Inventory of Policies affecting Parking within the NYMTC Region

September 11 Memorial Program

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ABSTRACT

Parking is one of the key components of any new development or a redevelopment project. It is one of the prime issues for home owners, businesses, residents and policy makers across different municipalities in the region. The minimum parking requirements as required by the municipal codes affect the site design and density of the structure. Zoning ordinances, which specify the parking requirements, can be an effective tool in regulating the supply and eventually the demand for parking.

This study aims at creating an inventory of existing parking provisions, analyzing the policies and identifying innovative parking practices from case studies primarily in New York region but also elsewhere in the US. This study also examines planners' and developers' perspectives on parking.

While the study did not identify many significant differences in the parking provisions of different municipalities within the NYMTC region, some municipalities have adopted innovative parking practices in their ordinances, which can be implemented and replicated in other municipalities.

Despite the fact that parking requirements sometimes put an unnecessary burden on businesses, planners continue to follow regulations as a historical legacy. Interview with planners indicate that the only solution to resolving parking issues is to increase the supply of off- street parking. In fact, ninety percent of the municipality staff who was interviewed stated that parking supply was inadequate within the municipality. There also seems to be a shortage in supply of spaces in the commuter lots and downtown. This may be due to the fact that commuter lots are either free or are relatively inexpensive.

Over ninety percent of the municipalities in the sample regulated the supply of on-street parking. This was done either by metered parking or non-metered with time limit on parking. Municipal parking lots are regulated through permits and meters. Fines due to expired parking meters are cited as an associated parking problem.

A parking authority or a parking bureau enforces and regulates parking in thirty percent of the sample of municipalities. These authorities are responsible for managing the supply of on-street and, sometimes off-street parking as well. They charge for parking and contribute towards a parking fund which is exclusively used to increase the supply of off-street parking.

Other strategies used to alleviate parking issues in the region include parking districts, development fees in lieu of parking, overlay districts and alternate-side-of-street parking. Demand management strategies such as parking maximums; design of parking facilities which are more pedestrian oriented; financing of parking structures with municipal bonds; creating an authority which caters to the parking needs of different user groups, are some of the innovative practices in parking adopted elsewhere in the US.

STRUCTURE OF THE REPORT

Section one begins with some background information on the project, the NYMTC region and the municipalities involved. It discusses the scope of the project. Section two discusses research literature on parking in US cities. Based on the results on interview responses and a study of zoning ordinances, section three summarizes the key findings. In section four, further comments and recommendations are made. Finally, section five discusses various innovative practices in parking in different cities across the US.

BACKGROUND

Parking provides access to diverse destinations. It is considered a by-product of any development. Our attitude towards parking is visible in the form of large paved open surface parking lots and structured parking decks. These spaces provide, "low cost housing for our cars" where they spend ninety five percent of their time (Shoup, 2005). Eighty one percent of our trips are made by car and ninety nine percent of the time we have the luxury of using free parking (Shoup, 2005). Abundance of free parking is an important cause of increased auto use (Willson 1995, Shoup 2005).

Figure 1: Parking Deck and Open Parking Spaces

Parking has thus become a selling point for real estate sellers, an estate for homeowners and a requirement for financing development projects. Parking requirements also constrain many site designs and play an important role in any development or an infill project. It is one of the prime issues for home owners, businesses, residents and policy makers across different municipalities in the region.

A surprising amount of traffic is not caused by people who are on their way somewhere, but instead by people who are near their destination, looking for on street parking. Streets are clogged, in part, by drivers searching for a place to park (Schaller

Consulting, 2007). A study also shows that cruising for curb parking generates about thirty percent of the traffic in central business districts (Schaller Consulting, 2007). Traffic congestion imposes a wide range of costs on New York City residents and businesses. It is interesting to note that despite zoning restrictions and high parking fees, the number of vehicles entering Manhattan has increased by fifteen percent (Schaller Consulting, 2007). Cruising for parking has been identified as one of the major contributors to the economic costs of 'free parking' with an estimated cost of $13 billion (Schaller Consulting, 2007).

Park and ride lots at train stations in the region have a waiting list of several years. For example the Long Island Rail Road parking lots in Hicksville and Port Jefferson line are full before 7:30 am each weekday, forcing the overflow to encroach upon the residential streets far beyond the immediate areas containing the commuter-intended parking. This is also detrimental to the downtown business district near park and ride locations, as it exhausts available customer parking (Mallozi, 2006).

Parking problems in the New York region are not only concentrated in downtown, where there is a scarcity of space, but seems to be pervasive in suburban municipalities, throughout the New York region. In the case of suburban municipalities, the problem appears to be more about management of parking spaces than insufficient supply. Abundance of land encourages large paved areas available for parking.

To summarize, irrespective of its location, parking has been a subject of discussion because of the social and economic and opportunity costs associated with the apparently free parking (Shoup 2005).

INTRODUCTION

Land use policies and zoning ordinances play an important role in guiding the development of parking standards for the city. These codes include development standards (such as width of aisles and parking stalls, minimum lot requirements, lighting requirements, etc) and planning standards (such as number of parking spaces for a particular use, building height, setbacks, etc). There is little which can be done to alter the development standards, however there is potential to reform planning standards based on individual characteristics of the municipality (City/Town/Village).

Figure 2: Roadside Parking Deck – Does not blend with the surroundings

Most of the cities in the US have off street parking requirements identified in their local zoning ordinances (Ferguson, 2002). These codes have evolved after World War II and have been largely based on principles like segregation of uses, circulation systems based on travel by car and land use planning with emphasis on providing generous parking spaces (Shoup 2005).

Parking provisions in the zoning codes have further enabled our car centric culture. These standards are being followed as a legacy by our land use planners and local officials. There has been little effort in amending these provisions or changing the basis of formulation.

Figure 3: Vast open parking spaces

Our zoning codes have many dimensions: zoning districts with bulk standards that do not recognize pre-existing conditions (uses, lot sizes, setbacks) and create an unnecessary (and often socially inequitable) number of non-conformities like outdated parking standards and poorly conceived lists of permitted uses." It is necessary to adopt a unified set of empirically based statewide parking requirements, sensitive to the land use context (urban vs. suburban vs. rural, transit-rich vs. transit-poor, etc) rather than submit to obsolete traffic engineering standards driven only by land use" (Rodrigues 2006).

"PARKING MATTERS" IN THE NYMTC REGION

New York is a "home rule" state (New York Department of State Guide to Planning and Zoning Laws, 2003). This means that every municipality is free to set its own land development standards. Parking provisions for municipalities are governed by village, town and city codes of the New York State Planning Regulations. It is therefore imperative to investigate policies or regulations (if any) pertaining to parking adopted by each municipality.

