting and reporting requirements for off-street parking.





CHAPTER 1

INTRODUCTION



CHAPTER 1

In one way or another, parking and its challenges touch all aspects of life in the city of Boston. This includes residents losing valuable time hunting for parking on neighborhood streets, parking garages at capacity near the city's major employment centers, and difficult access for tourists to the city's many attractions. Other forms of transportation are affected too. Shortages of parking at MBTA lots deters transit use and pushes would be riders into cars and onto highways and city streets. Bus routes and stops compete for road and curb space with cars. The city's businesses and institutions that depend on the availability of loading zones must often compete for curb space with parked cars. Every parking space also represents an opportunity to accommodate bicycle lanes, car-shares, and other more sustainable and efficient forms of transportation. The success of balancing these often competing demands dictates the overall success of the parking system, which in turn contributes to the overall economic and environmental health of the city.

Corresponding to the current high level of public interest and concern, local media has increasingly thrown a spotlight on the daily challenges facing the City as it seeks to improve its parking system. And while news articles typically do not dive into the details about Boston's challenges with balancing competing needs, they do provide a sense of how the public perceives and is informed of day-to-day parking issues. Understanding public perception

“EVERY PARKING SPACE ALSO REPRESENTS AN OPPORTUNITY TO ACCOMMODATE BICYCLE LANES, CAR-SHARES, AND OTHER MORE SUSTAINABLE AND EFFICIENT FORMS OF TRANSPORTATION.”



and the flow of information in regard to the City's parking challenges is critical to developing effective solutions. The effectiveness of the recommendations contained in this report will therefore depend as much on their technical effectiveness as the way in which they are communicated to Boston's residents, workers, and the public at large. Only effective communication will change the conversation regarding commonly held practices and expectations surrounding parking. This in turn will help support the City's goals for enhancing community access, promoting economic opportunity, and reducing parking demand.

There is no better illustration of how perception will need to change than by looking at recent media coverage of the City's Residential Parking Permit system, which currently provides an unlimited number of free, on-street parking spaces for residents. "Unlimited (residential) permits strain Boston's parking system" ran a headline in the *Boston Globe*.¹ Another article threw down the gauntlet: "There's exactly one way to solve Boston's parking woes: by giving up the pretense that, in a city of 13,000 people per square mile, parking can be both ample and free."² The *Globe* reports that "in dense neighborhoods such as the South End, North End and South Boston, where residents constantly feel like they are playing a game of musical cars—fearful of driving lest they give up their spot."³ In winter storms this leads to the infamous Boston street battles to reserve spaces using anything available "from trash cans to broken appliances." Residential permit systems in other cities like Philadelphia charge escalating fees based on the number of permits per household, which helps to drive down demand. The City has expressed a desire to fix the system: "Boston vows to review process for parking permits."⁴ There is growing support for gathering better data and tackling reports that more than three hundred Boston residences own five permits or more. However public perception can act as an obstacle. Articles report Boston residents opposing higher parking fees either because they represent a hardship for low-income residents or—at the other extreme—that parking fees represent a new form of taxation. Proven and successful solutions described in this report tackle these perceptions by placing a higher value on Boston's parking spaces in order to improve community access and economic prosperity, and curb climate change.

Residential parking permits are not the only aspect of the City's parking system receiving extensive media coverage. Public parking supplies have also been in the news. "Quest for parking in Boston worse than ever" ran the headline for an article in the *Globe*.⁵ The City is blessed with a booming economy, but as new buildings replace lots in high growth areas such as the Seaport, parking supply has diminished and office workers that once parked and walked to offices downtown have to find alternatives. The Downtown and South Boston parking freeze zones also cap the supply of spaces available to the public in commercial garages, and there are currently "zero spaces in the (downtown) bank."⁶ Parking managers and operators citywide—from the Massachusetts Convention Center Authority to private garage operators across downtown—are reporting 90-100 percent occupancy in the peak hours. The media has been quick to observe that as the city seeks to get a good handle on parking data, there is no one parking database that provides a comprehensive record of parking in the city. Parking, in fact, falls under the purview of a number of different City agencies.

The media has also addressed the perception that parking in Boston is expensive, and for those reserving spaces in private, off-street downtown garages, prices can indeed be high. However, compared to other cities, Boston's metered spaces are actually very cheap at \$1.25 per hour compared to \$4.00 per hour in Los Angeles and \$6.50 per hour in Chicago.⁷ Again, this is a public perception that will be important to change as the City seeks to reform citywide pricing and implement charges that better reflect the high value of curbside space.

Weather-related service disruptions on MBTA services over the winter have served only to heighten the need for parking system improvements, as regular MBTA commuters with no transit service flocked to their cars and sought scarce parking instead, creating chronic congestion on city streets and filling up parking garages during peak hours. Parking cannot be viewed as a stand alone system but instead as part of a finely balanced transportation system, dependent on a healthy MBTA.



**“REPORTED PARKING SHORT-
AGES AT MBTA STATIONS
ONLY REINFORCES THE
IMPORTANCE OF PARKING
TO THE HEALTH OF THE
TRANSIT SYSTEM.”**

Reported parking shortages at MBTA stations only reinforces the importance of parking to the health of the transit system. Despite additions to the supply of parking at MBTA stations including garages at Wonderland, Beverly and Salem, there are still parking shortages, particularly on the Red Line. The *Boston Globe* reports, “On weekday mornings, a line of cars snakes around the (Alewife) station’s two parking structures. Some drivers will wait as long as 20 minutes for a space. Then there are those who give up and hit the highway, revealing a predicament for the Massachusetts Bay Transportation Authority: The struggle to find parking is discouraging some from using public transit.”⁸ Parking expert Donald Shoup says: “It’s terrible to have a full parking lot determine the success of a transit system and the value of using transit.”⁹ Shoup suggests that higher parking fees will drive down demand and encourage carpooling or taking the bus instead.

Media coverage has focused on data and technological solutions that seek to fill the information gap, answering fundamental user-based questions such as: where and when can I find parking and how

much will it cost? With growing demand for better access to parking, the private sector has stepped in with real-time parking apps and information. These technologies are a cost-effective form of communication that help travelers make informed choices about when and where to park without the inefficiencies of circling to hunt for a space. One technology CEO succinctly stated: “We know for a fact that parking can either incentivize or prohibit individuals from coming into our city....”¹⁰ The City recognizes this and is close on the heels of the private sector. “Mayor Marty Walsh’s new plan for the Boston Transportation Department calls for 8,000 updated parking meters across the city” that are payable by



Far left: New parking meters in Boston are payable by credit card.

Left: ParkBoston app

credit card or smart phone.¹¹ The City also debuted ParkBoston—an app that allows pre-payment for parking spaces, which is now available throughout downtown. The new meters pave the way for technology that allows prices to fluctuate based on the time of day and corresponding levels of demand, an approach that this report recommends.

Meanwhile, best practice has recognized that building more parking to improve availability only attracts more cars to park, increasing congestion and competing with other valuable downtown uses. Calling for a halt in the construction of new parking, one article reports that according to the Metropolitan Area Planning Council (MAPC), parking regulations for new buildings “exceed car ownership rates in most Boston neighborhoods” further noting that there are 50,000 fewer cars registered in Boston today than there were in 2008.¹² The same article cites studies by Northeastern University stating that municipalities often require too much parking around transit stops which would have otherwise been great places to live for residents who don’t own cars or choose to live with less parking availability near transit.

Coverage of the City’s current Go Boston 2030 initiative recognizes the need for trade-offs in reforming the City’s parking policies. This means making non-motorized modes such as bicycling safer and more appealing. On Commonwealth Avenue between the Boston University Bridge and Packard’s Corner, protected bike lanes will replace more than seventy parking meters. At a news conference, Mayor Walsh noted that the goal of ongoing reforms is to make “our streets safer, more accessible and more considerate of the different modes of transportation we have in Boston.”¹³

The following recommendations recognize the importance of public perception, but they also seek to dig deeper to understand the roots of the parking challenges and to develop a menu of options. As many other North American cities have found, the solutions to parking challenges are as varied as the challenges themselves. Among other things, the recommendations explore what other cities are doing to tackle residential parking permit challenges, public parking shortages, and resistance to increased parking meter rates and residential permit fees. Solutions fall under three broad themes: Enhancing Community Access, Promoting Economic Opportunities and Reducing Driving Demand.

The time is ripe to overhaul the parking system to support these three themes. The City of Boston already employs progressive parking tools, including parking freeze districts, maximum parking ratios, and Transportation Access Plan Agreements (TAPAs) to administer off-street parking policies. As part of its Climate Action initiatives, the City of Boston is actively increasing walking, bicycling, car share and other non-Single Occupancy Vehicle (SOV) modes, while seeking solutions that provide sufficient parking to sustain healthy economic growth.

THE COSTS OF PARKING

Studies show that in general, 10 percent of development costs are typically dedicated to parking. But to uncover the true costs of parking, one has to count not only the direct land and construction costs, but



Cycle tracks on Vassar Street in Cambridge removed dozens of parking spaces.

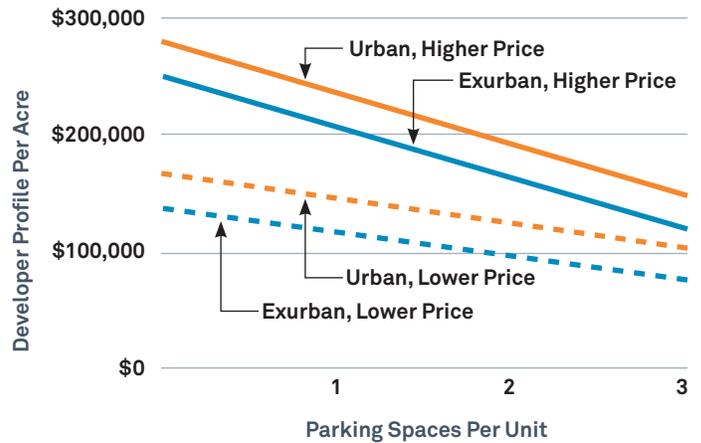
more importantly external and opportunity costs as well. Dedicating land, money and resources to parking sometimes means giving away spaces for living, recreation, walking, biking and other travel options. Regardless of the true costs of parking, only a small proportion of the total construction and operation costs is actually paid by the users, with the majority financed by public subsidies and developers. Thus, the costs of parking are actually passed on to all taxpayers and users of the development regardless of their travel options. That being said, one who takes transit or bikes to work will probably pay for the parking in his office building as the costs are included in the tenant leases, even though he or she does not drive.

DIRECT COSTS

The physical costs of constructing, operating, and maintaining parking vary by region, depending on local land values, the costs of construction, and other local factors. A single off-street parking space will take as much as 350 square feet, including circulation lanes. Construction costs of parking structures are typically more expensive than those of surface lots. Underground parking, which require excavation, waterproofing, extra lighting, etc., costs the most. According to a study by Carl Walker (2014),¹⁴ building one structure parking space costs as much as over \$21,000 on average in Boston, and varies by facility size, number of levels, topographic, design and location. In addition to the construction costs, parking facility development also involves “soft” costs for project planning, design, permits and financing, which typically increase the project costs by 30–40%. After the construction, operation and maintenance costs add another \$500 to \$1,000 per space per year,¹⁵ including employee salaries and benefits, facility maintenance and cleaning, taxes and insurance, etc.

It is in the interest of the developer to construct as few parking spaces possible while still guaranteeing the necessary housing demand due to the high construction costs of building parking. It is important to note that an increase in the number of required parking spaces also provides an incentive for developers to construct fewer affordable housing units. For example, a high-priced condominium that will draw a demand for three parking spaces draws the same level of profits for a developer per acre as a lower-priced apartment with no parking. If parking is required for all units under the bundling of costs, it will not be in the interest of the developer to construct low-priced housing. This is illustrated in Figure 7 above.

FIGURE 7: Level of Profit Relative to Parking Space Per Unit



Source: © Todd Litman, VTPI

INDIRECT AND EXTERNAL COSTS

In addition to tangible capital costs, parking has “external” costs that affect the environment and the surrounding communities. These costs are typically not factored into development costs analysis and decisions, but in fact should be. Providing parking not only costs more to developers, but also induces more travel by private vehicles. The additional auto traffic will then create additional, indirect costs such as traffic congestion, air pollution, and taking up spaces for non-motorized transport. Paving land for parking imposes environmental externalities, such as green space loss, stormwater runoff, flooding, and the urban heat island effects. Traffic circling around trying to find parking creates additional time and fuel consumption costs as well as greenhouse gas emission. Generous parking requirement and low parking prices tend to discourage infill development, encourage car ownership, and reduce uses of alternative travel options, such as walking, bicycling, taking transit, etc. UCLA Professor and author of the widely-received book *The High cost of Free Parking*, Donald Shoup cites a UCLA Environmental Impact Report data to estimate a total external cost of \$117 per month per parking space, including \$73 of congestion costs and \$44 of pollution costs.¹⁶ This estimate does not include the additional greenhouse gas emission costs from the increased vehicle travel and external costs during the structure construction. It is very important to understand and count these external costs when providing parking, as ultimately these costs will be passed onto everyone on the road.

OPPORTUNITY COSTS

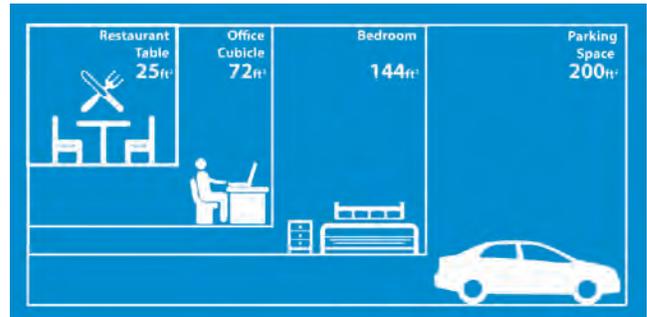
Land devoted to parking is sometimes mistakenly treated as having no opportunity costs, so the only costs of providing more parking are construction and maintenance expenses. Reducing parking supply also has been commonly viewed as minimal savings to land owners. However, in fact, the denser the area is, the higher the opportunity costs of parking are.

For example, the physical dimension of an off-street parking space (~300-350 sqf) is almost equivalent to the size of a studio apartment (~325 sqf). By building fewer parking spaces, the developer probably can accommodate more residential units, making housing units more affordable. Nonprofit affordable housing developers in San Francisco estimate that the City’s parking requirements added 20 percent to the cost of each unit and reduced the number of buildable units on site by 20 percent.¹⁷ Putting a cap on parking supply and using parking maximum requirements instead of minimums are critical to keep Boston affordable.

In addition, parking space can be shared among users rather than being reserved for one single rider. Sharing parking spaces can greatly increase the utilization efficiency over existing supply and reduce external costs. Studies indicate that one car sharing vehicle can take as many as thirteen private cars off the road while reducing vehicle miles traveled (VMT) by 27%.

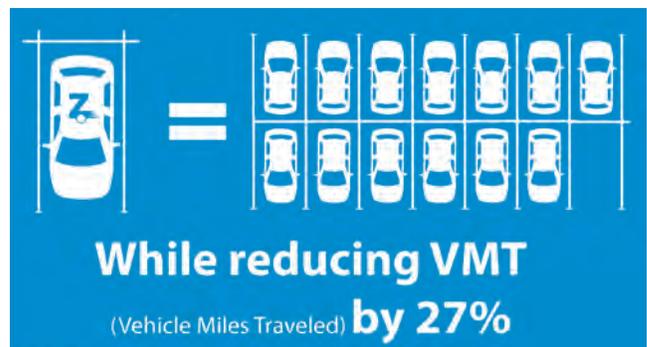
Curbside space in an urban area is the most valuable space given its proximity to business. At the curb, drivers need to park, buses and taxis need to drop off and pick up passengers, trucks and commercial vehicles need to load and unload freight; all have potential conflicts with pedestrians, bicyclists over the limited curbside resources. A better use of curbside space has great commercial value to nearby properties. In Portland, OR, by reallocating one or more on-street auto parking spaces in dense commercial areas, room was created to provide on-street bike corrals, each capable of accommodating 12 to 24 bicycles. A preliminary survey to adjacent business owners shows there is a 52% increase of the business visibility from the street and a 67% increase for foot and bike traffic, all of which contributes to an increase in business activity.¹⁸ By transforming an underused parking area in Brooklyn, NY into a space for public events, there has been a 172% increase in retail sales at locally-cased businesses.¹⁹ Creating a seating area out of a curb lane can potentially increase the sales at fronting business by 14%.²⁰

FIGURE 8: Parking Is About Economics



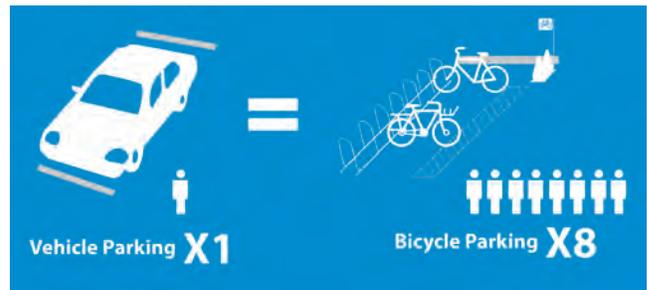
Source: © Nelson\Nygaard

FIGURE 9: One Car Sharing Vehicle Can Take 13 Private Cars Off the Road



Source: © Nelson\Nygaard

FIGURE 10: One Curbside Parking Space Can Be Used for 8–12 Bicycle Parking



Source: © Nelson\Nygaard

As stated above, policy-makers and developers have to count the trade-offs when making decisions of providing or reducing parking. In many situations, converting parking spaces into other uses can be justified if the opportunity costs are much higher, e.g. the converting will result in a shift from driving to alternative modes, reducing parking demand and mitigating congestions in the area. For instance, over 300,000 people commute into Boston each day for work, with 120,000 driving alone and 5,700 by bike. Converting one-mile of on-street parking to bicycle lanes would reduce parking supply by 100 spaces, but the improved bicycle infrastructure would shift an additional 0.1% of automobile commuters (120 commuters) to bicycling. This would yield

a net increase of 20 spaces in parking supply. Similarly, converting parking lanes into peak-hour busways or HOV lanes can also make transit and carpooling more attractive, resulting in overall reduction in auto-mobile trips.

In conclusion, when evaluating parking costs, one should include construction and land costs as well as external and opportunity costs. Only when we value the true costs of parking correctly can we price and manage parking properly.

A NEW FRAMEWORK FOR PARKING POLICY IN BOSTON

To revise Boston’s parking policies, the City must begin by reiterating who and what the system was intended to serve. Today’s complex parking system has become an obstacle to residents, employees and visitors alike, not a convenient way to access homes and businesses. Resident parking permits are intended to control spill-over parking from commercial districts, but in Boston they serve to discourage customers and act as barriers between

neighborhoods. Meter fees act only as a small, incremental levy, while ineffectively providing access to businesses and services. Development policies mostly consider parking demand at a time when driving is declining. A new focus is needed for Boston. To help guide the study and recommendations, a series of initiatives were developed in close coordination with the Advisory Committee, organized by these policies:



PROMOTE ECONOMIC OPPORTUNITY

Access to jobs, services, businesses, goods, etc. is a fundamental function of parking. Spaces in prime retail locations must be available to customers in a user-friendly fashion supported by technology, not enforcement. The parking system should support the vitality of commercial districts, both in terms of business access as well as investment in travel amenities that also promote transit, biking, and walking access. The high cost of building new supply must be realized, spread across more users, and separated from the cost of necessary housing to keep a reasonable amount of driving access affordable to all.