New York Metropolitan Transportation Council (NYMTC) conducted a series of workshops in the year 2006 to provide a platform for discussion on this issue. Parking experts Donald Shoup and Michael Kodama brought awareness about the use of the scarce parking resource. Workshops have been organized to educate residents and policy makers in optimizing the use of existing parking spaces.

SCOPE OF THE PROJECT

The region includes a total of nine cities, forty two towns and one hundred thirty eight villages (Please see Appendix 1). The scope of the project is limited to the study of twenty two municipalities (Figure 4), a selection done through stratified sampling, based on the density and political designation into cities, towns and villages. Cities, towns and villages have been classified on the basis of their political designations (U.S. Census Bureau,2002). The study area focuses on a part of the New York metropolitan region under the purview of New York Metropolitan Transportation Council (NYMTC). This includes New York City, Long Island and the lower Hudson Valley. The NYMTC Region constitutes the counties of Nassau, Suffolk, Putnam, Rockland, Westchester and New York City five boroughs - Manhattan, Richmond, Kings, Queens, Bronx and Brooklyn (Please see map below)

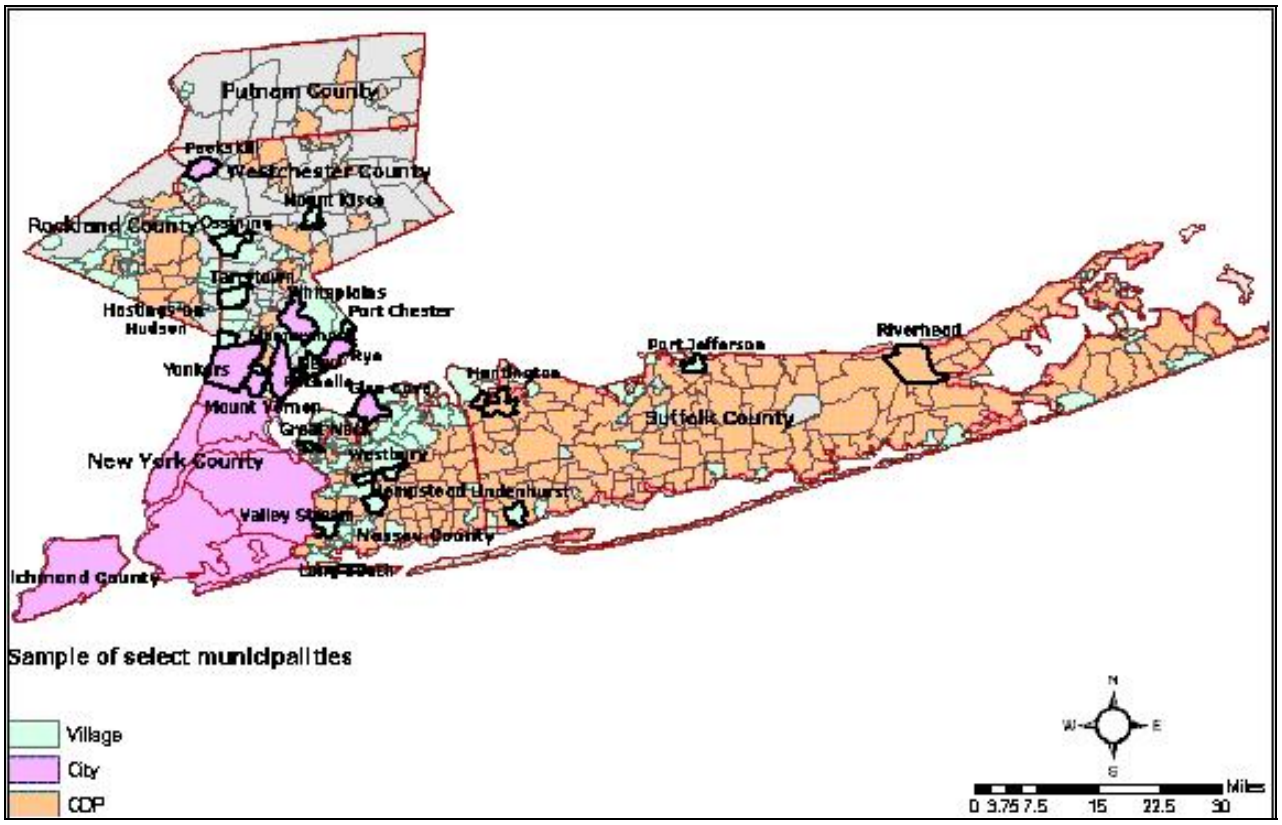

Figure 4: Sample of select municipalities, NYMTC region

An attempt has been made to create an inventory of parking provisions and understand issues associated with parking within the municipality. The research aims at creating a compendium of policies that affect the supply of parking in municipalities within the region. The study also examines some of the innovative parking practices from case studies within the region and across the US.

PROJECT DESCRIPTION

A sample of twenty two municipalities has been selected to understand existing parking provisions within the NYMTC region. Information on parking provisions in zoning ordinances, parking policies (if any), parking rates for on street and off street facilities and methods of regulation have been collected for the sample of municipalities.

An attempt has been made to select representative municipalities from each category. The sample includes suburban municipalities like town of Riverhead, railroad municipalities like City of White Plains and denser urban municipalities like town of Clarkstown. Some of the villages such as the village of Ossining and Tarrytown have also been included in the sample. The density of the municipality and its potential to grow were also considered during sample selection**.**

METHODOLOGY FOR STUDY

An in depth literature study was done to understand the parking practices in cities across the United States. A systematic research process was then used to understand the parking practices in the NYMTC region. This involved data collection from zoning ordinances and follow up discussion with planners. The steps for data collection included summarizing the parking provisions from the zoning ordinances (municipal codes). Interviews were conducted with the municipality planner, county planner and the developer. A questionnaire was designed to understand various parking related problems in the specific municipality.

County planners were interviewed to understand which municipalities are important from development point of view (Please refer to Appendix 2 for questionnaire for the county planner) Questionnaire responses along with parking provisions were then analyzed to create a compendium of existing parking practices of different municipalities. In addition to interviewing planners, a questionnaire was also designed to interview developers (Please refer Appendix 3 for questionnaire for the developer). Questions on how often developers apply for variance was used to understand how the code provisions had to be adjusted to the requirements of the developers. Interviewing developers also provided insights on innovative parking practices which are being adopted in different parts of the country.

LITERATURE REVIEW

Contemporary studies reveal important aspects of zoning for parking and how it has changed over time. Zoning for parking has seen significant changes over the last 50 years. Initially, it began with a piecemeal approach to resolving specific problems associated with growing automobile storage requirements. It attempted to alleviate high parking needs of the affluent neighborhood in higher density areas. This practice gradually became the preferred method to ensure adequate parking space in an automobile-oriented society. This encompassed most land uses in most urban areas of any size or location (Fergusson 2002).

Units of measurement to determine the number of parking space has changed its focus from a supply side measure to a demand side measure. Consequently parking provisions are determined by individual demand. Literature suggests the definition of parking policy from a stake holder's perspective. The three objectives of parking policy include promoting redevelopment activities within the city center by encouraging more businesses; controlling the supply of parking through restraint measures and providing a source of revenue generation from its operations. These conflicting objectives need to be addressed in a way to balance the revenue and costs of managing the facilities and acceptability of different stake holders (Marsden, G 2003).

There are three steps in determining parking requirements: identifying the land use, choosing the unit of measurement and establishing the number of parking spaces per unit of the basis (Shoup, 2006). There has been a steady increase in minimum parking standards over last fifty years (Fergusson 2004). With a need to provide more parking, there has been an effort to increase the supply of parking. In New York City, the increased usage of private vehicles causes congestion. Government tried to reverse this trend by providing financial

disincentives to clog the streets through use of zoning regulations (Schaller Consulting, 2007). The 1970 New York City zoning codes which capped the amount of off street parking is an example of such a regulation. This regulation restricted the supply of off-street parking, resulting in the highest off street parking costs in the US. Despite this, studies have shown that parking costs have failed to act as a disincentive to driving because many drivers do not bear the cost of parking; instead the cost is typically borne by the employer (Schaller Consulting, 2007). However, the lack of parking is the most frequent reasons why New York City residents take the subway instead of driving (given the two alternative modes) (Schaller Consulting, 2007).

Policies adopted by the local government have not always been unsuccessful. Parking policies such as parking reductions, parking maximums, shared parking or development fee in-lieu of parking have been successful in reducing the supply of parking and hence the demand for parking (EPA, 2006). Location and use specific standards and vehicle trip reduction strategies implemented in Arlington, Virginia have effectively reduced the demand for parking.

Zoning ordinances can be effective in managing the demand for parking. It addresses both the placement and supply of parking. Prominent surface parking is prohibited in transit districts (Calthrope, 1996). Off street parking requirements for mixed use districts in Denver's zoning ordinances includes the section on reduction of parking spaces. The section explicitly states to reduce the number of off street parking spaces (not more than 25 %) for uses and structures located within one fourth mile of the outer boundary of a transit facility (Calthrope, 1996). A study shows success of such provisions when enforced through

government policies. Jersey City zoning codes impose parking maximums for different uses in the downtown district (Please refer to Appendix 4).

Another example of parking ordinances is the case of Lafayette Township; Medina, Ohio. The zoning code includes a text amendment for land banking. This designates land on a site plan to be held and preserved for an identified future purpose. Such a provision discourages over-construction of impervious surface parking lots while providing a mechanism to preserve additional land for future.

Literature reveals that parking strategies such as parking caps and cash in lieu, if incorporated as a part of zoning ordinances, can effectively manage the supply of parking. Such mandatory parking provisions not only improve the existing supply of parking but also save costs on providing additional parking infrastructure (Litman 2006).

Some studies suggest removing off street parking requirements altogether (Shoup 2005, Willson 1995).There have also been suggestions on strategies to reduce the minimum parking requirements (Willson 1995). Policies on maximum parking requirements (instead of minimum parking requirements) help reduces parking demand (Manville , Shoup ,2005).

Demand management strategies are an excellent way of managing existing parking resources. Strategies such as transit overlay zones or transit friendly parking design effectively reduces parking requirements. This has been adopted in Portland OR, Bellevue WA and Cambridge MA. Improving the design of parking facilities, improving pricing methods and reforming parking taxes all can help in efficient use of parking infrastructure (Litman 2006). Shoup recommends employer-paid transit passes, cash out options and car sharing strategies as convenient ways to reduce demand for parking. A convenient shared-car option may convince some residents to skip buying a second (or even first) car, thus

reducing demand for parking [20]. Similarly, the "cash out" option gives commuters the choice between free parking and its equivalent cash value. This arrangement effectively raises the price of commuter parking without charging for it.

Shared parking provisions, a concept promoted by Shoup, Sollohub and others, have been widely accepted in many municipalities across the United States. Shared parking allows spaces to be used during different time periods throughout the day in mixed use development.

Other strategies for demand management include forming parking districts such as the one adopted by the city of Claremont California. San Francisco Housing, Oakland California, provided unbundled parking, which resulted in flexibility to vary the number of spaces (Kepper, 2007). Ride sharing and car pooling can be used in reducing parking demand (Litman 2006). In addition to these demand management strategies, studies also suggest supply side strategies as being effective in reducing the demand for parking. A tax approach (supply side strategy) provides incentive for intensive use of parking. This may cause a shift of large paved tracts of urban land to underground car park spaces in suburban mall setting. This tax will appropriate use of revenue generated to justify the approach of taxing surface parking (Feitelson, Rotem, 2004). Parking requirements play an important role in any development or a redevelopment project. The minimum parking requirements as required by the municipal codes govern the design and density of the structure. By the very nature of the type of development, dense and mixed use projects have lower parking requirements. However, these are constrained by parking requirements of the zoning codes. Developers favor reform in land policy to enable them to develop denser and mixed use. There is inadequate supply of alternatives such as compact and smart growth developments

relative to market demand. Developers attribute this gap between supply and demand principally to local government regulation (Levine, Inam, 2003).

Recognizing the importance of parking in development, there have been innovative ways of managing the demand for parking and limiting the supply, such as design of parking facilities, providing financing options to communities, households and developers[2]. These creative approaches are intended to promote pedestrian friendly project design sensitive to the surrounding environment.

Literature seems to acknowledge the problem of free parking. There is growing awareness about the social and environmental cost of apparently free parking. Recent publications by Shoup, Litman, Urban Land Institute and others have raised awareness among professionals, officials and the public that changing parking strategies can help break the cycle of auto-dependency in our communities**.** Some of the proposals include setting maximum instead of minimum parking requirements for new construction. Accounting for normal, not peak, demand will also help reduce the supply of parking (Shoup 2006).