ENHANCE COMMUNITY ACCESS

Parking is designed not for the sake of storing a car but as part of a system through which to gain access to needed destinations. Where destinations are walkable, bikeable, served by transit, etc., parking access should only be for those who need it most—those who cannot use other means or are visiting for only a short time. Where destinations rely on a vehicle, policies should rationally accommodate drivers, with higher regard to those who share rides when capacity is limited.

REDUCE PARKING DEMAND

As stewards of our planet, we must recognize the impact that parking supply has on climate change. Providing parking alone takes land and resources. Too much parking makes driving and emitting greenhouse gas emissions too plentiful, but just limiting parking is not enough. Parking policy needs to direct resources equitably to non-polluting modes of travel while supporting incentives that reduce trip-making.

- Complete innovative and adaptable design standards for parking to govern public and private parking and meet sustainability and climate action goals (stormwater management, green facades, etc.).
- Develop parking guidelines and ratios for scooters and motorcycles, hybrids and electric cars, and car-share services.
- Integrate measures that reduce parking demand and reduce excessive driving and circling for spaces, especially downtown.

RECOMMENDED PARKING INITIATIVES

The following sections highlight a variety of multi-modal parking management strategies organized within several initiatives. Although the City of Boston boasts several strategies and tools that are nationally recognized for being a “gold standard” of off-street parking practice, this report addresses additional national best-practice policies and programs that are suitable candidates for implementation in the City of Boston. The best practices analysis recognizes that each of the policies and programs would need to be adapted to fit the City’s culture, laws and customs.

Initiatives are grouped into three sections to address each of the multimodal parking policies proposed in the previous section.

PROMOTE ECONOMIC OPPORTUNITY

- Support Small Businesses
- Increase Housing Affordability
- Make Paid Parking Easier and Worthwhile
- Provide User-Friendly Mobility Information
- Support Parking Technology Innovation

ENHANCE COMMUNITY ACCESS

- Improve Residential Neighborhoods
- Manage Curb Space More Flexibly
- Prioritize High Occupancy Vehicle Parking
- Update Commercial Loading Access
- Expand Real-Time Parking Availability Displays
- Establish Improved Parking Design Guidance
- Improve Bicycle Parking and Access

REDUCE PARKING DEMAND

- Expand Demand Reduction Programs
- Enhance Tools for Management
- Provide Equitable Transportation Funding
- Offset New Development Impacts



Offset New Development Impacts

- Promulgate transit-oriented maximums
- Eliminate any remaining minimums citywide
- Consider cap on all non-shared parking
- Initiate an impact fee for exceeding maximums
- Facilitation of shared parking lease agreements
- Consider a municipal sharing district



Electric Vehicle Parking/Charging

Strategically locate on-street parking spaces for zero-emission vehicles along with charging infrastructure.



Price Parking to Demand

Pilot a variable on-street pricing system at locations and times of highest demand, in order to match availability goal.



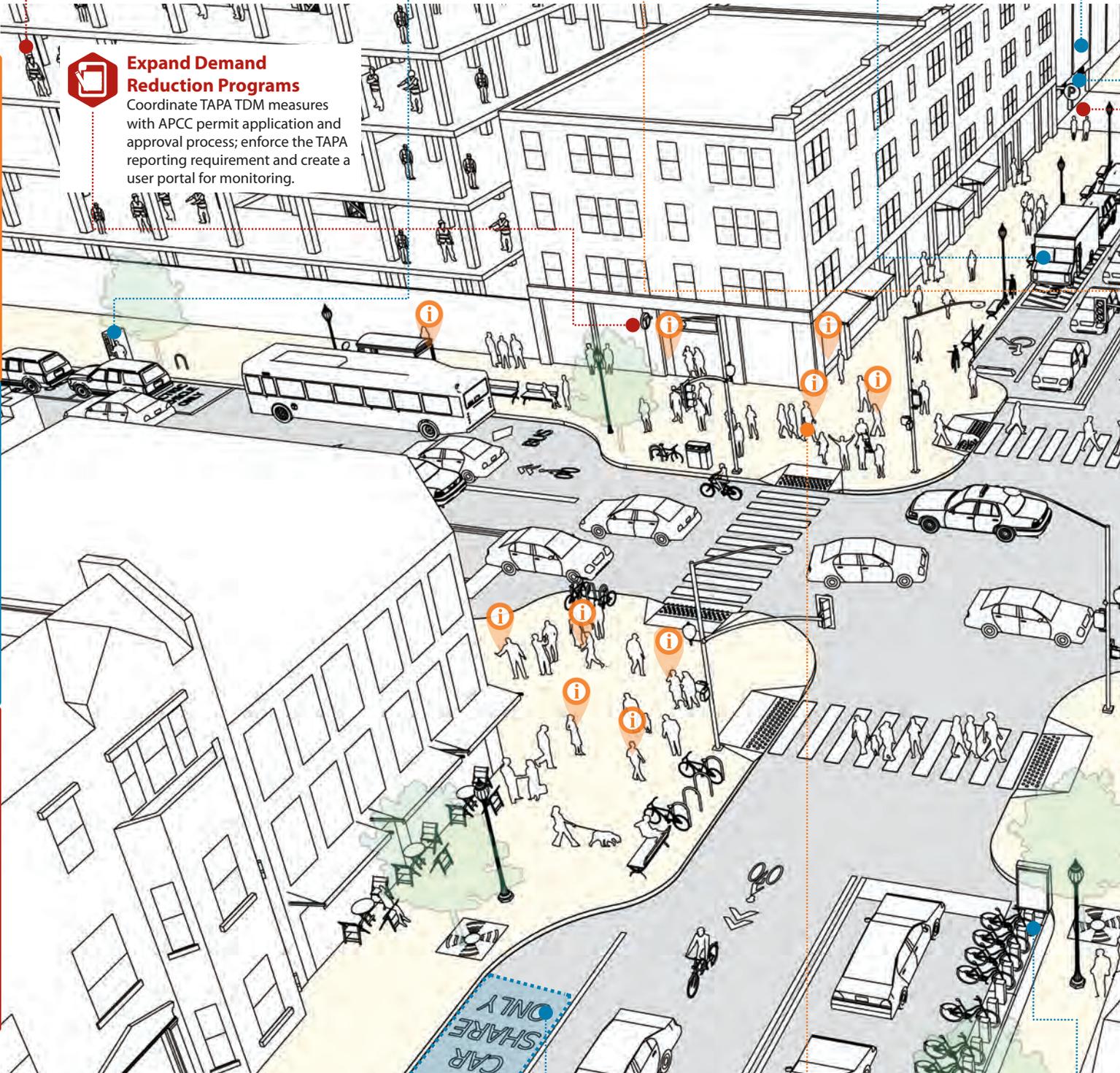
Commercial Loading Access

Update loading zone management strategies that mitigate congestion and improve air quality.



Expand Demand Reduction Programs

Coordinate TAPA TDM measures with APCC permit application and approval process; enforce the TAPA reporting requirement and create a user portal for monitoring.



Support Parking Technology Innovation

Local business and industries addressing parking and transportation technology or reduce carbon emission should be encouraged with appropriate policy support.



Flexible Curb Management

Revise curb ordinances to allow future flexibility to accommodate innovations of technology and automobile industry.



Car Share Network Expansion

Partner with more car share vendors to be highlighted for Special Permit requirements and offer license or bid for dedicated on-street spaces.



User-Friendly Mobility Info

Create web/app platform providing parking location, availability, regulation, price, & other travel options, etc.



Garage Design

Off-street parking facilities should be subject to design requirements that encourage ground floor activities.



Real-Time Parking Availability Display

Expand electronic real-time availability displays in high-demand parking areas and provide a webstream platform.



Reclaim On-Street Spaces

Where utilization data supports it, flex curbside space for valet parking, peak hour bus/bike lanes, parklets, outdoor dining, etc.



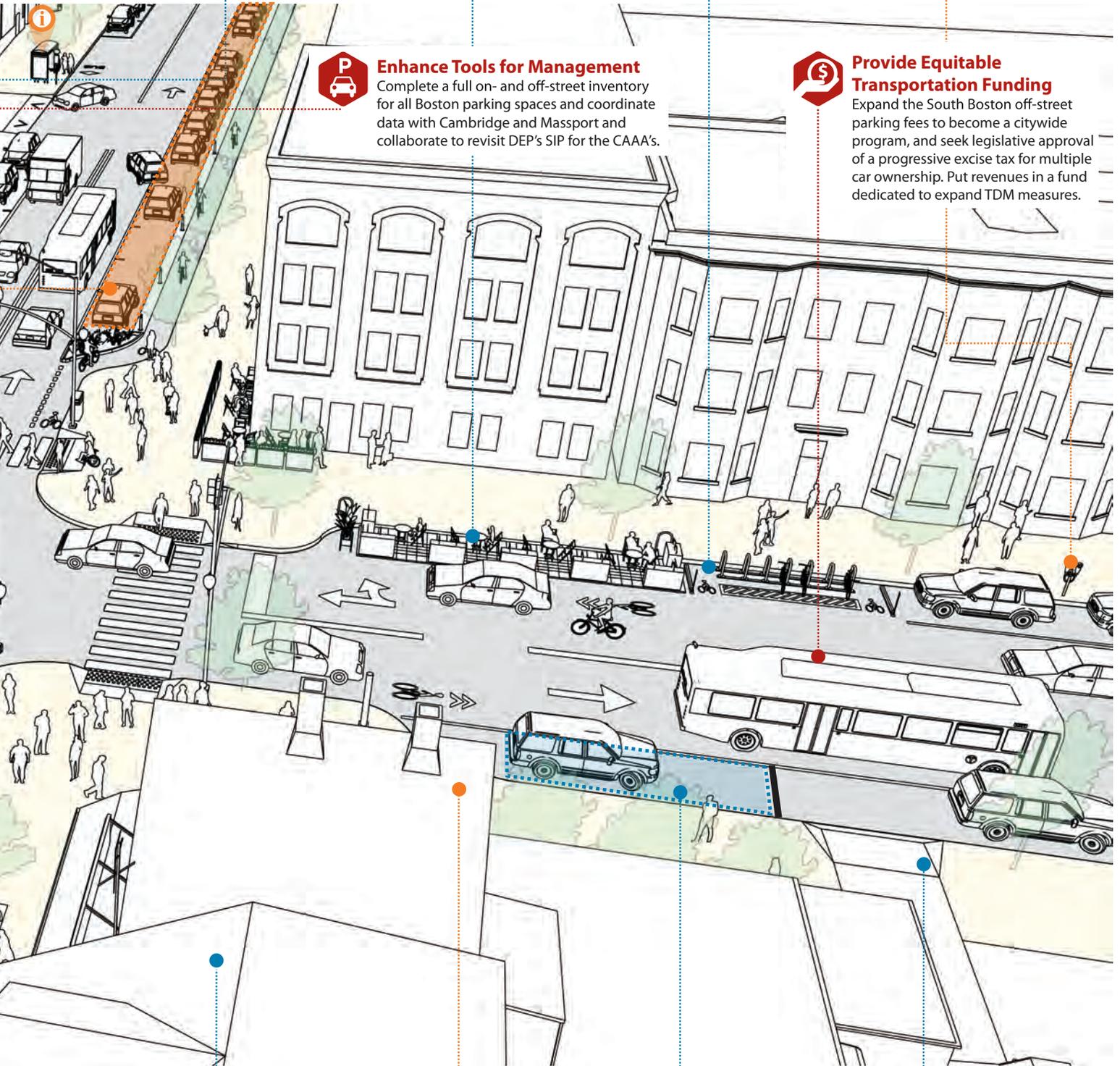
Improve Bicycle Parking/Access

Expand high-quality on-street bicycle parking corrals where bike and auto parking demand is highest.



Parking Revenues to Enhance Districts

Capitalize on the recently enacted law of Parking Benefit Districts (PBD) and the improvements eligible for funding with PBD revenues.



Enhance Tools for Management

Complete a full on- and off-street inventory for all Boston parking spaces and coordinate data with Cambridge and Massport and collaborate to revisit DEP's SIP for the CAAA's.



Provide Equitable Transportation Funding

Expand the South Boston off-street parking fees to become a citywide program, and seek legislative approval of a progressive excise tax for multiple car ownership. Put revenues in a fund dedicated to expand TDM measures.

Bike Share

Continue to expand the Hubway bike sharing system and expand funding partnerships.



Residential Parking Permits

Adopt an escalating RPP fee per household to limit abuse and dedicate revenue to neighborhood improvements.



Increase Housing Affordability

Reveal and unbundle the true cost of parking to building tenants that may help to discourage car ownership.



On-Street Carpool/Vanpool Parking

Carpool/vanpool preferential parking should be provided on-street at key locations.



Design Guidance

Promulgate improved placement standards for curb cuts, crosswalks, and on-street parking and encourage active use of ground floor.



CHAPTER 2

PROMOTE ECONOMIC OPPORTUNITY

小桃園
海鮮菜館
PEACH FARM
SEAFOOD

RESTAURANT

主理海鮮
然手小菜

小桃園 PEACH FARM
SEAFOOD

Judy's
hair & beauty gallery

Occ. with
restaurant
Lobster Special

翠苑
JADE
GARDEN
酒樓

NOT
ER



CHAPTER 2

Parking is closely linked to local economic prosperity. If poorly managed, it can be over-utilized and costly for patrons. If well managed it can create needed availability, provide revenues for district enhancements, and support the success of both a particular main street as well as an entire neighborhood.

Parking is essential to business, with every metered space serving the customers that are essential to business vitality. However, when spaces are not available and do not turn over, businesses suffer. Smarter curb management can help Boston's merchants and employers.

Building more parking supply is not always the best answer. At over \$20,000 per space, the cost of parking construction works in opposition to reducing the cost of doing business and providing housing. However, better regulations and management

practices can make parking work more efficiently, reducing business expenses while improving housing affordability. A well thought-out parking strategy can support multiple economic development initiatives.

Focusing on parking availability, before the amount of parking supply, is the key to local economic success. Recommended initiatives that promote economic opportunity are to:

- Support Small Businesses
- Increase Housing Affordability
- Make Paid Parking Easier and Worthwhile
- Provide User-Friendly Mobility Information
- Support Parking Technology Innovation



SUPPORT SMALL BUSINESSES

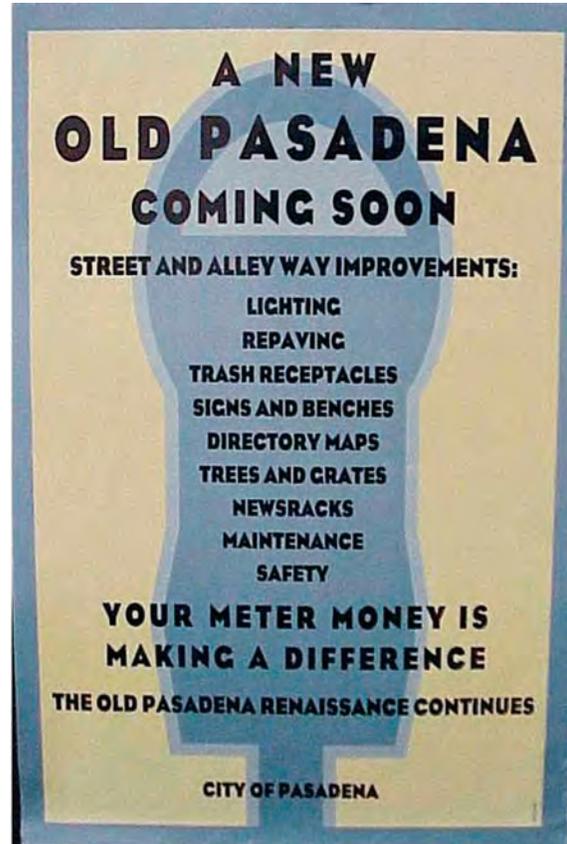
While increasing the cost of parking in response to demand will improve parking availability and convenience, merchants and other commercial district stakeholders may fear that increasing prices will drive customers and visitors away. Although increased customer access will mitigate this fear, it will be important to demonstrate the value of market rate public parking by sharing a percentage of meter proceeds with Boston's Main Streets Districts programs.

While increasing the cost of parking will improve parking availability and convenience, some Downtown stakeholders may be concerned that increasing prices will drive customers and visitors away. An important way to mitigate such fears is to enhance Downtown as a convenient and attractive destination.

A Parking Benefit District (PBD) uses parking revenue generated by meters to fund transportation improvements within the district. PBDs are traditionally established in central commercial areas with a high demand for parking and may include a Business Improvement District (BID). Business owners in the district collectively decide specific ways to reinvest parking meter revenue in the district. This revenue can be used to fund projects that encourage visitors to use transit and non-motorized alternatives over driving.

A number of different organizational structures could be used to establish a policy of dedicating net downtown parking revenues to fund public improvements and services that benefit Downtown. The approach which we recommend is to establish as City policy that net parking revenues from Downtown should fund public improvements and services that benefit the blocks or zones where the revenue is collected.

To attain broad-based support of stakeholders, it will be critical to communicate the benefits of price-based parking: to make parking more convenient; to reduce frustration and vehicle-miles spent on "circling"; and to find revenues to enhance Downtown as a destination. In addition, Downtown's increment of parking revenues could play a critical role financing public transit. Broad-based acceptance cannot be assumed but can be gained by engaging stakeholders and disseminating critical information. Public opposition to price increases occurs when the benefits of improved convenience may be overlooked and the effects of price on behavior exaggerated.



In Pasadena, California, meter revenues are dedicated to pay for neighborhood improvements that make the parking and visiting experience better and more enjoyable.

While targeted expenditure of parking revenues will likely be critical to gain community support, policy makers should also consider the extent to which new parking revenues should meet other fiscal demands. Recommendations on parking rates and revenues should be accompanied by analysis that provides a broader context for allocating the net increase in parking revenues.

ISSUES

Until recently, the Massachusetts law limited the use of parking meter revenue. Since the enactment of the Municipal Modernization bill in July 2016, the definition of how revenues can be used has been expanded.

OPPORTUNITIES

The City of Boston's Main Streets Districts programs are a vehicle for establishing Parking Benefit Districts. City policy should require that net parking revenues fund public improvements and services that benefit the blocks or neighborhoods where the revenue is collected.

BEST PRACTICES

PARKING REVENUE SHARING ORDINANCE

San Diego, CA

For over 20 years, the City of San Diego has offered any main street district that approved the installation of parking meters to split the revenues with the City 45/55. Proceeds may be used by the local district for parking improvements that could include landscaping and lighting as well as traditional tools like new shared parking lots.

PARKING BENEFIT COORDINATION DISTRICT

Boulder, CO

Faced with both a shortage of customer parking and voter aversion to additional traffic, the City of Boulder, Colorado, developed a Parking Benefit District (PBD) called the Central Area General Improvement District (CAGID). Downtown parking revenue is returned to CAGID for area improvements. Among other things, the revenue is used to fund Boulder's transportation demand management programs, including a free universal transit pass for all downtown employees ("Eco-Pass"), a Guaranteed Ride Home program, ride-matching services, bicycle parking and a number of other benefits.

PARKING BENEFIT DISTRICT

Austin, TX

The City of Austin's first Parking Benefit District was established along San Antonio St, between MLK and West 26th Street, in January 2006. This street is located in an area generally known as "West Campus." Council recently approved a zoning overlay in the area called the University Neighborhood Overlay (UNO) that aims to increase residential density. The revenue from the parking meters in the Parking Benefit District will go towards constructing streetscape improvements, such as sidewalks, curb ramps and street trees, to improve the pedestrian environment as the residential density of West Campus increases.