Parking pricing is another area which needs reform (Shoup 2006, Willson 2000). Differences in pricing of on street and off street parking are a major cause of cruising, yet another form of parking problem (Downs 2003).Cruising in search of cheap curb space is simply more attractive than to pay for the space. "Why pay for it when I can get for free" (Shoup 2005). Charging fees for parking will give a disincentive to the user and will directly affect the auto use. In addition, varying the pricing for parking facilities rather than charging a flat rate, will increase turnover and encourage people to economize on the use of parking space (Shoup 2006). Non linear variable pricing strategy in Berkeley downtown is one such example. The rates for parking increase as the duration of stay increases [24]. Similar parking

provisions in different municipalities, without much consideration to its location and context, have led to problem of managing the supply of parking spaces. The policies seem to have led to oversupply of parking spaces and distorted market prices for parking (Willson, 1995; Shoup 2005). Researchers have also argued against provision of minimum parking requirement for different uses. A regional level classification system is required which is consistent and easy to comprehend (Rodrigues, 2005).

THE RESEARCH PROCESS

Each municipality has its own criteria for categorization of different land uses. This study gathered information on the number of parking spaces required by different uses in different municipalities. Parking provisions of the some of the common uses such as residential dwelling unit, school, professional and doctor's office, retail store and restaurant have been analyzed. Information on parking regulations was collected from the municipal codes, which are available online. Parking provisions were compared across different municipalities (Please refer to Appendix 5)

An attempt was made to investigate the existence of any special provisions / policies adopted in different municipalities. This includes policies that reduce the required number of parking spaces, policies on on-street parking provisions or the reservation of handicap spaces etc for on street and off street facilities. In addition, information on pricing for on street and off street parking (if any) has been collected to compare how pricing for various facilities vary across different municipalities.

Some of the questions answered by research included:

1. What kinds of parking problems are there in the municipality?

2. How do municipalities regulate off and on-street parking?

3. Are there any separate parking provisions for suburban or transit based municipalities? Is there any difference in determining parking requirements for an infill development or a suburban development? Does the municipality encourage shared parking or any other alternate method for reducing the supply of parking?

4. How does pricing vary for a parking facility?

SUMMARY: PARKING PRACTICES IN THE REGION

Research shows that there are parking practices which are applied in an isolated manner in different municipalities across the NYMTC region. No uniform practice exists to adopt these policies. Municipalities volunteer to adopt policies to reduce the demand for parking at a local level. Please see the "matrix" below for a graphical representation of various parking practices in the region.

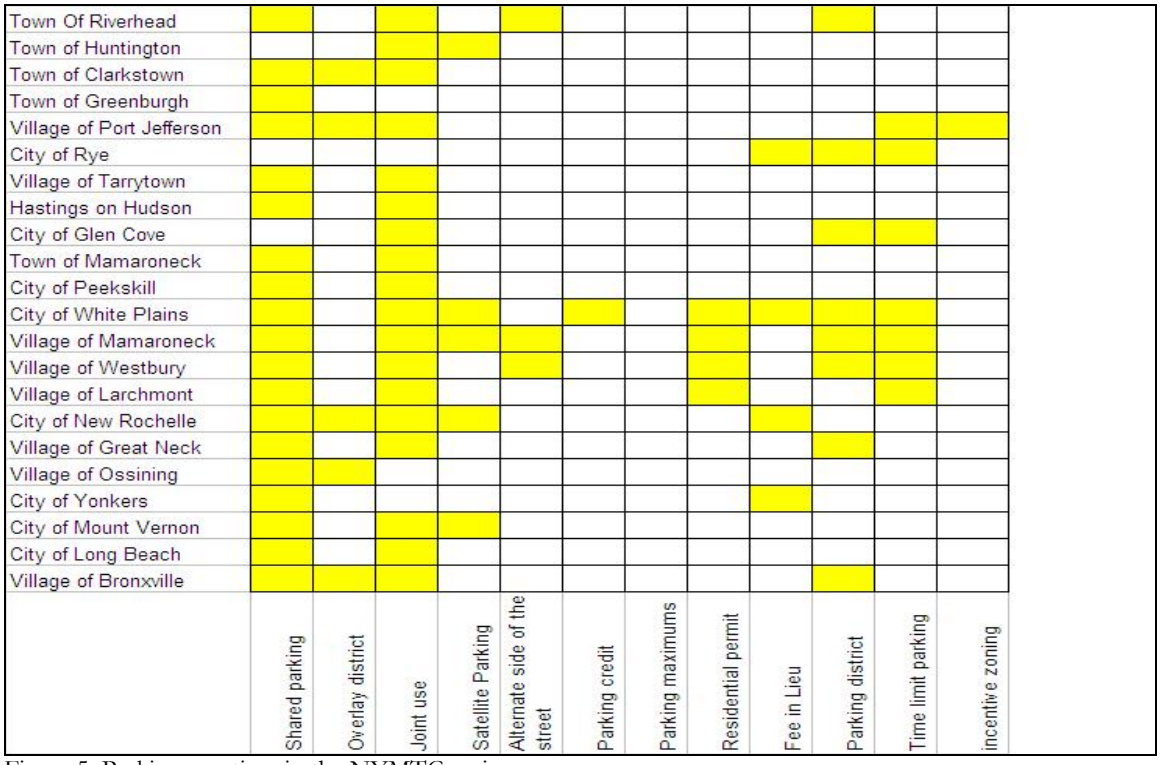

Figure 5: Parking practices in the NYMTC region

Some of the provisions as seen in denser municipalities in the NYMTC region include:

Congestion/value pricing- New York City's program for commercial parking is one of the best practices. This is applicable to parking of commercial vehicles on certain streets in midtown Manhattan. Price for parking varies depending on the time for which the vehicle is parked. Rates for commercial vehicles are $2 for one hour, $5 for two hours, and $9 for

three hours of parking. These are controlled by muni-meters. This has been widely accepted by business owners and drivers as well and has effectively reduced double parking problem of commercial vehicles.

Reduced parking requirements are applicable in parts of NYC which are served by subway. In addition, the city also uses "parking maximums" for different uses. The required number of spaces is calculated depending on its location and percentage of dwelling units in case of residential district. For example residential project in Jamaica, New York by LCOR Inc developers has negotiated a zero parking requirement because of its location and proximity to the train station.

Residential Parking Permit (City of White Plains) This provision is applicable in municipalities which have a downtown core. Residential parking permit secures a parking spot for the residents. This reduces problems due to reduced spillover from users of adjacent buildings.

Fee in lieu of parking (City of White Plains) encourages developers to pay for a fee to the municipality or the parking authority in lieu of providing for the parking. The businesses pay an equivalent fee for a parking space in the municipal lot.

A Parking district (City of White Plains) is usually formed in downtown or a mixed use district, with a different mix of uses with varying parking needs by establishing a parking district/ central parking system which cater to the needs of the adjoining businesses. It is used in combination with resident parking permits and fee in lieu. Such a provision takes off the burden from individual businesses to provide for parking. The businesses contribute to the parking fund which is used to increase the supply of off street parking.

Parking credit (City of Rye) is a practice under which buildings not in conformity with the off street parking will receive a parking credit for the difference between currently required parking and total number of spaces provided for the existing use. The credit may be applied for any future use of the existing building. Such a practice is applicable in places where it is impossible to increase the supply of parking because of change in use or any alterations to the existing structure.

Overlay zoning (Town of Clarkstown) is a form of zoning which sits over the existing zoning. The overlay zoning guides the development of a particular district for which the overlay is created. This is especially useful in case of urban renewal districts or redevelopment project, which may have special requirements because of its physical conditions. This district has reduced standards for all its uses within the boundaries of the overlay zone. For example hamlet overlay district in Clarkstown, Rockland County

Floating zone (City of New Rochelle) is a type of zone which is available in zoning text but is not physically mapped. The zone becomes visible when the need arises. This gives flexibility in determining the parking requirements for the kind of use that comes up in future rather than allocating space for parking.

Satellite parking (City of White Plains) allows the business to provide for parking outside of its premises which is at a walk able distance from the business for which the parking is provided, or there is a shuttle service form parking lot to the business. Such a provision relaxes the businesses from providing parking within the building especially in downtown location where supply of land is limited.

Joint use of Parking (City of Rye, White Plains, and New Rochelle) permits parking lots to be shared by two or more uses in different lots. These uses have to be from a walk able

distance from the parking lots. Such an arrangement reduces scattered lots, reduces curb cuts thereby reducing the impervious surface.

A Shared parking provision (City of Rye, White Plains, and New Rochelle) encourages businesses to share the number of parking space among different uses with different peak times. For example a theater may share a parking lot with commuters. Similarly commuters may share parking spaces with residents. Such a practice reduces the total number of required spaces.

Land banked parking (Town of North Hempstead) designates an area on the lot specifically allocated and designed for parking, but not immediately developed as such. This reduces the amount of paved surfaces which may be developed as a parking lot as the need arises.

FINDINGS

The following section provides a description of various parking provisions and policies pertaining to on-street and off street parking facilities in the sample of municipalities. Please refer to Appendix 6 for comparison of questionnaire responses for different municipalities.

Some of the findings from the research are

Municipalities with different characters, have similar parking provisions: Metropolitan transportation authority, Metro north and Long island railroad with an extensive railroad network serves different parts of the region. However, the advantage of being a rail town is not visible when it comes to comparing and evaluating zoning ordinances. Parking requirements for a suburban municipality like village of Great Neck are similar to that of a railroad town such as town of Clarkstown. Parking requirements for retail, commercial and residential are similar in both municipalities.

"Inadequacy of spaces" was the most common response from all municipalities in the sample. Sixteen out of twenty two municipalities mentioned that there exists shortage in parking. Dense urban municipalities like City of White Plains have created parking district. A parking district consists of downtown business owners/property owners and employees, which provides convenient attractive and adequate parking for downtown customers, employees and employers. There is on street and off street parking provisions for patrons and customers. A parking permit is required to access these municipal parking lots.

As businesses grow and building structure is altered, parking space usage changes. The municipality / parking authority strives to improve the quality of existing parking spaces and strategies to meet the increasing demand. There is also a parking trust fund which

ensures that revenue generated from parking is used towards parking improvements. Such a provision is seen in five out of twenty two municipalities in the sample.

Strategies to alleviate parking problems: Municipalities adopt different strategies to alleviate parking problems. Issuing different types of permits for various purposes, i.e. commuter permits for residents and non residents (Hastings on Hudson), business permits (Village of Tarrytown), employee permits (Village of Great Neck), 24 hour, day time (City of Yonkers) and night time permits only (Village of Larchmont) for using off street facilities.

The municipality also issues residential parking permits to protect against spillover. It also gives the business owners the option to pay a fee in lieu of providing parking. This helps reduce off street parking demand. This is seen in case of City of New Rochelle, City of Rye and City of Yonkers, village of Port Jefferson.

Handicap permits are issued by all the municipalities in the sample. Municipalities like Hastings on Hudson, City of Rye, and City of Glen cove have handicap parking zone district while Village of Port Jefferson have handicap parking permits.

A parking authority, parking bureau and parking commission were different forms of management authorities engaged in managing the supply and demand for parking. These authorities enforce and regulates on street and off street parking. This is seen in case of Town of Greenburg, City of New Rochelle, Village of Bronxville, City of Yonkers and City of Mount Vernon.

In case of suburban municipalities, there is an oversupply of parking, which is generally available in form of large parking lots in strip malls. Parking is more an issue of ownership rather than supply, for example, the Village of Baxter Estates. The lots that fall within the village boundaries are owned by the town of North Hempstead and the

municipality has no control over the use of land. In case of Clarkstown, the public parking lot including park and ride is owned by Rockland County and is funded by the State. Consequently there is inadequate parking available to the municipality to use as desired.

Off street parking lots are available in form of public parking lots. Off street parking facilities are required to comply with American Disability Act accessibility guidelines for design of facilities. There is a fixed percentage (approx 5 percent of the total number of spaces) of spaces that need to be reserved for handicap parking.

Regulation of parking: Inadequate residential parking permits and fines due to expired parking meters is a major problem in seventeen out of twenty two municipalities. Municipal parking lots are either metered (paid) or unmetered, regulated through permits and meters. This is seen in sixteen out of twenty two municipalities of the sample. Unmetered lots are regulated by permit as in case of village of Larchmont. In case of town of Greenburg off- street parking is converted to permit parking overnight. On street parking is regulated in nineteen out of twenty two municipalities. This has varying time limits and varying prices for 15 minute, 30 minute or 2 hour parking limit depending on the zone. City of Glen cove, Town of Clarkstown and the City of Peekskill enforces time limit on on-street parking manually.

No overnight on street parking is allowed. However, the Village of Ossining issues night time permits to residents for parking on the street between 6 pm to 8 am. The village of Larchmont also provides temporary parking permits for $3/day

Parking rates: There is little variation in parking rates for different garages. The hourly rate at garages even up after certain hours of parking. The City of Yonkers and the City of Mount

Vernon have variable pricing (somewhat linear parking rates) which increases as the duration of parked vehicle increases.

On street parking is either free or has a time limit enforced on it. Metered on street parking allows parking for 30 minutes (on average) for a charge of $0.25 with a limit on maximum number of hours to park. Short time limits at on-street meters promote turnover which increases space availability. This time limit varies by location.

The Yonkers Parking Authority has variable rates for parking depending on number of hours the vehicle is parked. Instead of traditional flat rates for parking, the pricing is linear.