RECOMMENDED STRATEGIES

- To attain broad-based support of stakeholders, it will be critical to communicate the benefits of price-based parking: to make parking more convenient; to reduce frustration and vehicle-miles spent on "circling"; and to find revenues to enhance neighborhood environment.
- Pilot a Parking Benefit District where new on-street pricing is needed or new smart meters are installed. With administrative costs extracted, dedicate a portion of net revenues to the local Main Streets Districts program or other BTM/BED parking demand reduction initiatives.
- Capitalize on the 2016's Municipal Modernization law that expands the potential use of parking meters revenue for public realm and transportation improvements.
- Create special planning areas around the Orange and Red Lines (JP & South Boston, eg) to encourage Transit-Oriented Development supported by mass transit.

INCREASE HOUSING AFFORDABILITY

Many residential and commercial leases in buildings that include off-street parking often assume that the lessee will want parking spaces, and will therefore include the cost of those spaces in the total cost of the lease. Unbundling parking by requiring that parking be purchased or leased separately reduces housing costs for households that own fewer cars, and reveals the cost of owning and storing a car to potential residential property owners. It also encourages shared parking since property owners can lease surplus parking spaces to other building residents. This single measure may be the most effective means for encouraging developers to "right-size" their accessory parking plans—once minimum requirements have been eliminated or reduced sufficiently to allow them to do so. If they have to individually sell or lease every space they build, they are unlikely to build many spaces for which they will have to cover the costs.

Some communities use zoning to require that parking be sold or leased independently from housing units or office space. Other communities require that parking be a separate line-item in lease contracts, even if spaces are automatically included.

Once renters become aware of what they pay for parking they may decide to negotiate changes, perhaps renting fewer spaces or trading parking spaces with other residents.

ISSUES

Greater Boston is less affordable than ever, particularly when compared to the other regions against which we compete for residents and workers. Part of the challenge stems from the high cost of housing which frequently includes the cost of parking.

OPPORTUNITIES

To help address the high cost of living, the cost of parking can be unbundled from housing effectively removing a hurdle for residents and workers wishing to invest in the Boston housing market. The City of Boston has and continues to encourage the development of mixed-use developments with unbundled parking options for building tenants. Housing and commercial developments, such as the Dudley Village in Dorchester were unbundled to reduce automobile usage and boost transportation alternatives in Boston's most dense neighborhoods.

RECOMMENDED STRATEGIES

- Create clear legal guidance and language for homeowners' associations and developers to include in new and modified leases and deeds that unbundles parking, for example:

Any parking spaces offered to tenants of a new development must be offered as a fee-based option distinct from charges established for renting, leasing, or purchasing primary-use space within the development; fees shall be recurrent—monthly or annual—with the ownership of such parking spaces remaining with the landlord or the building's tenant/owner association.

- Unbundled parking fees should reflect market realities. The Boston Transportation Department should maintain an annually-updated estimate of average monthly fees for commercial parking. A monthly amount roughly equivalent to 50% of this average should be established as the minimum tenant-charge for parking.
- Include unbundled parking requirements in the zoning code and the City's housing plan, especially for affordable housing developments.

BEST PRACTICES

UNBUNDLED PARKING FROM HOUSING COSTS

San Francisco, CA

In two major amendments to the Planning Code, the City requires to unbundle the cost of parking from the cost of housing for both renters and homebuyers in most areas of the city. The city also has very low maximum parking restrictions in its downtown. To exceed them, parking costs must be unbundled.

Many San Francisco condominium buildings, particularly recent conversions of historic office buildings to residential space, have less than one parking space per apartment (or no on-site parking at all). In these cases, the typical arrangement is that only some of the apartments come with the right to lease an on-site parking space established in the title deed. If any purchasers decline to lease the space that they are entitled to, the condominium association then leases the excess space on a month-to-month basis to residents of other units, or to an outside party.

UNBUNDLED PARKING FROM COMMERCIAL LEASES

Bellevue, WA

Bellevue, a city of nearly 120,000 located 10-miles from downtown Seattle, requires downtown office buildings of more than 50,000 square feet to identify the cost of parking as a separate line item in all leases. This also requires that the minimum monthly rate per space is not less than twice the price of a bus pass. "Unbundling" parking costs separates the rent for office and parking. It does not increase the total rent that is collected since the cost of occupying the office floor space is decreased when the cost for parking is separated. This innovative policy makes it easy for employers to "cash-out" parking for employees (that is, to offer employees the value of their parking space as a cash subsidy if they do not drive to work), since employers can save money by leasing fewer spaces when fewer employees drive. It also makes it easier for shared parking arrangements to occur, since building owners can more easily lease surplus parking spaces to other users. Combined with its Commute Trip Reduction (CTR) program of incentives, unbundling of parking has influenced a drop in the drive alone commute rate from 81% in 1990 to 57% in 2000.



- Consider taxing parking that is bundled into lease agreements. Consider taxing existing unbundled parking.
- Consider taxing existing unbundled parking.

MAKE PAID PARKING EASIER AND WORTHWHILE

Charging market prices for parking is an idea whereby drivers are charged the fair market value for the parking they use. This seems reasonable, since drivers are expected to pay fair market prices for everything else associated with using their car. Why should parking be any different? Demand responsive parking pricing and technology is the single most effective strategy for harnessing the power of the market and the laws of supply and demand to maximize the value of a City's parking assets. Low meter rates have unintended consequences, such as encouraging some people to feed meters (decreasing turnover) while encouraging others to drive around searching for low-priced parking spaces even when they are all occupied, thereby exacerbating congestion. Demand-responsive pricing

alters the cost of parking according to the level of demand using market principles: drivers pay more in areas and at times of higher demand and less in areas and at times of lower demand. This demand-responsive approach encourages drivers to park in underused areas and garages and reduces demand in congested areas and during peak times.

ISSUES

On-street parking meter pricing, where it exists, is flat at \$1.25/hour, regardless of demand, throughout the entire City, while in downtown where demand is so high, garage operators can charge over \$14/hr. Curbside parking is extremely rare and valuable in Boston; however, existing curbside parking is not treated as such and priced much lower than peer cities around the nation.

OPPORTUNITIES

Several major American cities have learned that demand-responsive parking pricing and technology is the single most effective strategy for harnessing the power of the market and the laws of supply and demand to maximize the value of a City's parking assets. Drivers should be charged a fair market value for the parking they use.

Boston has recently initiated a program to update all of its old meters with the latest “smart” meters and expand pricing in busy commercial districts. In 2015, ParkBoston was launched to allow people to pay for metered parking by smart phone. The successful program will be offered citywide in 2016 and become the platform for adjusting prices more fairly in response to demand.

BEST PRACTICES

VARIABLE RATE PARKING PRICING

New York City, NY

The Park Smart program by NYCDOT seeks to increase the availability of curbside spaces and improve traffic flow by encouraging motorists to park no longer than necessary. NYCDOT requires community board approval to initiate the program, which sets a higher meter rate when demand for parking is greatest. In October 2008, the NYCDOT introduced a pilot of Park Smart at 281 metered on-street parking spots in the Greenwich Village neighborhood of Manhattan. During the six-month trial period, DOT raised meter’s rates from \$1 to \$2 per hour during the peak 12 p.m. to 4 p.m. , while meter rates remained at \$1 per hour at other times.

PERFORMANCE-BASED PRICING

San Francisco, CA

An evaluation by San Francisco’s Municipal Transportation Agency found that SFPark, the City’s smart meter program, decreased by 16 percent the amount of time when no on-street parking spots are available and dropped by 5 minutes (or 43 percent) the average time spent searching for a space. Meanwhile, while high-demand areas like Fisherman’s Wharf may cost over \$6 per hour, the average meter rates citywide dropped 11 cents per hour. SFPark is generally considered to be the most effective performance-based pricing program in North America. In addition to varying parking rates according to demand, it provides drivers real-time occupancy information. Information is distributed to the public through a user-friendly web-based interface.

RECOMMENDED STRATEGIES

- Require the BTD to price commercial streets at all times in a manner that achieves a parking availability goal (i.e. 10-15% available per block face), allowing customers to get desired front-door access to businesses. Prices may be much higher in desirable districts and lower than today’s rates in others.
- Monitor parking utilization to determine the correct price, which can be free at many times of day.
- Eliminate time limits to reduce hassle and reliance on ticket revenues, making Boston parking more friendly and self-enforcing.
- Redirect some percentage of the new revenue, gained in the places where demand-based pricing is implemented, back to those locations for local improvements.

PROVIDE USER-FRIENDLY MOBILITY INFORMATION

Equipped with Streetline’s industry-leading sensing technology, the City of Boston is currently using real-time and historical parking utilization data to adjust policy in order to promote parking availability, and improve overall mobility. This information should also be made available to the user. Using technologies to alert drivers towards open spaces and informing them of relevant information can greatly increase the efficiency and turnover of parking spots. The data interface can be web-based platform on apps, or integrated into GPS navigation system. Various information, such as parking location, availability, regulation, price, as well as information of other travel options, such as public transit, bike sharing, and car sharing can be combined using technologies of parking sensors, information monitors, video cameras, satellite radio, and web application via mobile phone or internet.

ISSUES

User-end comprehensive mobility information is still led by private sector’s efforts and is largely segmented by different travel mode. A more integrated, centralized information platform will provide better and more comprehensive information to both the City and its parking customers.

BEST PRACTICES

PARKER APP

Boston, MA

Delivered in partnership with Streetline, Parker is a mobile app that helps find on-street parking in the Innovation District in Boston. Key features include: real-time parking guidance; access rate, hour, address and more for real-time and static locations; voice guidance (audible queue when parking is nearby); pay for parking (where available); filter by preference; EV charging stations, ADA spaces, payment types accepted; set a timer to alert when your meter time is about to expire; and directions back to your car.

SFPARK APP

San Francisco, CA

In summer 2010, the city launched the SFPark pilot program. Wireless sensors are being placed on the curb next to 8,300 parking spaces, which inform the public of open parking spaces in real-time via street signs or the internet. The sensors will also be used to adjust parking rates to meet demand and encourage turnover of parking spaces. Drivers will be able to pay by cell phone as well.

E-PARK

Seattle, WA

E-Park, a parking guidance system, provides real-time, short-term parking information. E-Park signs let people know how many spaces are available in six garages throughout the Downtown Retail Core and Pike Place Market while guiding people to them. E-Park is also making people more aware of existing, available off-street parking.

SPOTSWITCH & ROADIFY

New York, NY

Spotswitch and Roadify are mobile phone-based programs that inform users of available on-street parking spaces using social networking websites and smart phone applications.

OPPORTUNITIES

The City of Boston has been a pioneer in using data to support policymaking. Technology currently exists to consolidate transportation information and provide a more comprehensive, end user platform to share real-time parking and mobility information on location, availability, and pricing.

RECOMMENDED STRATEGIES

- Expand the Streetline Parker or a similar system to a broader area in Downtown Boston.
- Create real-time parking information portal available to public through web or app platform.
- Expand parking payment technology onto the mobility information platform.
- Partner with private parking facilities to open up real-time availability data.

SUPPORT PARKING TECHNOLOGY INNOVATION

Envisioning a bold transportation future for Boston, a far reaching parking policy should include incentives to proactively support and nurture local innovative parking and transportation-related industry and business, including design, lighting, and technology. Currently, we are at the beginning of an important new era in personal transportation and have seen the booming technology development, which enabled services and tools that give instant access to new travel services and information while complementing traditional modes like driving alone and taking transit. These services include bike sharing, car sharing, new forms of ride sharing, technology-enabled shared ride services, new private forms of transit, personal ride matching, etc., that are enabled as easy as clicking the mouse or tapping on a smart-phone. It is important for the City of Boston to recognize these rapid changes and keep up with the technology innovations.

ISSUES

The City is home to numerous innovators in parking and technology—much of them serving markets outside Boston. It is critical to remain attractive to local innovations in Information and Communication Technology.



OPPORTUNITIES

The City has a wealth of local technology and innovation. With the right incentives and support from the City, these industries can flourish and support local parking and technology improvements. Boston's Department of Innovation and Technology has been attracting talents and made tremendous progress in enhancing the innovation environment within the City.

RECOMMENDED STRATEGIES

- Open source data should be encouraged through policies so public and private partners can better share data and collaborate.
- Hold app design contests and innovation competitions to encourage local entrepreneurs creatively solve the parking and transportation-related issues.
- Support local parking, transportation and technology industries by public endorsement, zoning incentives, official partnership, etc.
- Develop zoning incentives for green garages, pervious paving, and environmentally-friendly industries and companies.

BEST PRACTICES

PARKBOSTON/TICKETZEN APP

Boston, MA

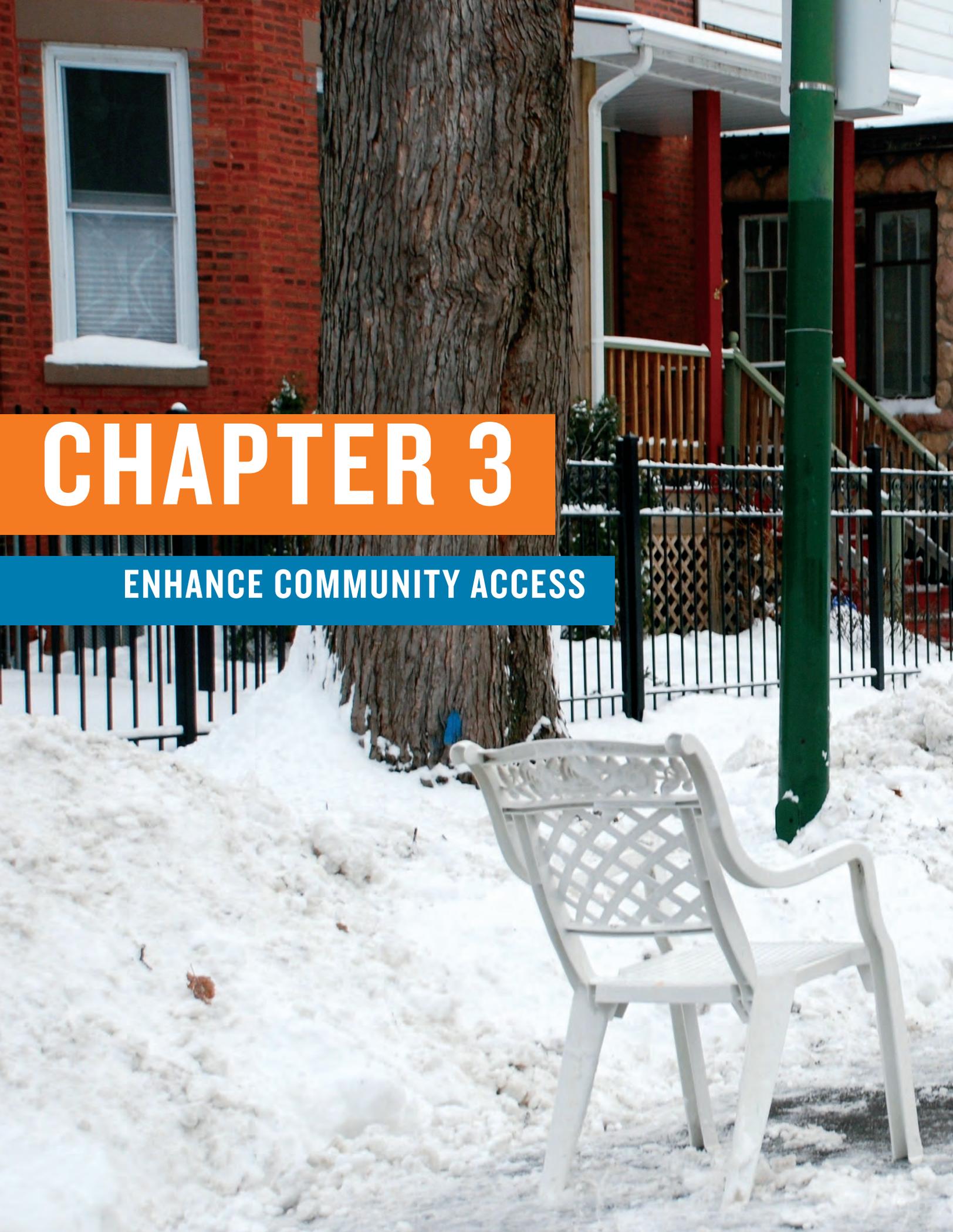
During Mayor Walsh's 2015 annual State of the City address, he announced a city partnership with ParkBoston that allows drivers to feed the meters using a mobile device. Supported by license plate enforcement, users don't have to leave any receipts on the dashboard. The application also sends a 10 minute warning before the meter runs out.

In January 2015, Boston extended its trial program with TicketZen for another year. This app allows drivers to pay their parking tickets by simply scanning a barcode. TicketZen has reduced the likelihood of incurring late fees: data shows that during the trial period, more than one quarter of tickets paid through the app were paid in three days or less.

MBTA COMMUTER RAIL GREEN GARAGE

MA

The new MBTA Beverly commuter rail parking garage project was designed in compliance with Executive Order No. 484, which directs State agencies to prioritize practices and programs that address resources use at State facilities, such as reducing energy consumption derived from fossil fuels and emissions associated with the consumption. The new garage features sustainable and environmentally-friendly elements include: photovoltaic solar panels; electric vehicle charging stations; a "snowmelter" on its roof that will allow for snow to be melted on-site instead of being removed by plows and a lighting system designed to utilize natural daylight; and energy-efficient lighting and energy-saving lighting controls. The garage also includes multi-modal transit features such as an enclosed "Pedal & Park" bike storage area with capacity for 48 bikes and Zipcar[®] services on-site.

A photograph of a winter scene. In the foreground, a white plastic chair with a lattice back is sitting on a snow-covered ground. Behind the chair is a large, textured tree trunk. To the left, a red brick building has a window with a white frame and a small amount of snow on the sill. To the right, a green utility pole stands next to a building with a porch and a black metal fence. The scene is covered in snow, suggesting a winter or early spring setting.

CHAPTER 3

ENHANCE COMMUNITY ACCESS



CHAPTER 3

Enhancing community access is a fundamental goal of good parking policy. Parking should be managed strategically to meet the mobility needs of all Bostonians, making it easier to get to work and back when other travel options are unrealistic, allowing needed front-door access to essential services, permitting residents better access to educational and recreational opportunities, and smartly accommodating transit, biking and walking without displacing the most valuable parking spaces.

A wide range of parking supply options should be provided both on-street and off-street which offer multiple travel choices, including space for car-share services, vanpools and bicycles. Commercial loading zones should be regulated flexibly to mitigate double-parking and eliminate idling pollution.

Technologies should also be adopted to better manage the system and provide needed information about options and parking availability to residents. Initiatives aimed to enhance community access are to:

- Improve Residential Neighborhoods
- Manage Curb Space More Flexibly
- Prioritize High Occupancy Vehicle Parking
- Update Commercial Loading Access
- Expand Real-Time Parking Availability Displays
- Establish Improved Parking Design Guidance
- Improve Bicycle Parking and Access

“PARKING SHOULD BE MANAGED STRATEGICALLY TO MEET THE MOBILITY NEEDS OF ALL BOSTONIANS.”



IMPROVE RESIDENTIAL NEIGHBORHOODS

A Residential Parking Permit (RPP) program operates by exempting permitted vehicles from the governing on-street and off-street parking regulations within a geographic area. The primary goal of a Residential Parking Permit (RPP) program is to manage parking “spillover” into residential neighborhoods. RPPs are effective in neighborhoods that are impacted by high parking demand from neighboring uses. By managing parking spillover, RPPs can ensure that residential neighborhoods are not overwhelmed by commuters, employees, or visitors, thereby enabling local residents to park their vehicles more easily and conveniently. RPPs are especially important in older, historic neighborhoods where many residences were built with limited or no off-street parking.

A conventional RPP is one that allows those without a permit to park for generally two to four hours during a specified time frame, such as 8:00 AM to 6:00 PM, Monday to Friday. Permit holders are exempt from these regulations and able to essentially store their vehicle on-street. Ownership of a permit, however, does not guarantee the availability of a parking space and for this reason it is important not to grant too many permits far in excess of available curb spaces.

ISSUES

The current RPP program in Boston offers residents a free parking permit for every car they own, with no restrictions on the number allocated to each household. Even though the number of registered cars in Boston has been declining over the past decade as people drive less, the number of parking permits has been steadily growing—likely because the City provides free parking.

As of January, 2015, there were almost 94,000 residential permits in Boston. A neighborhood group estimated that there are 4,000 permits for only 1,500 spots in the North End, creating a huge parking scarcity. This is not uncommon—many of Boston’s neighborhoods contain households that sometimes have more than five parking permits per household resident. There are more cars than on-street spaces in many neighborhoods making the hunt for parking a challenging burden on residents.



RPP Sign in Mill Valley, CA.

BEST PRACTICES

RESIDENTIAL PARKING PERMIT

Cambridge, MA

The Resident Parking Permits allow Cambridge residents to park their vehicles in locations throughout the City posted “Permit Parking Only.” The purpose of the City’s Resident Parking regulation is to maximize the availability of parking for Cambridge residents while discouraging long-term parking on residential streets near commercially zoned areas or transportation access points. All permits expire each year on January 31 and must be renewed.

- \$25.00 for the initial resident permit which includes one visitor parking permit per household.
- \$25.00 per vehicle for any additional resident parking permits in the household.
- Fee waived for senior citizens (65 years old +).

OPPORTUNITIES

The fight for parking was especially contentious after the winter of 2014-2015, when snow banks cut available supply nearly in half, and residents used everything from trash cans to dining chairs to reserve spaces in front of their house. The residential parking shortages in Boston's neighborhoods have never gained more attention. This represents an opportunity to improve the program and incentivize a reduction of the number of permits per household to help control demand.

RECOMMENDED STRATEGIES

- Distribute educational and information packages to gain public support and stakeholder buy-in for RPP update.
- Adopt an escalating RPP fee per household to limit abuse, such as \$25 for the first permit, \$50 for the second, and \$75 the third.
- Extend “hybrid” RPP areas to commercial districts during times of lower demand.
- In some neighborhood commercial zones, give permit holders flexibility to stay longer and pay less.
- Allow non-permit holders to park in some RPP zones when and where resident demand is low, such as when residents are off to work.
- Make RPP signage simple, streamlined and easy for all motorists to follow the rules, including enforcement hours and days excepted, length of stay allowed, non-resident visitors payment information, etc.
- Add meters in some mixed-use neighborhoods, with permit holders exempt from paying.
- Dedicate permit fees and fines to cover program administration cost and fund increased enforcement, with surplus revenue used for neighborhood improvements such as snow removal or sidewalk repair. Alternately fund rewards for car-free households, such as discounted Hubway and car-share memberships, monthly T discounts, sneaker rebates, etc.
- Broker shared parking agreements to open up underutilized facilities, e.g. overnight permit holder parking in nearby office garages for residents.

MANAGE CURB SPACE MORE FLEXIBLY

Curbside space is one of the City's most valuable and least productive assets. As Boston sees dramatic growth in biking, walking, and the use of online shared ride services, our curbs remain regulated in the same way they have been for years. The most convenient and accessible on-street spaces—even near major multi-modal hubs—are frequently occupied by cars used by a single occupant. This represents an inefficient use of the City's curbside space and a missed opportunity to accommodate other modes.

ISSUES

The most convenient, visible on-street spaces are frequently occupied by single-occupancy vehicles. This represents an inefficient use of the City's curbside space and a missed opportunity to accommodate other modes.

OPPORTUNITIES

In response to unrelenting demand, the City is launching a citywide on-street car-share initiative called DriveBoston, which will provide greater resident access to car shares. Central to this program is managing curbs more flexibly to allow a single resident space to be used by many residents sharing a single car.

“THE MOST CONVENIENT, VISIBLE ON-STREET SPACES ARE FREQUENTLY OCCUPIED BY SINGLE-OCCUPANCY VEHICLES. THIS REPRESENTS AN INEFFICIENT USE OF THE CITY’S CURBSIDE SPACE.”

BEST PRACTICES

ZERO-EMISSION VEHICLE INCENTIVES

Nationwide

- **New Haven, CT:** Free metered parking for hybrids and EVs
- **Cincinnati, OH:** Free on-street metered parking and at two city-owned parking garages
- **Washington, DC:** Offer their residents with plug-in cars an excise tax exemption and reduced registration
- **Austin, TX:** Provides unlimited charging for under \$5 a month at over 170 public charging stations

CURBSIDE CAR SHARE PARKING

Washington, DC

The District of Columbia's policies, and DDOT's curbside regulations in support of car-share parking, combine to form what is, arguably, the nation's leading practice in this area. For that reason, no other leading practice is summarized here as a model of potential improvement.

CARPOOL LOADING

Seattle, WA

Carpool loading zones are provided in designated curbside spaces throughout Seattle. These zones are assigned to qualified carpool groups, based on the number of passengers, frequency of carpool commuting, and proximity of residence or place of employment. To prioritize morning carpool commuters, carpool spaces are restricted between 7 a.m. and 10 a.m., after which they are available to the general public for use.

PARKLETS

San Francisco, CA

Since San Francisco piloted its first parklet in 2010, the Pavement to Parks program has grown to more than 38 parklets providing outdoor public seating in the parking lane of the street as an amenity to pedestrians at places where sidewalk seating is not available. Also known as "Pop-Up Cafes" in New York, Parklets provide well-designed public open spaces that invite people to stay where narrow sidewalks often prevent traditional sidewalk cafés or permanent public seating. The San Francisco Parklet program seeks applications from business improvement districts, community organizations, property

owners, retail stores, and restaurants to design, construct, and maintain the spaces for one-year leases that can be renewed on an unlimited basis. San Francisco has found that the program works best when specific businesses sponsor and maintain the parklets.

FORMAL CURBSIDE PRIORITIES

Seattle, WA

To address demands on the limited amount of available curb space, the City of Seattle began prioritizing curb uses as part of their comprehensive planning process in the 1990s. This approach to curb management provides a strategic tool to balance diverse and competing demands, to assist in moving people and goods more efficiently, to support the vitality of business districts and to create livable neighborhoods. In general, the use of curb space for long-term commuter parking is not one of the City's priorities. The priorities for curb space use are:

- Transit use (bus stops and spaces for bus layover)
- Passenger and commercial vehicle loading zones
- Short-term customer parking (time limit signs and paid parking typically for 1- or 2-hours)
- Parking for local residents and for shared vehicles
- Vehicular capacity

VALET AND TANDEM PARKING

Gainesville, FL

Gainesville allows required off-street parking to be placed in a tandem configuration when administered as a valet parking service. The area used for tandem parking must be clearly designated on a development plan and the administered parking service must be maintained. If and when the service is discontinued, the regular off-street parking configuration of aisle and spaces shall be reinstated and the minimum parking spaces required shall be provided. When using this option the property owner must demonstrate that private streets, vehicular maneuvering areas, service areas, loading and unloading area, queuing areas and any regular parking space can function efficiently and will not obstruct the efficient flow of traffic, service, utility and vehicles on the site.



Electric vehicle charging/parking at City Hall Plaza, Boston.

The City should seek to build upon this program and expand curbside uses for other functions, including Hubway, carpools, vanpools, electric car charging, bike parking, and more.

RECOMMENDED STRATEGIES

- Strategically locate additional on-street parking spaces for zero-emission vehicles along with charging infrastructure.
- Expand vanpool parking program beyond downtown and include carpools to further encourage ride sharing.
- Explore one-way car share program to further encourage residents to shed vehicles.
- Continue to expand Hubway bike share to all densely populated neighborhoods and build a low stress bicycling network.
- Flex curbside regulations seasonally for bike corrals, bike share, outdoor dining, parklets, or other innovations to improve bicyclist and pedestrian experience.
- Dynamically manage the city's curb, e.g. peak hour bus and/or bike lanes, off-peak parking lanes.
- Expand and improve commercial loading, using the best practices to get trucks to the curb faster where there's least conflict with competing uses.

- Attended parking policy, including valet services and autonomous parking, should be revisited and updated by the City.

PRIORITIZE HIGH OCCUPANCY VEHICLE PARKING

Carpooling and vanpooling should continue to be rewarded to discourage single-occupant driving. "Preferred parking spaces" are designated on-street parking spaces for carpool and vanpool use. They are often located in convenient and highly visible locations near transit and at entrances and exits to major employment centers to encourage ride-sharing and mitigate traffic congestion. Providing dedicated parking facilities for those who choose to carpool or vanpool offers an incentive for those seeking to use an alternative to driving alone. Within Boston, provisions of carpool/vanpool preferred parking spaces can be included in freeze permit applications or the City's Transportation Access Plan Agreements (TAPAs). Some cities designated a number of on-street parking spaces for carpoolers and issue permits to applicants qualifying for an on-street carpool/vanpool parking permit. These parking permits are sold on a discount or exempt from parking meters. Some city ordinances permit a reduction in required parking if property owners provide carpool/vanpool parking spaces.

ISSUES

There is often little incentive that encourages residents, employees, or visitors to carpool or vanpool to their destinations. Businesses may often provide basic incentives such as ride matching services and information for employees and some businesses may have the capabilities of providing a more robust incentive such as gas vouchers drivers. Those who choose to carpool without any incentives should be rewarded to continue their commute habits.

Currently, prime curbside spaces, such as those near to employment centers and transit hubs that are designated for single occupancy vehicle parking do not represent the “highest and best use” of a finite public resource. The same applies to off-street private parking that contains only single-occupancy-vehicle (SOV) parking. In areas with limited parking, carpool and vanpool commuters are competing with vehicles that carry half the number of passengers, and should be therefore compensated for their efforts.

OPPORTUNITIES

Boston has already implemented seven reserved vanpool boarding zones throughout the city, each with five or ten minute limit for loading/unloading during certain period of the day. These zones are strategically located outside Boston’s popular work destinations to help vanpoolers travel quickly and conveniently during peak hours.

BEST PRACTICES

ON-STREET CARPOOL SPACE

Portland, OR

Portland Transportation administers the carpool parking permit program in order to improve access to the Central City and reduce the number of single-occupant vehicles throughout the metropolitan area. Permits are sold monthly for a reduced price of \$115 per month. Carpooling commuters can park in 500 spaces without time restrictions throughout the day if displaying carpool hang tags.

RECOMMENDED STRATEGIES

- Expand the current vanpool program and add on-street carpool spaces.
- On-street carpool/vanpool preferred parking should be installed in visible locations near major employment centers, commercial and institutional buildings, and mobility hubs.
- A percentage or all of the carpool/vanpool parking users should be randomly monitored each month to determine authenticity and ensure compliance.
- Information and directional maps should be available for carpoolers/vanpoolers to easily find a space at priority locations.
- Working with public and private partners, to establish more comprehensive incentive package to further encourage carpooling, such as reduced permit rates, etc.
- Couple carpool and vanpool parking incentives with other TDM programs such as Guaranteed Ride Home, Parking Cash Out, etc.
- Advertising the program to promote carpool/vanpool activities.

UPDATE COMMERCIAL LOADING ACCESS

The value of curbside loading zones compared to other curbside uses should be reassessed. Commercial vehicle parking and loading zone management strategies should be adopted to improve safety and air quality and mitigate congestion. Off-street freight deliveries should be encouraged. The city should ensure that planned developments include physical accommodations for off-street freight loading activity and seek to maximize the usage of existing off-street infrastructure, such as alleyways and loading docks as an alternative to curbside loading zones. The City should also encourage private property owners and managers to lease or share the excess off-street loading capacity to adjacent business to increase the land use efficiency. The City should recognize the congestion and air pollution potentially caused by commercial loading zones, such as double parking of freight trucks, the occupancy of commercial loading zones by non-commercial vehicles, the undue parking of commercial loading zones by trucks that are not in the

BEST PRACTICES

METERED COMMERCIAL VEHICLE PARKING

New York City, NY

In 2000, NYCDOT initiated the NYC Commercial Congestion Parking Program. This pilot replaced unpaid commercial parking with hourly metered rates for all commercial loading zones and used an escalating pricing scale—\$2 for the first hour, \$3 for the second, and \$4 for the third hour—to encourage operators to turnover spaces as soon as their loading activity was complete. By 2009, the program had steadily expanded to include about 8,000 curbside parking spaces. Muni-meters used for this pricing strategy accept coins, credit cards, and pre-paid parking cards. Since implementation, NYCDOT has found that curb occupancy has dropped from 140% (reflecting rampant illegal parking) to 95%. The typical time of occupancy has fallen from 160 minutes to 45.

LIMITED LOADING ZONE LENGTH

Long Beach, CA

Loading zones in City of Long Beach not only has time of day restrictions between 7:00 a.m. to 6:00 p.m., but also limits the length of loading zones not exceeding thirty five feet.

process of loading or unloading, the extended waiting and idling of trucks that are unable to access the zone due to reasons listed above, and the blocking of traffic lane by trucks that are improperly parked in the commercial loading zone.

ISSUES

Commercial loading zones frequently occupy prime curbside space, and depending on time of day restrictions, loading activities may create conflicts with traffic flows and pedestrians presenting an obstacle to safety, and causing congestion and air quality impacts.

OPPORTUNITIES

Underutilized loading zones and curbside space excessively occupied by commercial vehicles represents an opportunity to recapture space for multi-modal uses and gain revenues from commercial vehicle operators.

RECOMMENDED STRATEGIES

- Conduct thorough and comprehensive studies on current time-of-day restrictions, occupancy rate and utilization of the commercial parking/loading zones and strategically relocate or regulate these spaces.
- Pilot metered commercial vehicle parking on-street at key locations in downtown Boston, and consider an adaptive pricing mechanism for loading zones.
- Identify underutilized loading zones and convert to metered parking spaces or shared metered spaces for freight and passenger at different times of the day.
- Adopt more effective enforcement methods to enhance commercial vehicle parking compliance to avoid double parking and violated parking.
- Based on utilization studies, sign and enforce off-peak loading times.
- Promote or require use of off-street loading areas during peak hours.
- Encourage share and lease underutilized off-street loading facilities and incentivize businesses to coordinate on the use of the curbside space.
- Incentivize businesses to use environment-friendly vehicles for freight delivery, such as lower meter/permit fee or prioritized loading zone for low-emission commercial vehicles.

EXPAND REAL-TIME PARKING AVAILABILITY DISPLAYS

Real-time space availability displays are digital wayfinding signs that direct drivers to available capacity at nearby parking facilities. Using data from sensors in the facility entries and exits, these signs allow drivers to proceed directly to locations where parking is available; this reduces the amount of time and wasted energy spent “circling” for a space and resulting congestion and air pollution. In 2013, the City installed Smart Parking sensors in parking spaces in the Innovation District. A free mobile app works in tandem with the sensors to show drivers where spaces are available.

ISSUES

Citywide real-time parking occupancy data is currently not available. Private facilities’ data is difficult to acquire and there is a limited number of parking facilities equipped with real-time parking availability displays. Drivers looking for available parking spaces are therefore cruising the same streets and blocks for available parking, when parking could be available on the next block over. Currently there is a lack of information for drivers.

OPPORTUNITIES

There is an opportunity to replicate the Innovation District’s real-time parking pilot in other parts of the city. Providing improved parking information can assist in utilizing parking resources more effectively. Coupled with improvements to the pedestrian environment and demand based pricing, this would help to provide a wider range of parking options for those who are willing to park further or pay more to park closer.

RECOMMENDED STRATEGIES

- Educate private operators on the benefits of installing equipment and sharing utilization information.
- On-street parking sensors should continue to be installed and off-street gate arm counters should be required in all new development.
- Work with private operators to get real-time feeds advertising their availability.
- Identify larger locations as pilot sites, such as Common Garage, Government Center, etc.

BEST PRACTICES

REAL-TIME SPACE AVAILABILITY DISPLAYS

Rockville, MD

To help downtown patrons find a parking space, the City of Rockville has instituted an enhanced parking availability information system for the three city-owned parking garages. All three City facilities provide real-time space availability displays to indicate the number available spaces. Once inside the parking garage, drivers are directed to vacant spaces by following digital green arrows signs at end of lanes indication where available parking is located. To further streamline the search for parking, each individual parking stall has a ceiling-mounted light, red or green, indicating availability at a glance.

PARK-AND-RIDE AVAILABILITY DISPLAYS

Chicago, IL

Chicago constructed eight signs along a suburban highway to help promote park-and-ride usage at commuter rail stations. The city developed park-and-rides to encourage drivers to park at local stations and commute by rail instead of driving to a final destination. A field processor sends information obtained by exit/entry sensors to message signs, which are located on freeways and nearby arterials.

- Provide data on live web streams and apps to promote awareness of options to reduce drivers’ street cruising and incentivize remote parking or alternate modes.
- Embrace crowd-sourcing (aka Haystack) appropriately to avoid unregulated market.

Parking is a critical component of great places and livable communities, but placemaking efforts should also include pedestrians, bicyclists, and transit users.

ESTABLISH IMPROVED PARKING DESIGN GUIDANCE

Streets and parking can take up as much as a third of a community's land. Designing streets and parking spaces solely for the convenience of drivers has undermined the livability and vitality of many communities across the nation. Careful attention to the design and location of off-street parking can reduce its negative impact on neighborhood quality and the pedestrian environment. Badly designed curb cuts to off-street parking may pose a safety hazard to pedestrians, and interrupt pedestrian and traffic flows. With few exceptions, parking structures represent an eyesore and without active ground-floor uses, result in blank street walls and a gap in local street life.

Regulating the designs and types of structured and surface lot parking can positively contribute to street and sidewalk activity. Flexible and inclusive elements of street design should be included in the zoning and design guidance language. There are several examples of regulations of design, including requirements for:

- Ground-floor retail or active/transparent storefront commercial uses.
- Screening for parking lots and architectural treatment for structures.
- Tandem/stacked parking to reduce the footprint occupied by parking.
- Building to the front lot line and parking at the rear, away from pedestrian flows.
- Reduced surface parking or above-grade parking.
- Limitations on curb cut widths, location and frequency.
- Restricting percentage of lot frontage dedicated to parking.
- Limiting garage doors to a certain percentage of street-facing façade.
- Landscaping ordinance for appearance and contribution to greening the city.
- Street design for future autonomous vehicles.



Santa Monica parking garage.

ISSUES

Currently, Article 23 of the City of Boston zoning code regulates off-street parking. Subsection 23-9 Design, has limited design provisions requiring that off-street parking facilities “shall be so designed as not to constitute a nuisance or a hazard or unreasonable impediment to traffic.”

OPPORTUNITIES

Provisions of the zoning code regulating parking can be updated to codify best practices including multi-modal parking, better design and providing greater guidance and predictability to developers.