Hours and days of operation: Hours and days of operation for various off street parking facilities vary across municipalities. All meters are effective Monday to Friday except in City of Yonkers which is effective for 7 days and Village of Bronxville which is in effect Monday to Saturday. Hours of operation are generally 8am -6 pm.

Metered parking lots have varying time limit on parking meters for different zones. This ranges from 12-24 hr time limit (for commuter lots) in contrast to 1-2 hour parking limit in commercial zones. Business metered zone have time limit range from 1hour-8 hour.

Commuter Lots: Cities which lie along the Metro north corridor line and Long Island rail road corridor have parking problems at park and ride/commuter lot locations. Commuters lots are either free or have minimal charges. These are usually regulated by parking permits. All commuter lots in the selected sample have inadequate parking spaces with a long waiting period for parking permits. In addition there is a spill over problem in adjacent areas of these commuter lots which leads to illegal parking and parking tickets around the train station.

Commuters permits are issued either free of cost or are available at a very low cost. There is a different charge for residents and non-residents.

There is not any variation in pricing for parking in different municipalities. There exists a flat rate for parking in various metered parking facilities Prices vary from $40-$70 per month. Some commuter lots are metered for a maximum period of 12 hours. The Village of Mamaroneck has limit of 12 hour on commuter parking for an annual permit of $360 for residents.

Parking provisions for the change of use: Change of use, enlargement or alteration to existing building structure requires adherence to new parking requirements as per zoning ordinances. This is applicable to all the municipalities in the sample except city of Rye, which has a provision of parking credit. This allows the alteration in the building structure, without adding parking spaces. The credit for parking can be applied towards any future use of the existing building. A change of use or expansion of an existing use within an existing building, structure or a portion of the building, occupying 2,500 square feet gross floor area or less shall be exempt from providing off street parking. The Village of Hastings-on-Hudson has this policy to limit the number of driveways and curb cuts accessing off-street parking areas within the central commercial district. The City of Mount Vernon, City of Glen Cove and City of Rye have separate standards for redevelopment and new development projects. The City of New Rochelle has separate requirements for its downtown district. The central parking area (the downtown district) has more restrictive parking provisions than in other areas of the city because of the availability of public transit, proximity to inter modal transportation center, availability of on street and off street parking spaces multiple destination accessible on foot.

The concept of an overlay district is seen in ordinances in three out of twenty two municipalities. An overlay district is used in urban and dense municipalities such as Town of Shelter Island, City of New Rochelle and Town of Clarkstown, wherein additional zoning is overlaid on the existing plan. This encourages high density development in a designated overlay zone without additional parking requirements. The City of New Rochelle has downtown density bonus overlay zone to encourage large scale redevelopment of large properties and infill on smaller properties. This leads to a separate parking plan specific to a location and determining the number of spaces based on its particular use.

Village of Ossining has both a "special height zone overlay" and a "historical overlay district". This gives flexibility of context specific parking provisions for these special zones.

Village of Port Jefferson also has provision of incentive zoning which eliminates the need for on site parking as an incentive to property owners to encourage improvements to the lands and buildings contained within the Arts district. This helped in the creation of art and cultural resources within the village.

A floating district is another phenomenon prevalent in dense municipalities which reserves the portion of land for later use without actually zoning it. This is seen in case of City of New Rochelle. These zones are context specific and prevents the over supply of parking.

Ambiguity with parking provisions: There exists no standardized process to determine the parking requirements based on building use. When a lot is divided by district boundaries such that it is located partly in one district and partly in another district, the regulations for the district requiring the greater number of parking spaces shall apply to all of the lot.

There is no uniformity in adopting a unit of measurement. For example, square footage is used to determine parking requirement for a retail store use, number of employees are used to determine required number of parking spaces for an office building and number of workers in the largest working shift to determine parking requirements for an industrial building. Similarly a restaurant may use number of employees or floor area to calculate parking requirements. In all municipalities in the sample, there are two units of measurements for the same use. For example, a club use in the City of Yonkers allocates one parking space for four seats or one space for hundred square feet. In such cases the one which yields greater number of parking requirements is accepted for calculation purposes. Gross floor area is a standard measure to calculate parking requirements for all retail uses in all the municipalities for the sample. However the City of Long Beach has building frontage as basis for calculation.

Municipalities differ in definition of parking space in terms of dimensions. Town of Riverhead, Clarkstown and Village of Port Jefferson considers car port garage as one parking space, thus requiring one additional space to satisfy parking requirement for a two family dwelling unit. Other municipalities do not explicitly mention any such provision.

It is interesting to see how the "units" of parking provisions vary for different uses. Unit of measurement varies from number of students per classroom (City of Yonkers) age of children in different groups or faculty staff in the school (City of Rye) or square footage of the largest assembly hall or number of students (City of Yonkers). Requirements for an industrial/manufacturing use are based on number of persons working in the largest shift. Unit of measurement for the industrial use is sometimes area in square footage as in case of City of Glen Cove or number of employees in case of the City of Long Beach. Joint use of

parking space and shared parking is used interchangeably. This is seen as a common practice in all the municipalities in the sample.

Other provisions: There is very little or no mention about on street parking provisions in the municipal codes. This may be because on street parking is considered as a public good, and is the responsibility of the municipality. Municipality/parking authority regulates on street parking by prohibiting parking on certain streets, regulating hours of operation, charging for spaces. There is no set rule to allocate the number of on street parking spaces for different businesses.

Alternate-side-of-street parking is seen in the Village of Hastings on Hudson and New York City. The owner has to move his vehicle on certain sections of the street on certain days for street cleaning purposes. City of Rye and Town of Riverhead issues seasonal parking permits which regulates parking between the periods of June to September. Pay stations at the Village of Port Jefferson are unique in its application. These pay stations are found all over the village. The user can feed the meter from any pay station. These pay stations accept tokens from participating merchants. Customers receive tokens from merchants based on the purchase.

Size of the stall is a design standard followed in parking provisions of all municipalities; however there is no uniform size of stalls. Town of Greenburg requires twenty feet long and at least ten feet wide while City of New Rochelle requires eighteen feet long and nine feet wide.

Interviews suggested that the parking provisions are not restrictive i.e. they reflect the needs of the users. Ten out of twenty two municipalities within the sample mentioned that developers do not need to apply for variance so often. New York City, on the other

hand, has restrictive parking provisions for different uses. When two or more provisions are applicable to a particular district, the one with more restrictive provisions are applicable to a particular district, i.e. the one which permits fewer numbers of parking spaces, most exclusive use of spaces and fewer numbers of curb cuts. When parking requirements are determined by two different units, the one which yields lower number of spaces is used for calculation purposes. Different community districts in the city have different parking ratios. This is dependent on the location, accessibility and proximity to the train station. Unlike other municipalities in the New York region where number of parking spaces is calculated on floor area or number of spaces per unit, New York City has maximum parking requirements in terms of percentage of new development units. For example off street parking requirements for a new residential development should not exceed twenty percent of the new dwellings or two hundred spaces whichever is less. Similarly for hospitals, the city has a maximum of hundred spaces for a facility with one entrance. For a commercial establishment, zoning codes requires one space per four thousand square feet of floor area or hundred spaces, whichever is less.