RECOMMENDED STRATEGIES

- Flexible and inclusive elements of street design should be included in the zoning and design guidance language.
- Promote Complete Streets guidance citywide.
- Provide clear design guidance on driveway curb cuts, safe sightlines for motorists entering the roadway, and slopes behind sidewalks.
- Set placement standards for curb cuts, crosswalks, and on-street parking as part of ISD guidance.

- Off-street parking facilities should be subject to design requirements that save energy consumption and encourage ground floor activities such as minimum transparent frontage and ground-floor retail allocation.
- Provide flexibility to accommodate innovation.

IMPROVE BICYCLE PARKING AND ACCESS

In 2010, the City of Boston released the City's first set of off-street bicycle parking guidelines, including recommendations on bicycle rack selection, location, and placement to ensure quality bicycle parking. The policy was intended to encourage bicycling and facilitate adequate and secure bicycle parking for residents, employees, customers, and tourists. Secure bicycle parking and a geographically comprehensive network of bike share stations are a critical part of future development helping to accommodate growth in bicycle demand and supporting growth of the existing bicycle network. Strategically placed bicycle parking and bike share stations help to enlarge the catchment areas of employment centers, major destinations and transit stops and improves travel options for residents and visitors without access to a car. New high-quality on-street bicycle parking corals should be provided where bike and auto parking demand is highest. Additional funding partnerships should be sought out to support the continued expansion of the City's Hubway bike sharing system.

ISSUES

The City has made substantial progress expanding the bicycle network. However, sections of the city continue to lack bicycle lanes and shared-use lanes. Similarly swaths of the city either lack bicycle parking or have an insufficient number of spaces to meet demand.

OPPORTUNITIES

Building on recent successes, including the installation of bike lanes on Commonwealth Avenue and the expansion of Hubway bike share, the City can further expand the bike network, add new bike parking to underserved neighborhoods and enhance existing supply in high demand locations.

RECOMMENDED STRATEGIES

- Develop clear design guidance for bicycle infrastructure.
- Offer private branding in exchange for funding bike station maintenance agreements.
- Strategically expand bike share system to transit stops, underserved neighborhoods and areas of high demand.
- Integrate bicycle infrastructure improvements with Boston multimodal "mobility hubs."
- Partnering with the MBTA to pursue State funding for bike infrastructure improvements that support "Last Mile Project," or "Pedal & Park Facility."
- Explore introduction of "Hubway Lite"—requiring less infrastructure with no station needed.
- Explore introduction of bike valet at large events and destinations.
- Encourage and incentivize developers and property owners to provide bicyclist lockers and shower facilities.



Hubway bike share station, Boston.



Curbside bicycle parking, Somerville.



CHAPTER 4

REDUCE PARKING DEMAND

TOW ZONE
NO STOPPING
BIKE LANE

PROTECTED BIKE LANE

DRIVE **BIKE** **WALK**

visionzeroboston.org/betterbikelanes City of Boston
Mayor Martin J. Walsh



CHAPTER 4

Good parking policy is essential to achieve the transportation components of the City's climate initiatives, including the Boston Climate Action Plan. This is especially true of measures that minimize incentives to drive (such as the parking freeze), support lower levels of private vehicle ownership, and increase curbside spaces dedicated to modes with lower emissions per capita—including ride-sharing, taxi services and bicycling.

By removing hidden developer and employer parking subsidies and using the market to determine pricing, a carefully managed parking supply will also reduce the financial and behavioral incentives for auto travel.

Innovative and adaptable parking design standards can help meet sustainability and climate action goals through the integration of low impact design (LID) measures such as stormwater management, the use of pervious materials and parking lot landscaping.

In the near future, parking policymaking and management should be data-driven based on regular monitoring and reporting.

Recommended initiatives are to:

- Expand Demand Reduction Programs
- Enhance Tools for Management
- Provide Equitable Transportation Funding
- Offset New Development Impacts

EXPAND DEMAND REDUCTION PROGRAMS

There are five Transportation Management Associations (TMAs) within the City of Boston including the A Better City TMA, CommuteWorks in the Longwood Medical and Academic Area (LMA), the Allston-Brighton TMA, Seaport TMA, and TranSComm, the TMA for Boston Medical Center. Each offers an array of Transportation Demand Management (TDM)



BEST PRACTICES

PTDM ORDINANCE

Cambridge, MA

Cambridge has a sophisticated Parking and Travel Demand Management (PTDM) ordinance. Its goals are to “improve mobility and access, reduce congestion and air pollution, and increase safety.” The ordinance requires new and expanding commercial, education, and religious developments with more than five parking spaces to implement a PTDM plan to reduce auto use to 10% below the average for that census tract. Developments with more than 20 spaces must implement a full plan with an annual review of their mode split while a building with less than twenty spaces must apply three trip reduction measures. All structures subject to the annual review must reserve 10% of parking as HOV preferentially located spaces and construct bicycle parking equal to 10% of the parking supply. Developers who fail to meet the targets can be fined; in a worst case scenario their parking facilities can be shut down by the City. Residential developments are not covered under the ordinance. Instead, developers must conduct a traffic study for every residential structure over 50,000 square feet under a process covered by special permit. The ordinance currently covers roughly 30,000 employees and graduate students.

getDOWNTOWN PROGRAM

Ann Arbor, MI

In order to address growing concerns about traffic and congestion problems in downtown Ann Arbor, a number of public and private entities joined together to initiate the getDowntown program to serve as a centralized commuter information clearinghouse providing guidance and assistance to downtown businesses and employees on commuting options, such as biking, riding the bus, walking, and carpooling. The mission of the getDowntown Program is to reduce the number of downtown commuters driving

to work alone and to create more transportation choices for downtown commuters through promoting existing transportation options and advocating for new ones.

The getDowntown Program is funded through a Federal Congestion Mitigation and Air Quality Grant, provided by the Ann Arbor Transportation Authority (AATA). In addition, the Ann Arbor Downtown Development Authority (DDA) provides funding for go!passes and additional staffing. The City of Ann Arbor also contributes funding to the getDowntown Program. By expanding access to downtown through modes other than the single occupancy vehicle, taken together, these program elements reduce the demand for off-street parking in downtown Ann Arbor. These include:

- Personalized trip planning assistance to commuters
- Promotional materials on bicycling, walking, carpooling, and taking transit to work
- Running The Commuter Challenge, an annual month long competition encouraging individuals to use sustainable transportation with 139 competing organizations involving nearly 1,800 individuals in 2008
- Managing 31 Cycle Safe downtown bike lockers
- Information on ridesharing to match people for carpools/vanpools
- Preferential parking for carpools or vanpools of three or more people
- Attracting ZipCar to offer vehicles in Ann Arbor
- go!pass - an unlimited usage bus pass, free of charge, available to all downtown employees
 - First two-years go!pass was funded through a federal Congestion Mitigation and Air Quality Grant
 - go!pass program was continued beyond 2001 with funding by the DDA generated by parking revenues

programs to member organizations ranging from shuttle services to walk/bike incentives.

Transportation Access Plan Agreements (TAPAs) represent an agreement between a development project and the City of Boston and typically require developers to provide TDM measures such as subsidized T-passes and bicycle parking.

While TMA and TAPA programs directly support reductions in driving demand, TMAs cover only parts of the city and TAPAs only govern developments that meet a minimum threshold. TAPAs are also not actively enforced or monitored. In order to effectively manage parking, a complete and accurate record of TAPAs and all citywide parking assets should be developed. This would provide the City with the opportunity to monitor existing supply and better coordinate public and private parking policy and related TDM measures. The threshold for requiring TDM mitigation measures should be revisited to include different types of development and potentially smaller buildings.

ISSUES

Accurate and up-to-date parking data is needed to make effective policy and management decisions. TAPAs include a requirement for annual reporting, but there is no current system ensuring that post-occupancy, developers are either reporting or complying with the terms of the TAPA.

OPPORTUNITIES

The City's Transportation Department has just developed a citywide off-street inventory database which includes permitted public and private off-street parking facilities. The database for the Downtown Parking freeze zone—a boundary administered by the Air Pollution Control Commission (APCC)—is being refined by the Boston Environment Department and databases for the South Boston and East Boston Freeze Zones are underway.

BEST PRACTICES

PARKING REGISTRATION

Sydney, Australia

The Office of State Revenue (OSR) sends a parking license registration to all non-residential property owners within the business area boundary. Owners must register as soon as they become owners of a taxable parking space, thus both existing and new parking developments are subject to the tax. Parking property owners are required to survey and report the number of marked parking spaces as well as unmarked land-use areas for motor vehicle parking on their initial registration, as well as on their annual parking tax return. This registration is only repeated if parking conditions change or property sales take place. Based on this registration record, owners receive annual instructions on how to file online as well as the amount of taxes due. Revenues deposited into the Transport Infrastructure Fund are used to fund city or regional public transportation projects within the Greater Sydney Metropolitan Area. Enforcement of the fee is achieved through monitoring of tax returns, regular site surveying, analyzing parking databases, and charging of interest and penalty fees. Every year, parking property owners must log a return with the number of parking spaces which are tracked by computer models which report variances above set tolerance levels.

RECOMMENDED STRATEGIES

- Coordinate TAPA and TDM measures with the APCC permit application and approval process.
- Consider new TDM measures learning from national and worldwide best practices that use modern technology.
- Enforce the TAPA reporting requirement and create a user portal for long-term monitoring and evaluation.
- Develop an incentive program to ensure participation (e.g. a per-space fee discount with monitoring submission).

- Create incentives for TMA membership, such as discounted parking taxes (if implemented).
- Ensure future records can include special parking examples that may be useful (such as the number of Zipcar spaces).

ENHANCE TOOLS FOR MANAGEMENT

Boston continues to be the national leader in fighting climate change. The downtown parking freeze was put into place in 1976 by a Federal Implementation Plan under the Clean Air Act, and has seen little change since it was first introduced. The City has frozen the number of publicly available off-street spaces to 35,556 in downtown, which includes North End, Financial District, Chinatown, Back Bay, and South End neighborhoods.

Limiting the availability of “commercial” parking was seen as an effective way to control the number of cars traveling into the city. However, the construction of “exempt” employee- or resident-only spaces was unrestricted. The transportation landscape has substantially changed since the 1970’s, and Boston’s Article 80 Transportation Access Plan Agreements (TAPAs) have led the way in introducing more effective methods for managing vehicle miles traveled (VMT), including car share services, T passes, bike parking, and other transportation demand management measures.

OPPORTUNITIES

Boston’s required measures to control demand could be made more robust and enforceable. Many businesses already go beyond the measures of what Article 80 permits require, yet many more are not implementing their agreements because there is no monitoring provision. Since many facilities predate or are exempt from the Parking Freeze, the City does not have a real handle on parking supply.

As part of its recently announced initiative to inventory the entire city’s parking supply, Boston must implement a new system to measure and monitor parking supply, its use, and especially the measures to reduce its need.



RECOMMENDED STRATEGIES

- Provide a **full on-street and off-street inventory** of all Boston parking spaces and regulations, helping residents and visitors identify where to find parking and avoid a ticket.
- Create incentives or mandates for **regular data reporting** by parking operators and make such reports transparent.
- Include **review of “costs” (charges) and availability** of space by uses.
- Make better use of existing parking supply by becoming a resource and facilitator of **shared parking agreements**.
- **Expand City staff capacity** to maintain the inventory, promote shared parking, and monitor private entities' compliance with TAPAs and parking freeze permits, creating an on-going renewal process. Staffing can be funded through a citywide expansion of the nominal parking impact fee already in place in South Boston.
- Coordinate data with Cambridge and Massport and collaborate to revisit **Department of Environmental Protection's FIP and State Implementation Plan for the Clean Air Act**.

- Develop a process to support parking innovation, where new companies can partner with the City in exchange for reporting, data and evaluation.

PROVIDE EQUITABLE TRANSPORTATION FUNDING

The cost of parking is one of the reasons why Boston has a high cost of housing. Road maintenance and construction is heavily subsidized by State and local dollars. Transit receives only a fraction and biking almost none. A policy to reduce driving must have commensurate funding. The City should revisit its social and economic return on transportation investment.

Additionally, the MBTA needs to be brought in as a partner to reprioritize station parking pricing and policies that encourage a greater utilization of its transit system—particularly trips that would otherwise strain Boston's parking supply.

ISSUES

At both the Commonwealth and local levels, transportation finances and investments are a persistent concern. Many policymakers are currently paying

attention to the reforms at the MBTA and the future levels of funding for the Commonwealth's transportation services. Although a transportation funding reform package was passed in 2013, State voters repealed the indexing of the gas tax the following year. As a result, there is an ongoing need for new and innovative revenue sources that are not regressive, if equitable transportation funding is ever going to be possible. The political and social interest in the issue should create momentum for innovation in the future.

OPPORTUNITIES

According to the 2012 Census of Governments, local governments in Massachusetts expended a combined

\$18.3 million on parking facilities but realized a combined \$43.8 million in revenue. Some of these may come in the form of parking fines. There may be an expectation for transparency in where such dollars are invested.

Ensuring funding is equitable across modes is not tantamount to the creation of a zero sum-game. In fact, recognizing the complex transportation system needs support from all angles. For example, all drivers must become a pedestrian after they park their car, warranting walking improvements to enhance parking. Similarly, although the City of Boston doesn't control the trains and buses, they are responsible for the streets and sidewalks, which are also used by transit riders, warranting street

BEST PRACTICES

PARKING TAX

San Francisco, CA

In the 1970s, the City of San Francisco imposed a 15% parking tax on the revenues from all off-street parking spaces in the City, and in 1980, voters approved an additional 10% surcharge for a total parking tax of 25%. Local sales tax does not apply to parking fees.

For the last three fiscal years, the parking tax has generated about \$50 million each year. Muni, San Francisco's transit system, receives 40% of the net parking tax revenue. Parking lot operators are responsible for collecting the parking tax and paying the City. In San Francisco, most off-street parking spaces are rented by a property owner to a professional parking operator. The parking operator collects a fee from the parking patron for the space rental plus the 25% parking tax.

UNIVERSAL TRANSIT PASS

Boulder, CO

Boulder, Colorado is served by a Parking Benefit District called the Central Area General Improvement District (CAGID), which manages parking and subsidizes alternative mode transportation options in order to reduce auto-dependence and support a more walkable downtown. The "Eco-Pass" program provides free unlimited-ride transit passes to more than 8,300 employees of 1,200 different downtown

businesses. The CAGID pays a flat fee to the transit district for each employee enrolled in the program, regardless of whether the employee actually rides transit. In 2009, these programs cost nearly \$755,000. However, they are fully funded through CAGID revenues as the Downtown Management Commission has determined that effective demand management investments are a far cheaper strategy than building new parking alone.

STREETCAR SUPPORTED BY PARKING REVENUE

Portland, OR

Revenue from parking meters installed in the districts served by the streetcar, including the Pearl and South Waterfront Districts, is used to fund about a third of the streetcar's operating cost (\$1.8 million budgeted for 2010). This use of revenue is justified by the streetcar's role in providing central city circulation and in helping open these areas for development, thereby generating parking meter revenue. City policy conditioned an additional \$300,000 in annual operating support to a 9% increase in streetcar ridership within two years of the streetcar's extension to the South Waterfront. The city's Transportation System Plan states that parking meter districts should "encourage the use of alternatives to the use of the automobile, and provide a funding source for transportation projects within the districts."

improvements to aid transit performance. Funding improvements that benefit multiple types of trips can be a widely agreeable priority.

RECOMMENDED STRATEGIES

- Expand the annual \$10 per space fee of off-street parking in South Boston to become a citywide program.
- Seek legislative approval of a progressive excise tax for multiple car ownership and/or higher MPG (miles per gallon) ratings.
- Explore progressive parking fines to change the behavior of habitual violators of the City's residential or commercial parking rules.
- Explore reassessing properties where parking is bundled into lease agreements, rethinking parking and parking policies to lower housing costs while not over burdening residential streets with parking demand.
- As with all taxes and parking fees, ensure there is transparency with regards to where fees go. Put revenues in a fund that can be used to expand demand management measures and enforce the compliance of TAPA.

REDUCE THE IMPACT OF DEVELOPMENT

Almost all new buildings are built with parking, forcing compromises on form, visual appeal and function while contributing to emissions. Parking can be provided more efficiently depending on location and adjacencies and regulated by maximum requirement rather than minimums. The most obvious advantage of eliminating minimum parking requirements compared to reducing or tailoring requirements, is that it provides the opportunity for regulators to avoid the “guessing game” of parking demand projections. The elimination of minimum requirements can reduce development costs and help spur development in areas where land is expensive, or at sites where parking provision is impractical such as irregular-shaped lots or where parking is prohibited by restrictions for historic properties.

Impact fees can be charged for exceeding parking maximums and the revenues invested in traffic mitigation measures, such as transit, walking, biking facilities and TDM programs. These fees can both provide an attractive source of new revenue, and

ensure that developers pay their “fair share” costs of mitigating their transportation impacts. Municipal sharing districts should also be established to encourage parking resource sharing and further reduce the impact of development.

ISSUES

The City's district-based maximum parking ratios serve only as guidelines for use by the Zoning Board of Appeal, rather than a formally adopted regulation in the zoning code.

OPPORTUNITIES

Thirty-seven percent of Boston's land area is within a half-mile of an MBTA rapid transit station. The City could start piloting the maximum requirements within transit overlay districts. Transit-oriented mixed-use settings offer the opportunity to share parking spaces between various uses with different peak demands, thereby reducing the total number of spaces required compared to the same uses in stand-alone developments.

In consultation with cities and towns, including Somerville, Concord, Seattle, and Minneapolis, Massachusetts created a model Transit Oriented Development bylaw. The text explicitly calls for parking maximum requirements.

RECOMMENDED STRATEGIES

- Promulgate a transit-oriented maximum parking requirement in base zoning.
- Eliminate minimum parking requirement citywide.
- Consider cap on all non-shared parking in downtown Boston.
- Initiate an impact fee for those exceeding maximum requirement.
- Facilitate shared parking lease agreements.
- Consider a municipal parking sharing district.
- Develop zoning and developer incentives for green garages, pervious paving, bicycle lockers, and environmentally-friendly industries and companies.
- Collaborate with neighboring municipalities and similar cities to assess the successes and needed improvements after implementing requirements.

BEST PRACTICES

MAXIMUM PARKING REQUIREMENT

San Francisco, CA

San Francisco limits the number of available downtown parking spaces (especially commuter parking spaces) in order to limit the number of cars that will attempt to enter the downtown at rush hour. Setting maximum parking requirements sparks a simple chain of events. Limiting the number of parking spaces causes building owners to charge for commuter parking spaces, in order to balance supply with demand. Commuters respond to parking prices by driving less, and carpooling, riding transit, bicycling and walking more.

RESIDENTIAL PARKING MAXIMUMS

Eugene, OR

Eugene has adopted parking maximum restrictions for residential land uses, which sets a limit on the amount of parking that can be provided for each residential unit, rather than parking minimums, which mandate a certain number of parking spaces be supplied for each residential unit. The use of parking maximums removes the requirement for the property owner to supply a set minimum amount of parking while still allowing a limited supply of parking. In doing away with parking minimum requirements, Eugene removed a significant barrier to residential in-fill development, effectively reducing the cost by not requiring parking. In addition to parking maximums, Eugene's zoning code allows certain reductions in parking requirements if a parking study demonstrates that the proposed amount will be sufficient to meet demand. While at the same time encouraging the use of other modes of transportation and helping to decrease congestion, Eugene has implemented these changes to increase density and reduce the amount of land dedicated to parking, advancing efforts to improve the quality of water and lessen the amount of stormwater runoff.

SHARED PARKING

Middleborough, MA

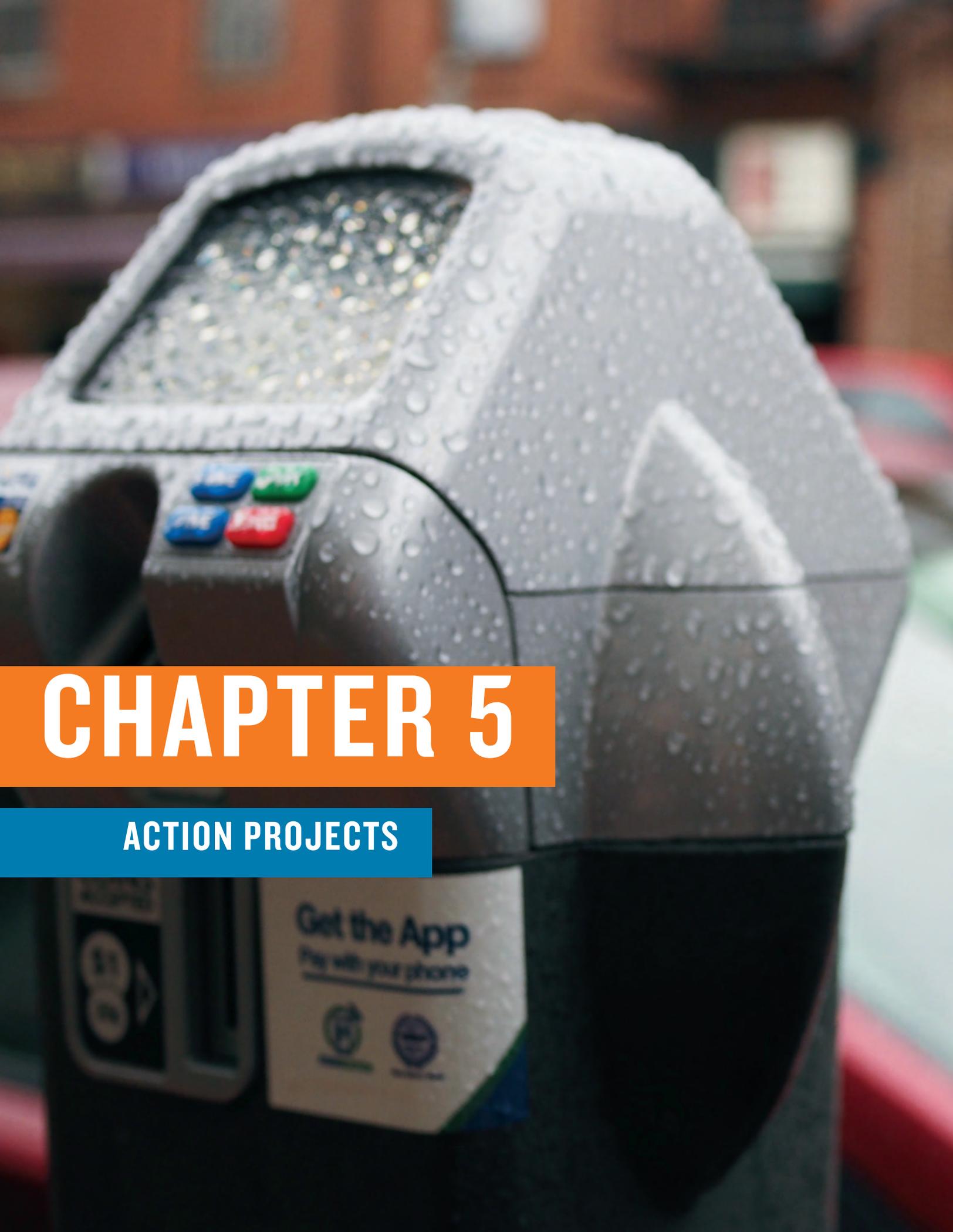
Middleborough, MA altered its zoning code to eliminate parking requirements for second or third story downtown residential units above retail which are also within a quarter-mile of overnight public parking. The effect was to encourage sharing of the existing commercial use parking that was otherwise vacant most evenings and weekends with the recognition that residential and commercial uses have peak parking demand at opposite times of day. Property owners have been able to generate additional income from their buildings by opening upper floors as residences, while at the same time allowing them to keep rents low for businesses on the street level.

SHARED PARKING DISTRICT

Arlington, VA

Arlington County's Columbia Pike District Parking Strategy encourages sharing spaces by setting a limit on the number of reserved parking spaces allowed, while placing no limit on the amount of shared parking allowed on-site. Sites over 20,000 square feet in land area have the following requirements:

- A maximum of two spaces per residential unit may be made available as reserved parking.
- There are no maximum limits on shared parking.
- Up to 100% of all required parking may be provided off-site if the said parking spaces are located within a ¼-mile radius of the subject site and a legally binding parking agreement meeting zoning code standards is provided to the Zoning Administrator.



CHAPTER 5

ACTION PROJECTS



+TIME

OK

TIME

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CHAPTER 5

The following projects are early actions the City has already begun to undertake during the course of this study which support the study's recommendations.

DRIVEBOSTON

A TWO-PART PILOT PROGRAM TO ENHANCE CAR-SHARE

The City of Boston envisions an urban landscape with ever increasing mobility options that allow residents and visitors to select the optimal mode of transportation for each type of trip they might take. In a region with many “car-free” households, car sharing provides an important option and opportunity for residents and visitors alike. The City believes supporting wider availability and awareness of car sharing options as an alternative to personal vehicles will in time decrease individual car ownership, make more curb space available for a range of uses, and reduce the city's rate of carbon emissions.

To advance the agenda articulated in the City's Climate Action Plan and Boston's Complete Streets, the City of Boston Transportation Department (BTD)

is launching DriveBoston, a two-part pilot program focused on car-share. One part of the pilot will provide opportunities for Car Share Operators (CSOs) to have dedicated spaces on City streets and in City parking lots. The second part of the program will provide opportunities for CSOs to have Free-Floating parking permits to pilot One-Way car share in Boston.

The City of Boston plans to gather significant data on usage and user behavior over the course of the pilot to assess the effectiveness and success. If the initial pilot is successful, the City may renew the licenses.

PARKBOSTON

SMART PHONE PAYMENT AVAILABLE FOR 8,000 SPACES

In 2015, Mayor Walsh announced a city partnership with ParkBoston that allows drivers to feed the meters using a mobile device. All of Boston's 8,000 metered parking spaces will be payable by smart phone. Supported by license plate enforcement, users no longer need to leave any receipts on the dashboard. The application also sends a ten minute warning before the meter runs out.

Since the original pilot in the Back Bay area, the ParkBoston app has been embraced by Boston residents and visitors. The app was downloaded more than 15,000 times and used more than 12,000 times by those parking in the area. The City will continue integrating existing and new purchased smart meters into the new pay-by-phone system. The installation will take place by phase: first starting from Back Bay and Fenway/Kenmore area, then gradually expanding to Downtown, Beacon Hill, West End, North End, and Charlestown, and finally covering South Boston, South End, Mission Hill, Allston and Brighton.

The ParkBoston app showcased the success of using technology to make transportation easier and more convenience, and is only one of the first steps the City has taken in applying innovative and data-driven approach to inform transportation and parking policies.

“THE CITY OF BOSTON ENVISIONS AN URBAN LANDSCAPE WITH EVER INCREASING MOBILITY OPTIONS THAT ALLOW RESIDENTS AND VISITORS TO SELECT THE OPTIMAL MODE OF TRANSPORTATION FOR EACH TYPE OF TRIP THEY MIGHT TAKE.”

SMART METERS

CREDIT-CARD PAYMENT TECHNOLOGY

Another initiative along the line of ParkBoston app is to replace all Boston's parking meters with "smart" units, allowing parkers to pay with credit cards and eventually phone apps. The citywide upgrade could let the City better control the on-street parking, and provide the infrastructure for more progressive smart parking management, such as dynamic meter pricing based on real-time availability data, and apps that let smartphone users know where to find empty spaces. Smart meters and more importantly, the data provided, will be able to handle years of technological advances and help make "smarter" parking policy decisions.

OTHER ACCOMPLISHMENTS

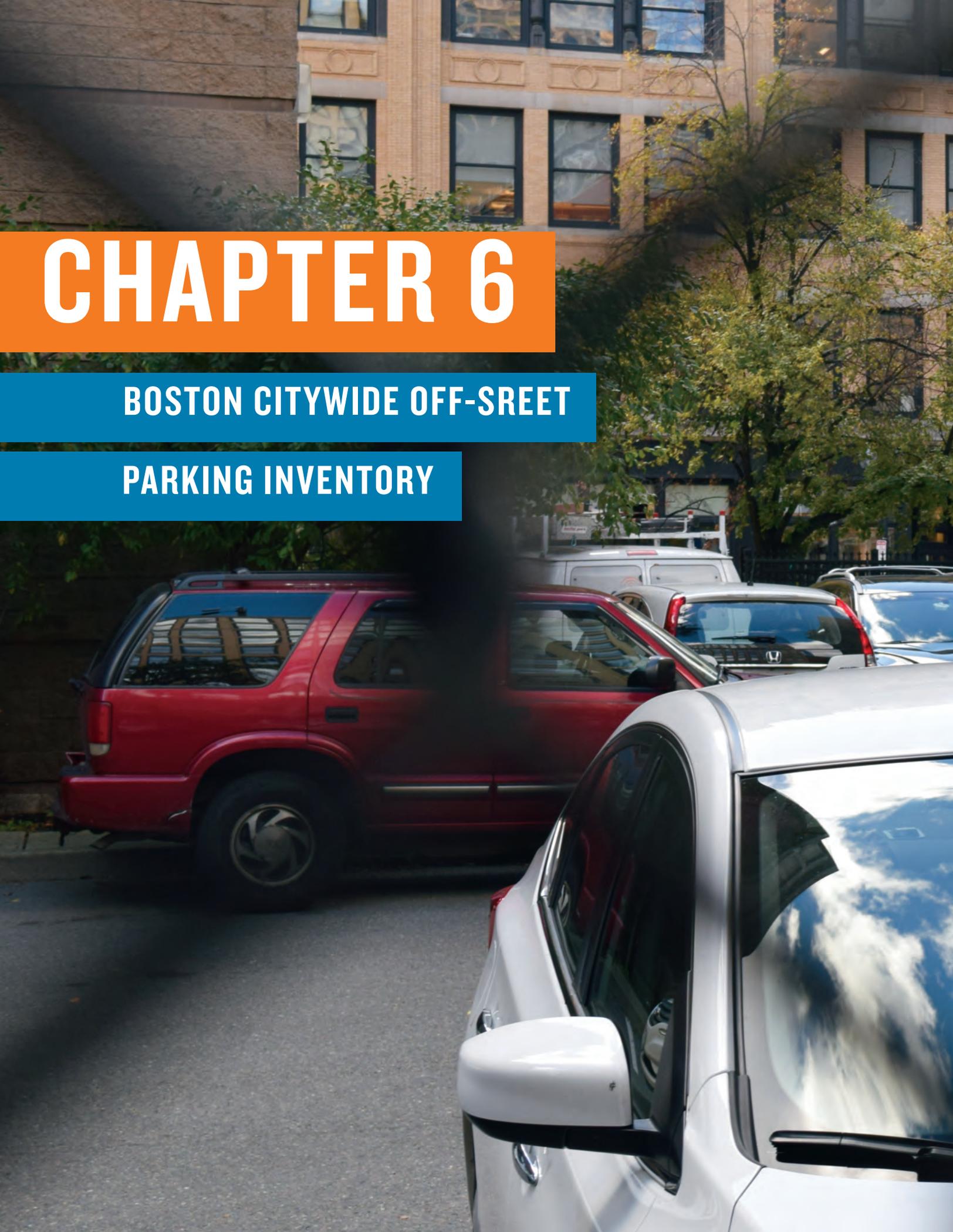
Other recent accomplishments that the City has made include:

- Updated the parking fines to discourage illegal parking in business districts to free up parking.
 - Opened up Boston Public School parking lots for overnight parking.
 - Minimized parking requirements: most new developments in Boston have a parking ratio of 0.5 cars per housing unit in downtown and 0.75 cars per 1,000 square feet of commercial development in downtown.
 - Launched Special Planning Area efforts in key transit-oriented neighborhoods including Dudley Square, Dorchester Avenue and Washington Street.
 - Expanded Hubway from 60 stations to 106 stations with approximately 1,100 bicycles since its launch in 2011.
 - Conducted a citywide off-street parking inventory.
- Early actions scheduled for the next few years that complement the recommendation of this report include:
- Piloting performance-based parking in select neighborhoods to increase parking availability.
 - Creating a Parking Benefit District in each of those neighborhoods, using a portion of new revenue gained to fund local improvements.
 - Using data from parking meters to show likely availability of on-street parking to drivers in real time, reducing the amount of time people are hunting for parking.
 - Expanding the use of parking meters in business districts to ensure curbside availability.
 - Revisiting commercial vehicle loading and parking policy and regulation.
 - Reforming the Resident Parking Permit (RPP) program to enhance community access, fund neighborhood improvements and disincentivize multiple car ownership.
 - Piloting shared parking agreements to open up underused off-street commercial lots for resident parking.
 - Updating parking fines for parking in residential parking areas without a permit.
 - Exploring other methods to unbundle the cost of parking from the price of housing.
 - Expanding demand management programs.
 - Expanding Bus Rapid Transit (BRT) along key routes throughout the city.
 - Working with car share companies to locate city-wide, using data to aid in picking locations.
 - Including electric vehicles in parking requirements.
 - Hiring a Director of Parking Policy.
 - Creating a dynamic, digital accessible database of all downtown parking facilities.
 - Streamlining and consolidating permitting and reporting requirements for off-street parking.

CHAPTER 6

BOSTON CITYWIDE OFF-STREET

PARKING INVENTORY





ROADSCHOLAR

RUE LAFFITE

CHAPTER 6

A complimentary early action conducted by the study team was to establish—for the first time in Boston’s history—an inventory of all off-street parking spaces within the city in order to understand how many parking spaces exist and how they are used and regulated.

The study team adopted a GIS-based approach, utilizing existing geospatial database resources to estimate the off-street parking inventory citywide as well as in several special districts, including the Downtown Parking Freeze zone, South Boston Freeze zone, East Boston Freeze zone, Allston-Brighton district, the Longwood Medical Area (LMA), and the Dudley Square district. Built upon this initial estimate, the City can then field check the inventory of selected areas or facilities as needed in the future.

Overall, the City of Boston has approximately 380,000 off-street parking spaces (not including small residential driveways), with nearly 78,000 of these located within the Downtown Parking Freeze boundaries. Table below summarizes the estimated off-street parking inventory by areas and in total. The following section describes how these estimates were reached.

DATA SOURCES AND ASSUMPTIONS

Off-street parking spaces were counted based on five data sources.

- The **Boston Air Pollution Control Commission** (APCC) maintains detailed records of permitted off-street parking spaces within the Downtown, South Boston and East Boston parking freeze

TABLE I: Off-Street Parking Inventory

	DOWNTOWN	SOUTH BOSTON-COMMERCIAL DISTRICTS	SOUTH BOSTON-RESIDENTIAL DISTRICT	EAST BOSTON	ALLSTON BRIGHTON	LMA	DUDLEY SQUARE	ALL OTHER DISTRICTS	SOURCE TOTALS
Air Pollution Control Commission Data	62,200 (33,200 Commercial & 29,000 Residential)	20,200	11	3,600					86,000
Boston Fire Department Gasoline Licenses	5,000	1,000	600	800	2,000	2,100	6	9,200	20,700
Transportation Access Plan Agreements/ Other	2,200	1,100	600	2,400	7,600	4,900	30	21,000	39,800
Boston Redevelopment Authority (BRA) ²¹	1,700	50	6	1,300	4,300	—	50	9,000	16,300
OpenData	6,800	3,300	6,000	11,500	23,800	500	2,100	163,300	217,300
TOTAL	77,800	25,600	7,200	19,500	37,800	7,500	2,200	202,500	380,000
Population (2012)	91,700	13,400	32,300	40,500	75,100	10,700	14,100	330,400	608,200
Jobs (2012)	242,500	29,000	6,000	6,600	22,800	45,000	11,100	69,600	432,800
Parking Space per Capita	0.85	1.91	0.22	0.48	0.50	0.70	0.16	0.61	0.62
Parking Space per Job	0.32	0.88	1.19	2.94	1.66	0.17	0.20	2.91	0.88



zones. The study team compared 1977, 1991 and 2010 Freeze database and used the most recent and accurate inventory data.

- The **Boston Fire Department** (BFD) tracks storage of combustible materials within structures in Boston. This includes data on the estimated total volume of gas stored in the tanks of cars parked in at-capacity parking garages. Based on BFD's permit regulation, the study team assumed that an average of 20-gallon gas is permitted for each parked vehicle.
- The **Transportation Access Plan Agreement** (TAPA) data from the Boston Transportation Department includes records of permitted parking spaces for large developments citywide.
- The **Boston Redevelopment Authority** (BRA) has parcel-level data on both land use (including commercial and residential parking) as well as built area.
- The **Open Lot Data** traces all paved and unpaved open-air lots based on Google aerial map. Lots that are smaller than 1,000 square feet (approximately three or fewer spaces) were not counted.

METHODOLOGY

These five data sources were incomplete on their own, but together, they were assumed to contain a reasonable approximation of the number of off-street parking spots in Boston. To remove duplicate values, a hierarchy was created that assumed APCC to be most accurate, followed by BFD, then TAPA and other non-APCC data from the Boston Transportation Department. These three were followed by the rough estimate of spaces derived from information available through the BRA and then Open Lot Data.

Some data cleanup was required before a final tally could be completed. For instance, the BFD data was filtered for permits that cited passenger vehicle-specific types of fuel. BRA data was filtered for commercial and residential parking and then floor area used to estimate the quantity of parking spaces. Open Lot Data was also filtered for only paved parking areas and the very largest data points were cross-checked on Google Street View to ensure that they reflected actual parking lots. Repair lots, maintenance yards, terminals, playgrounds, etc. were deleted from the final layer. An average of 300 square feet per parking space—a standard used to account for parking plus circulation space—was applied to the layer to establish the final count.

All APCC data was incorporated into the final tally. BFD data points were then mapped over APCC parcels. Any data points that overlapped APCC parcels were excluded. Those that matched to a non-APCC parcel were included in the analysis. Next, TAPA parcels that did not overlap either an APCC parcel or a BFD parcel were tallied. The same procedure was next applied to BRA parcels and finally to Open Lot Data polygons.