ANALYSIS

Municipalities differ in their attitude towards the use of car. Some may prefer creating walk able spaces that reduce car use, while others may insist on complying with provisions thereby creating car friendly spaces. Such a varying attitude among policy makers leads to diverse practices in parking with no single formula governing the supply of spaces. "Variance" from parking requirements thus becomes a site specific solution to excess parking requirements depending on the negotiation between the planner and the developer.

It is interesting to see that theoretically supply of parking is dependent on location of a particular use, adjacent uses, availability of public transit, walk ability among different destinations. However such factors are ignored while calculating the number of parking spaces. There seems to be no such studies done in any of the municipalities in the sample before determining the parking requirements for different uses. In fact these requirements have been followed as a legacy and there has been no change in policies that affect the supply of parking

Town of Riverhead and city of Yonkers had no parking problems. This may be because of large undeveloped available land in the town of Riverhead. Municipalities with parking authorities are more efficient in charging for parking and enforcement of regulations. The Yonkers Parking authority manages on street and off street parking in the city.

Parking provisions as per zoning ordinances often constrain the developer from developing a piece of land. If there is a conflict between parking requirements and density which makes it difficult to develop at a given density, parking requirements govern the situation. It is interesting to note that planners seem to be aware that redevelopment project

should have reduced parking requirements but do not make any such provisions through ordinances. Instead, they expect developers to apply for variance. For example, in the case of town of Clarkstown, a small business owner might not be able to provide the mandatory number of parking spaces based on square footage of gross floor area (especially in case of furniture store where large floor space is required because of the type of merchandise). This leads to the frequent practice of applying and granting of variance, in order to be waived from fulfilling the minimum parking requirements.

It is interesting to see different units for determining parking requirements. For example, in calculating total number of spaces for a school, planners assume that as kids graduate classes in school i.e. from elementary junior to high school, they will drive to school, so planners make provisions for car parking spaces based on size of classroom or capacity of largest assembly building. The same concept holds true for industrial uses where parking provision is based on largest shift which occurs only during certain period of the year.

The enlargement or expansion of a building is dependent on provision of parking as in case of Village of Larchmont. Where the number of parking spaces is calculated on basis of club membership, the club cannot increase its members unless there is an equivalent increase in supply of parking.

Shared parking is a recommended practice for reducing the supply of parking. This is effective where the uses are complementary and have different peak times of operation. However, interviews suggested there are some issues related to shared parking provision because of an over demand of parking spaces for some time.

For joint use of parking, the total number of spaces is calculated by cumulative addition of required number of spaces for each use. Although this does not affect the supply of spaces, it however reduces the number of curb cuts and reduces paved surface area.

Some of the practices such as alternate-side-of -street parking and standardizing the stall size might be effective in alleviating parking problems. Alternate -side-of -street parking, intended for street cleaning is one of the strategies to keep the vehicles moving. Such a provision denies people from using residential streets as storage facility. There are no standard dimensions for parking stalls. Redesigning lots to accommodate more cars (surface lots and decks) with a standard size of stall may be useful in economizing on the use of space.

Although reduced parking requirements might benefit developers by reducing the costs associated with the construction, operation and maintenance of parking facilities, developers may not opt for the reduced parking requirements because of the potential impact on the marketability of the project to the lending institutions or the prospective buyers. With approximately fifty percent of the responses from the sample, in which developers do not seem to apply for variance implies that the provisions are responsive to the needs of the user. However, follow up interviews with the developers suggested that variance is not a preferred alternative unless absolutely necessary. Seeking variance from parking requirements is an expensive and time consuming exercise.

"Inadequacy of spaces" was a common response from all the municipalities. However, further interviewing did not suggest a complete analysis of the problem, for example, the interviewees found it difficult to pinpoint times or particular groups when the problem was existent. Issuing resident permits is seen as the most effective way of dealing

with parking problems in a downtown district. This encourages people to buy permits to reserve their spaces. This practice clogs the streets with cars that stay in one spot for weeks at a time, which can be bad for businesses and for the community as a whole. There will be no place for customers and visitors to park.

INNOVATIVE PRACTICES IN PARKING

The location of any project impacts parking demand. A railroad town with an access to transit will have reduced demand for parking than the suburban town which has no rail road or any other means of public transit in its vicinity. The demographics of the anticipated users of the project impact the parking demand. The high cost of car ownership might discourage low income residents from owning a car, thereby requiring fewer parking spaces.

Parking is of more concern in downtowns where land is available at premium. Questions are being raised about how much parking is really needed, what form this parking should take, and who should pay to use it. Large surface parking lots with unused capacity in downtown districts consume valuable land that could be put to greater economic use, particularly as sites for mixed-use development. Similarly large park and ride lots in front of train station might discourage people to walk to the train station (Calthrope 1996). There are many problems associated with high parking ratios and the subsequent over supply of parking; there is a need to economize on the use of parking efficient management of existing spaces to cater to the changing needs of the community, developers and the users (businesses, visitors/residents)[2]

Some of the innovative practices applicable to various aspects of parking are parking demand, parking design, parking financing, and parking management and technology.

Parking Management: Demand management is an important component to encourage more efficient use of transportation infrastructure. The practice aims at reducing the demand for parking. For example, Gaslight Commons in South Orange, NJ has 1.25 spaces per dwelling unit unlike two spaces per dwelling unit for residential use; proximity to transit and location being the criteria to justify the reduced requirements.

Figure 6: Gaslight commons, South Orange, NJ

Demand management through shared parking is another strategy widely seen in many municipalities. The city of New Brunswick, NJ adopts a shared parking provision to fulfill the off street parking requirement for different uses in the downtown. Please refer to the appendix for shared parking provisions for the City of New Brunswick. Montclair, NJ, has been at the forefront of innovative commercial parking standards. Their standards allow for shared parking. Shared parking allows spaces to be used during different time periods throughout the day in areas where mixed use development makes this possible. In Montclair, entertainment destinations use shared parking on evenings and weekends, while commuters inhabit the spaces during workday hours. The Rahway parking authority has shared parking

provision between commuter lots and nearby residential. Shared parking in South Orange encourages commuter lot at the train station share spaces with theater patrons. This is because of the close proximity of the theater district to the train station.