FIGURE II: Boston Citywide Parking Inventory ~380,000

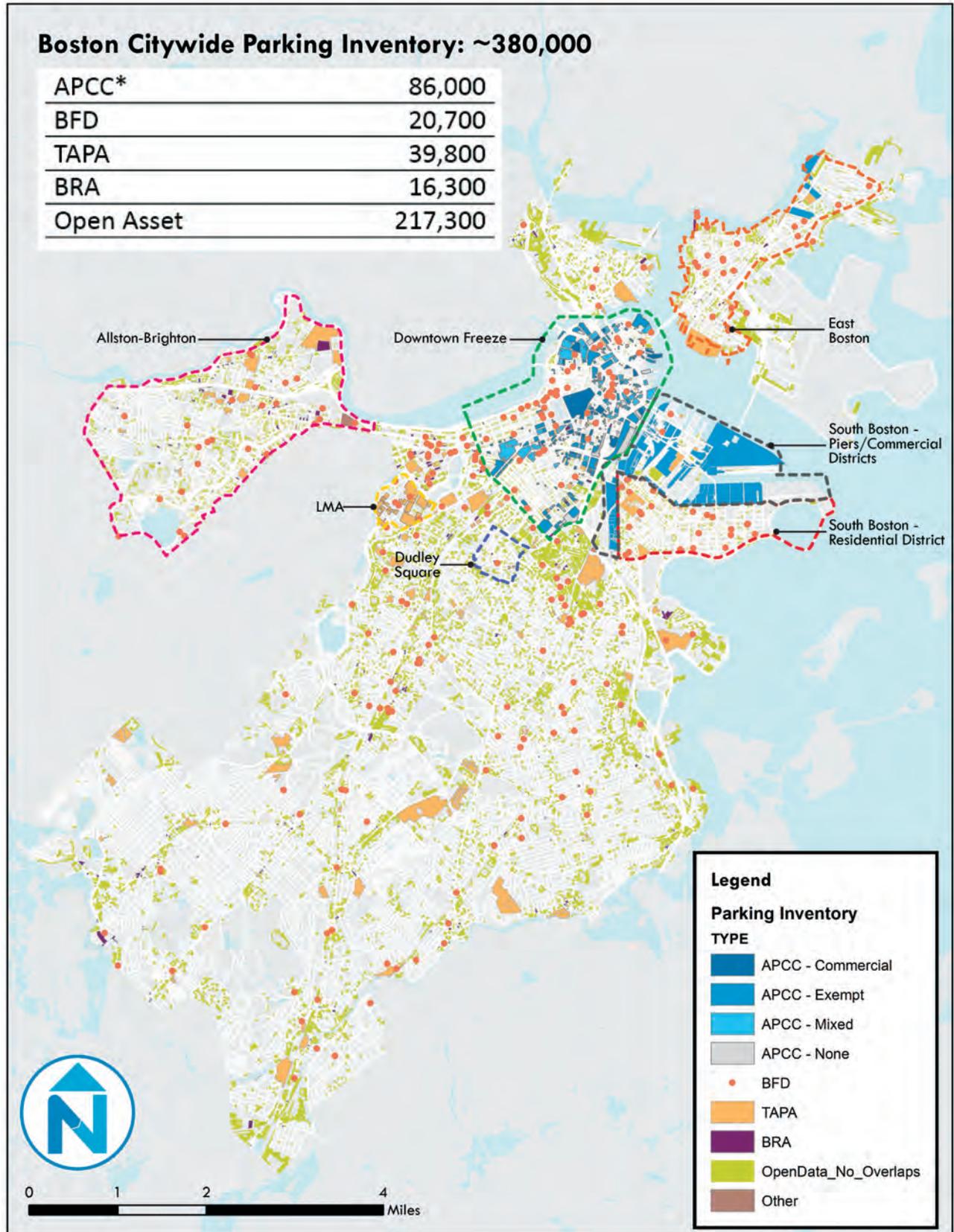


FIGURE 12: Downtown Freeze Parking Inventory ~77,800

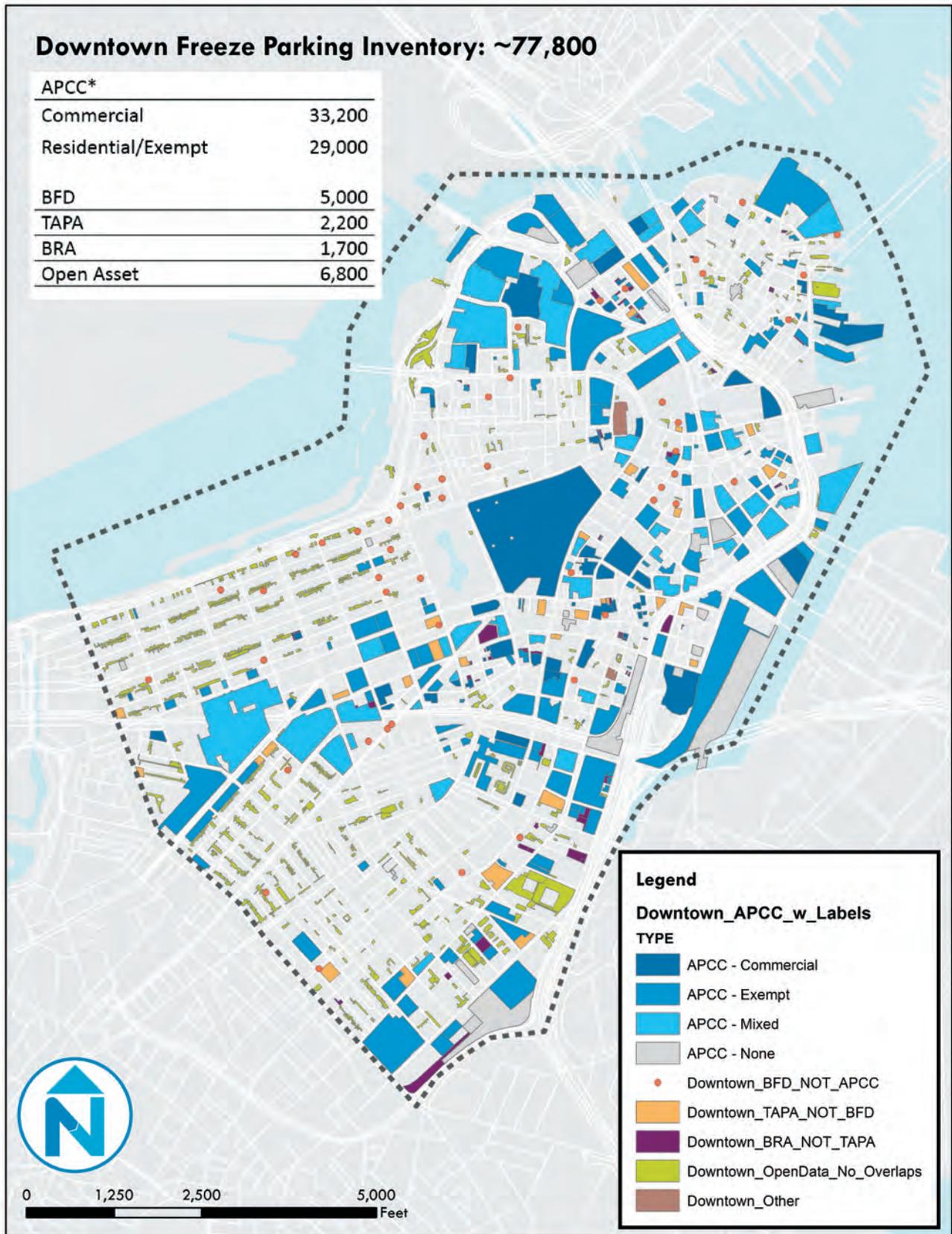


FIGURE 13: South Boston Freeze Parking Inventory ~32,800

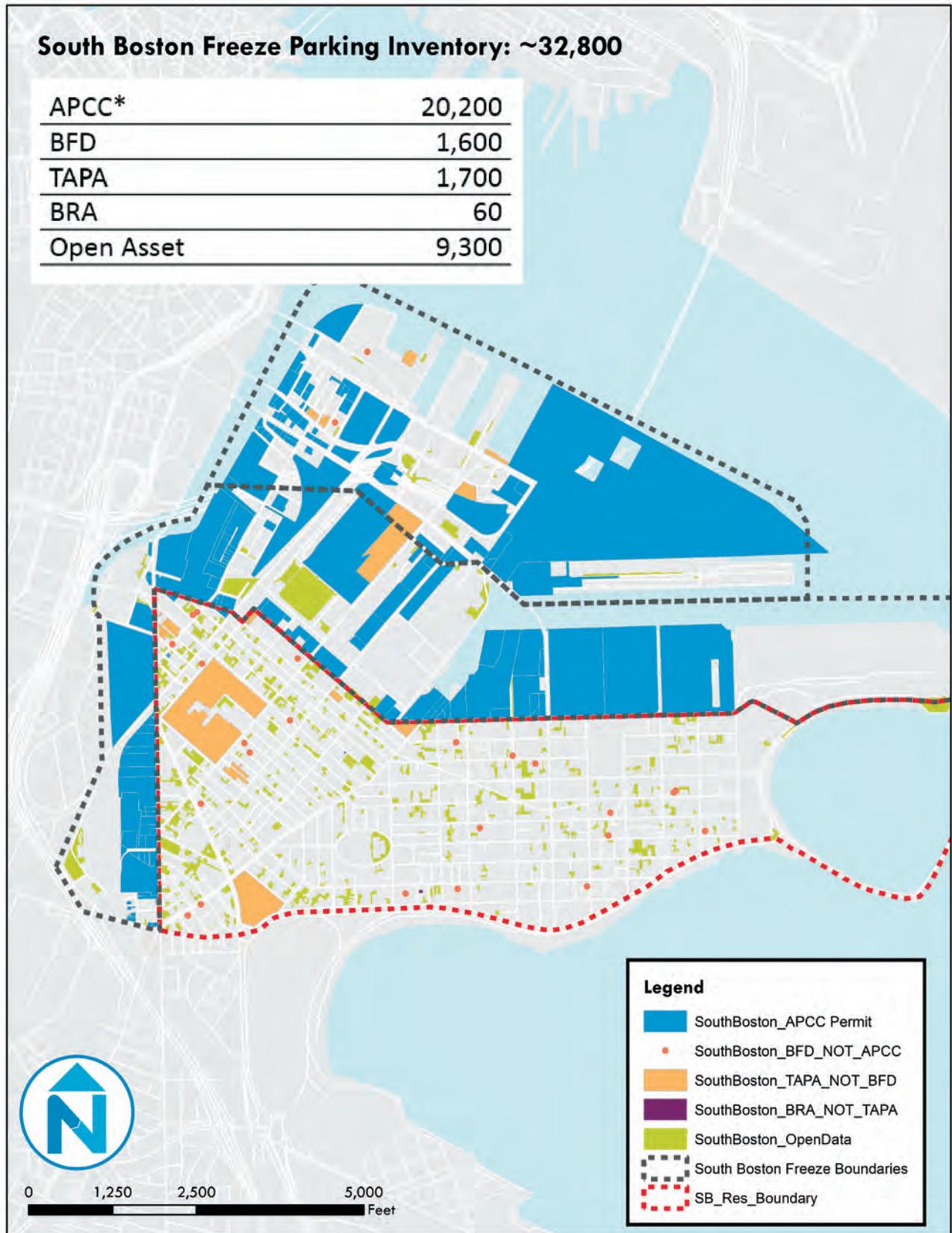


FIGURE 14: East Boston Parking Inventory ~19,500

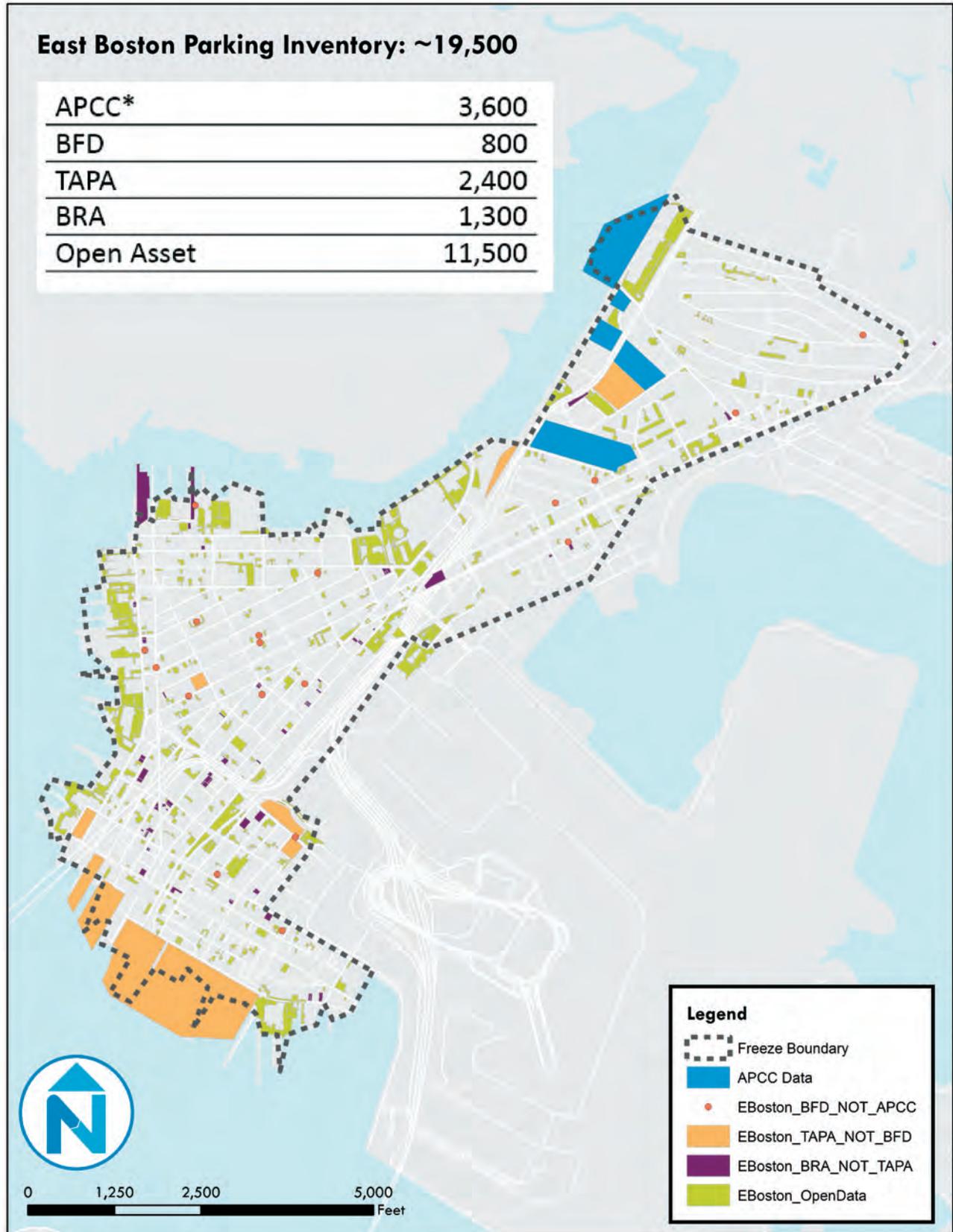


FIGURE 15: Allston-Brighton Parking Inventory ~37,800

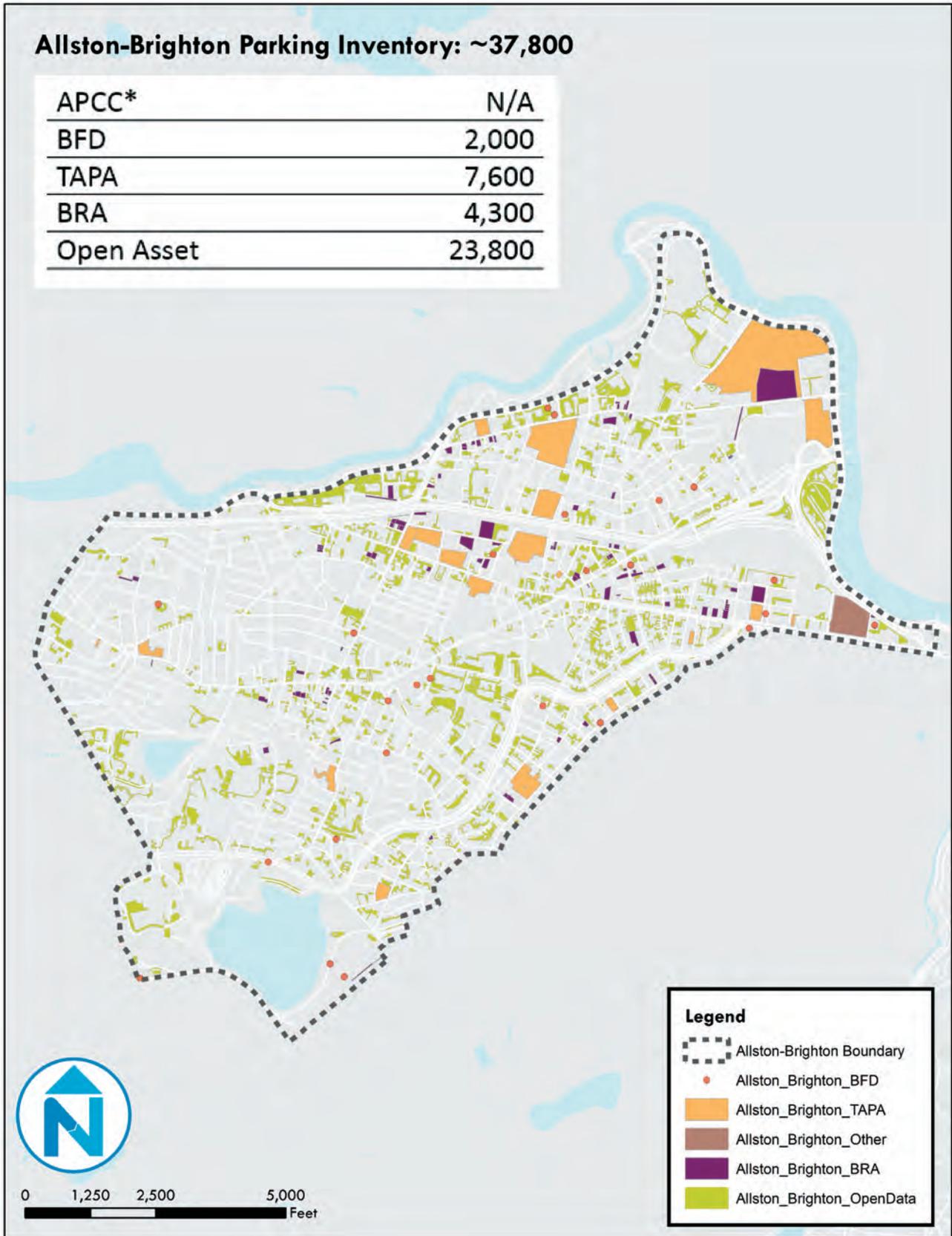


FIGURE 16: Longwood Medical Area (LMA) Parking Inventory ~7,500

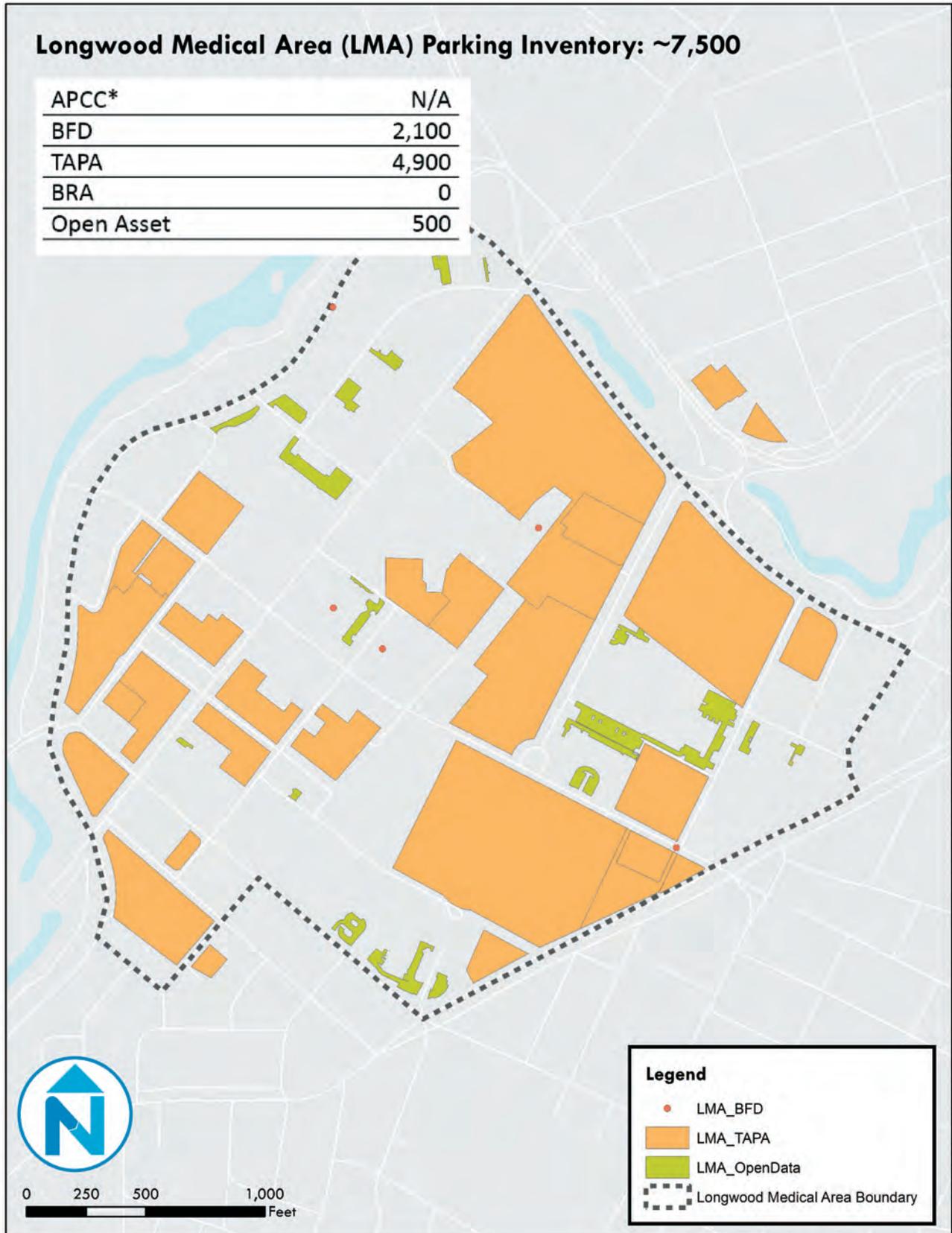
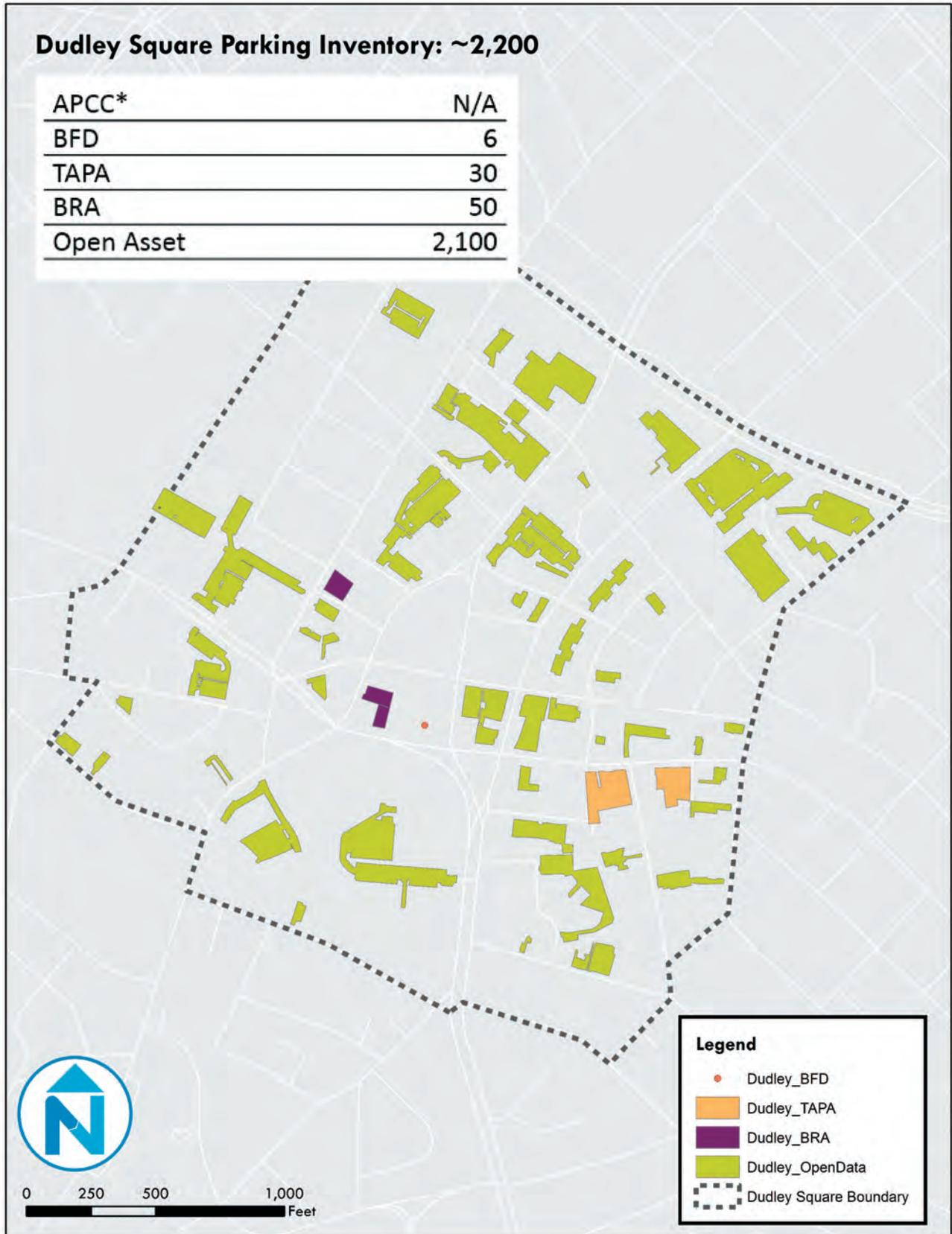


FIGURE 17: Dudley Square Parking Inventory ~2,200





OPEN
24 HOURS

PUR
LA
OP

Evenings
\$20
Mon-Fri 4pm to 3am

Saturday
& Sunday
\$20
up to 12 hours
\$40 Max for 24 hours

Evenings
\$20
Mon-Fri 4pm to 3am

Saturday
& Sunday
\$20
up to 12 hours
\$40 Max for 24 hours





CHAPTER 7

ACTION PLAN



TABLE 2: Action Plan for Promoting Economic Opportunity

GOALS	STRATEGIES	LEVEL OF EFFORTS	RESPONSIBLE PARTY	ACTION PLAN	1ST YEAR
PROMOTING ECONOMIC OPPORTUNITY 	1. Support Small Businesses	Medium	BTD	Priority	<ul style="list-style-type: none"> Pilot a Parking Benefit District (PBD) in Dudley Square with new smart meters installed, and dedicate a portion of net revenue to the district improvement.
	2. Increase Housing Affordability	Low	ZBA, BRA	Priority	
	3. Make Paid Parking Easier and Worthwhile	Medium	BTD	Secondary	<ul style="list-style-type: none"> Pilot demand-based pricing and eliminate time limits in Dudley Square to achieve a parking availability goal of 10-15% parking available per block face. Monitor and document parking utilization and program effects using smart meter data.
	4. Provide User-Friendly Mobility Information	Low	BTD	Secondary	
	5. Support Parking Technology Innovation	Low	BTD, BED	Secondary	

2ND YEAR	3RD YEAR	4TH YEAR	5TH YEAR
<ul style="list-style-type: none"> Expand the pilot to Downtown and Back Bay. Capitalize on the 2016's Municipal Modernization law that expands the potential use of parking meters revenue for public realm and transportation improvements. 	<ul style="list-style-type: none"> Expand the pilot to South Boston, and LMA area. Draft formal PBD policy. Create special planning areas around the Orange and Red lines (JP & South Boston, eg.) to encourage TOD supported by mass transit. 	<ul style="list-style-type: none"> Expand PBD program to East Boston and Allston/Brighton. Adopt formal PBD policy and expand city staff capacity to administrate the programs. 	
<ul style="list-style-type: none"> Create clear legal guidance and language for homeowners' associations and developers to include in new and modified leases and deeds that unbundles parking. 	<ul style="list-style-type: none"> Maintain an annually-updated estimate of average monthly fees for commercial parking: a monthly amount roughly equivalent to 50% of this average shall be established as the minimum tenant-charge for parking. 	<ul style="list-style-type: none"> Include unbundled parking requirements in the zoning code and the City's housing plan, especially for affordable housing developments. 	<ul style="list-style-type: none"> Consider taxing parking that is bundled into lease agreements. Consider taxing existing unbundled parking.
<ul style="list-style-type: none"> Review the pilot program data and determine the correct price. Expand the pilot to Back Bay and Fenway Area. Continue to monitor the parking utilization in these areas. Eliminate time-limits to reduce hassle and reliance on ticket revenues. 	<ul style="list-style-type: none"> Expand the pilot to all areas equipped with smart meters. Release program evaluation report and data. Draft formal demand-based pricing policy. Redirect some percentage of the new revenue, gained in the places where demand-based pricing is implemented, back to those locations for local improvements. 	<ul style="list-style-type: none"> Adopt formal demand-based parking pricing. 	
<ul style="list-style-type: none"> Expand the Streetline Parker or a similar system to a broader area in Downtown Boston. 	<ul style="list-style-type: none"> Create real-time parking information portal available to public through web or app platform. 	<ul style="list-style-type: none"> Expand parking payment technology onto the mobility information platform. 	<ul style="list-style-type: none"> Partner with private parking facilities to open up real-time availability data.
<ul style="list-style-type: none"> Establish formal policies to encourage open source data. 	<ul style="list-style-type: none"> Hold app design contests and innovation competitions to encourage local entrepreneurs creatively solve the parking and transportation-related issues. 		

TABLE 3: Action Plan for Enhancing Community Access

GOALS	STRATEGIES	LEVEL OF EFFORTS	RESPONSIBLE PARTY	ACTION PLAN	1ST YEAR
<p>ENHANCING COMMUNITY ACCESS</p> 	1. Improve Residential Neighborhoods	High	BTD, BED, PWD	Priority	<ul style="list-style-type: none"> • Pilot RPP flat fee in Dudley Square. • Make RPP signage simple and easy to follow in the pilot. • Distribute educational and information materials to gain public support and stakeholder buy-in. • Broker shared parking agreements to open up underutilized facilities, eg. overnight permit holder parking in nearby office garages for residents.
	2. Manage Curb Space More Flexibly	Low	BTD, PWD, BED, ABC, MASCO	Secondary	<p>Citywide program:</p> <ul style="list-style-type: none"> • Expand on-street car share program. • Expand curbside zero-emission vehicle parking/charging infrastructure. • Expand one-way car share program. • Expand Hubway bike share to all densely-populated neighborhoods and build a low-stress bicycling network.
	3. Prioritize High Occupancy Vehicle Parking	Low	BTD, BED, ABC, MASCO	Secondary	
	4. Update Commercial Loading Access	Low	BTD, PWD	Secondary	
	5. Expand Real-Time Parking Availability Displays	Medium	BTD	Secondary	
	6. Establish Improved Parking Design Guidance	Low	BTD, ISD, PWD	Secondary	
	7. Improve Bicycle Parking and Access	Low	BTD	Secondary	

2ND YEAR	3RD YEAR	4TH YEAR	5TH YEAR
<ul style="list-style-type: none"> Evaluate the effects of the pilot to determine an appropriate RPP fee structure. Expand the RPP pilot to Back Bay. Establish a RPP cap by household or by area. Add meters in some mixed-use neighborhoods. 	<ul style="list-style-type: none"> Pilot escalating RPP fee per household in Dudley Square and Back Bay. Draft RPP administration policy and establish formal administration entity/capacity, including visitor parking and revenue management. 	<ul style="list-style-type: none"> Release pilot report. Adopt RPP policy citywide. Expand formal RPP signage citywide. Continue to document the RPP effects and establish pricing adjustment mechanism. 	<ul style="list-style-type: none"> Dedicate RPP revenue to residential parking solutions.
<p>Establish formal policy on flexible curbside regulations to seasonally allow bike corrals, outdoor dining, parklets, attended parking, such as valet services or autonomous parking.</p> <p>Downtown Freeze Area Pilot:</p> <ul style="list-style-type: none"> Expanded vanpool parking. New on-street carpool parking. New bike corral and parklet program. 	<ul style="list-style-type: none"> Expand downtown pilot to South Boston, Back Bay, Dudley Square, and LMA area. New pilot of peak hour bus and/or bike lanes. 	<ul style="list-style-type: none"> Expand pilots to East Boston, Allston/Brighton. Pilot flexible RPP & commercial spaces. 	<ul style="list-style-type: none"> Expand programs citywide.
<ul style="list-style-type: none"> Working with public and private partners, to establish more comprehensive incentive package to further encourage carpooling, such as reduced permit rates, etc. 	<ul style="list-style-type: none"> Distribute information and directional maps for carpoolers and vanpoolers to easily find a space at priority locations. 	<ul style="list-style-type: none"> Couple carpool and vanpool parking incentives with other TDM programs such as Guaranteed Ride Home, Parking Cash Out, etc. 	
<ul style="list-style-type: none"> Conduct thorough and comprehensive studies on current time-of-day restrictions, occupancy rate and utilization of the commercial parking/loading zones and strategically relocate or regulate these spaces. 	<ul style="list-style-type: none"> Pilot metered commercial vehicle parking on-street at key locations in downtown Boston, and consider an adaptive pricing mechanism for loading zones. 	<ul style="list-style-type: none"> Identify underutilized loading zones and convert to metered parking spaces or shared metered spaces for freight and passenger at different time of the day. 	<ul style="list-style-type: none"> Incentivize businesses to use environment-friendly vehicles for freight delivery, such as lower meter/permit fee or prioritized loading zone for low-emission commercial vehicles.
<ul style="list-style-type: none"> Educate private operators on the benefits of installing equipment and sharing utilization information. 	<ul style="list-style-type: none"> Work with private operators to get real-time feeds advertising their availability. Identify larger locations as pilot sites, such as Common Garage, Government Center, etc. 	<ul style="list-style-type: none"> Provide data on live web streams and apps to promote awareness of options to reduce drivers' street cruising and incentivize remote parking or alternate modes. 	<ul style="list-style-type: none"> Gradually expand the program citywide.
	<ul style="list-style-type: none"> Include clear design guidance on driveway curb cuts, safe sightlines for motorists entering the roadway, and slopes behind sidewalks in the zoning and design guidance language. Set placement standards for curb cuts, crosswalks, and on-street parking as part of ISD guidance. 	<ul style="list-style-type: none"> Promote Complete Streets guidance citywide. Include design requirements that save energy consumption and encourage ground floor activities such as minimum transparent frontage and ground-floor retail allocation for off-street parking facilities. 	<ul style="list-style-type: none"> Provide flexibility to accommodate innovation.
<ul style="list-style-type: none"> Develop clear design guidance for bicycle infrastructure. Strategically expand bike share system to transit stops, underserved neighborhoods and areas of high demand. 	<ul style="list-style-type: none"> Offer private branding in exchange for funding bike station maintenance agreements. Partnering with the MBTA to pursue State funding for bike infrastructure improvements that support "Last Mile Project," or "Pedal & Park Facility." 	<ul style="list-style-type: none"> Explore introduction of bike valet at large events and destinations. Encourage and incentivize developers and property owners to provide bicyclist lockers and shower facilities. 	

TABLE 4: Action Plan for Reducing Parking Demand

GOALS	STRATEGIES	LEVEL OF EFFORTS	RESPONSIBLE PARTY	ACTION PLAN	1ST YEAR
<p>REDUCING PARKING DEMAND</p> 	1. Expand Demand Reduction Programs	Medium	BTD, ABC, MASCO	Priority	
	2. Enhance Tools for Management	Low	BED, BTD	Priority	<ul style="list-style-type: none"> • Complete a full on-street and off-street inventory for all Boston parking spaces.
	3. Provide Equitable Transportation Funding	High	BTD, BED	Secondary	<ul style="list-style-type: none"> • Expand the annual \$10 per space fee of off-street parking in South Boston to all new development in Downtown Parking Freeze Area. • Establish a parking fund to manage all additional parking revenue.
	4. Offset New Development Impacts	Medium	BTD, BRA, BED, ZBA	Secondary	

2ND YEAR	3RD YEAR	4TH YEAR	5TH YEAR
<ul style="list-style-type: none"> • Coordinate TAPA and TDM measures with the APCC permit application and approval process. • Consider new TDM measures learning from national and worldwide best practices that use modern technology. 	<ul style="list-style-type: none"> • Enforce the TAPA reporting requirement and create a user portal for long-term monitoring and evaluation. 	<ul style="list-style-type: none"> • Develop an incentive program to ensure participation (e.g. a per-space fee discount with monitoring submission). • Create incentives for TMA membership, such as discounted parking taxes (if implemented). 	<ul style="list-style-type: none"> • Ensure future records can include special parking examples that may be useful (such as the number of Zipcar spaces).
<ul style="list-style-type: none"> • Create incentives or mandates for regular data reporting. • Include review of “costs” (charges) and availability of space by uses. 	<ul style="list-style-type: none"> • Expand City staff capacity to monitor compliance with TAPAs and the BED’s Air Pollution Control Permits (APCCs) and to process annual renewal of APCCs and similar parking fees. 	<ul style="list-style-type: none"> • Coordinate data with the City of Cambridge and Massport and collaborate to revisit DEP’s SIP for the Clean Air Act. 	
<ul style="list-style-type: none"> • Expand the annual \$10 per space fee to all new development citywide. • Seek legislative approval of a progressive excise tax for multiple car ownership and/or higher MPG (miles per gallon) ratings. 	<ul style="list-style-type: none"> • Explore progressive parking fines to change the behavior of habitual violators of the City’s residential or commercial parking rules. 	<ul style="list-style-type: none"> • Explore reassessing properties higher where parking is bundled into lease agreements. • Use the additional parking revenue to expand demand management measures and enforce the compliance of TAPA. 	
<ul style="list-style-type: none"> • Promulgate a transit-oriented maximum parking requirement in base zoning. • Eliminate minimum parking requirement citywide. 	<ul style="list-style-type: none"> • Consider cap on all non-shared parking in downtown Boston. • Initiate an impact fee for those exceeding maximum requirement. 	<ul style="list-style-type: none"> • Facilitate shared parking lease agreements. • Consider a municipal parking sharing district. 	<ul style="list-style-type: none"> • Develop zoning and developer incentives for green garages, pervious paving, bicycle lockers, and environmentally-friendly industries and companies. • Collaborate with neighboring municipalities and similar cities to assess the successes and needed improvements after implementing requirements.

ENDNOTES

- 1 Wallank, T. (2015, January 20). Unlimited permits strain Boston's parking system. *Boston Globe*.
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