LCOR developers, a premier developer in New York is working on a building with 400 units in midtown Manhattan with no parking requirements. This is attributed to its location and proximity to subway.

Parking financing: The cost of structured parking includes facility's annual income, operating costs, amortization rate, land costs and construction costs. The cost of parking also needs to consider the highest and best use of land[23].

The need for structured parking is becoming greater in downtown redevelopment and transit oriented development areas where the supply of land is limited. The cost is further increased because of the opportunity cost associated with the use of that piece of land especially in a downtown.

Private sector financing, bonds, grants, tax revenues are some of the financing options available. Some examples of creative parking financing methods includes fee-in-lieu of parking, risk fund, bonds, tax exemptions, variable rate taxes and grants[23].

In some cities, developers are allowed to buy out of minimum parking requirements. The fee-in lieu fee is set at a level below the cost of constructing parking spaces and can be used to fund future parking facilities. This can help in the redevelopment of older and historic properties and can be used to develop shared parking facilities[17]. A tax on parking (structured or surface) would give an incentive for efficient use of parking facilities (Shoup 2005).

Local jurisdictions may use public financing that can involve the use of municipal bonds. Parking revenues, lease payments, benefit assessments may be used to secure bond payments. For example the New Brunswick parking authority finances its parking decks with municipal bonds. The Ferren deck in New Brunswick is a good example where office and retail income support the financial operations of the parking component.

Design of parking facilities is another aspect of parking. An intelligent and efficient design of a concrete parking structure can either make a development either car friendly or pedestrian friendly. The placement of a garage and its orientation in integrating with adjacent land uses, all affect the character of the neighborhood. Cranford, NJ has wrapped its deck with housing and retail; Princeton uses a stainless steel mesh which has a very modern appearance.

Figure 7: Structured Parking design, Princeton, NJ

Wrapping around of the structure with retail or residential component provides an alternative to otherwise concrete façade of the parking structure. Another example of optimizing on the use of spaces is residential development in Morristown. The developer has economized on use of space of parking by design of aisles and increasing the number of car park spaces. Supply of spaces is also dependent on type of unit. For dwelling units over

$600,000 there is a provision of two parking spaces in the structured parking. For a middle range apartment, there is one space allotted per dwelling unit. Rental apartments have no parking space reservation.

Management Authorities have an impact on how parking is managed within a municipality. Parking Authorities like the New Brunswick parking authority caters to the on street and off street parking needs of the businesses in the downtown. The municipal decks are accessible to permit holders, commuters and daily visitors. Some of the spaces are also leased to residential development to fulfill off street parking requirements, for example The Skyline Tower, New Brunswick. When Penrose Properties converted the former Middlesex County administrative building into residential, rental and office space at Skyline Tower, no new parking was built. Instead the municipality allowed the development to lease parking spaces in municipal lots to fulfill parking requirements.

Technology and Intelligent transportation systems (ITS): Parking database can be used to provide the public with real-time information on parking availability at employment sites and other attractor/generators. Downtown Seattle has a parking database that uses intelligent transportation systems technology to facilitate the development of a comprehensive on-street and off-street database of parking[17]. This gives local jurisdictions a more accurate assessment of parking use upon which they can develop programs that better reflect local conditions and issues. ITS technology can thus be used to gather, analyze and provide real-time parking information. Automated parking facility in Hoboken uses robotic technology facility which accommodates more cars in less space thereby economizing on space for parking.

Figure 8: Automated parking facility, Hoboken, NJ

Parking payment technology, such as pay stations, is seen in village of Port Jefferson (Please see figure below). Rapid development in pay station technology is providing options for variable pricing, accept multiple payment mediums, more user friendly, support ITS information on parking availability to users and provide better intelligence for parking system managers.

Figure 9: (Right) Parking meter in Village of Port Jefferson (Left) Muni-meter parking in NYC

Some of the other parking practices which have been successful in improving the efficiency of the parking are as below.

Parking maximums and area wide parking caps effectively reduce the supply of parking. Few communities have made efforts to reduce the amount of parking required. Jersey City, NJ, has a policy on for reduced parking requirements which are applicable to its downtown district. Please refer to Appendix 4 for a summary of reduced parking requirements, for Jersey City. The city has adopted "parking maximums" to reduce the amount of off street parking. Jersey City has a city wide parking maximums for different uses. For example at the Liberty Harbor North project, residential parking requirements were set at a maximum of one space per unit.

Maximums can complement minimum parking requirements thus ensuring a threshold level of parking supply leaving individual developers to determine the appropriate amount of

parking. Similarly, area wide parking caps limits the total number of parking spaces that can be constructed in a defined area.

Reduction in parking requirements is applicable to all type of uses in the Jersey City redevelopment zone (i.e. residential, commercial, office, retail, etc.) These numbers are further reduced for areas which are served by one or more transit lines. For Example, an office requires four spaces per thousand square feet as against nine spaces per thousand square feet of area.

Figure 10: Liberty Harbor North Project, Jersey City, NJ

The parking management program in Lloyd district, Portland ,OR encourages transit improvements and provides incentives. Some of the strategies include the establishment of direct bus routes connecting homes with destinations in the district, an employee transit pass, elimination of free commuter parking, free on street parking, aggressive parking ratios restricting on surface parking lots, and development of lots near train station. The Lloyd district created new development (with public private participation) with reduced commercial office vacancy and decreased parking spaces[17].

Washington DC, Washington Metropolitan Transportation Authority, offers metro riders at select stations the option of using car sharing through memberships. The users pay hourly or on mileage basis. This takes off the worry of having a car at origin and destination at the train station. Zip car and flex cars (in NJ) work on the same principle.

In Hoboken, the city issues permits for different purposes. Residential parking permits, visitor parking permit and temporary parking permit are issued to Hoboken residents who own or lease a vehicle. Business parking permits are issued to business owners within the city. One side of the street is reserved for resident parking under resident permit parking while other side of the street is unreserved and can be used by resident's visitors or commuters.

Parking reforms such as changing the parking policy might encourage people to use transit. A Connecticut employer, Aetna, the health insurance company, is charging parking fees (ranging from $75 to $200 per month) from all Aetna workers except those who belong to vanpools. This will eventually reduce the demand for parking and lower the cost of parking facilities [21].

Parking pricing can be effective in reducing the demand for parking. The figure below illustrates pricing policies for three different cities. Non linear parking pricing in Berkeley increases with time. The City has variable hourly rates such that it is more economical to park for less time. The longer the stay the higher you pay for parking. This not only helps increase the parking turnover but also frees up spaces for other customers.

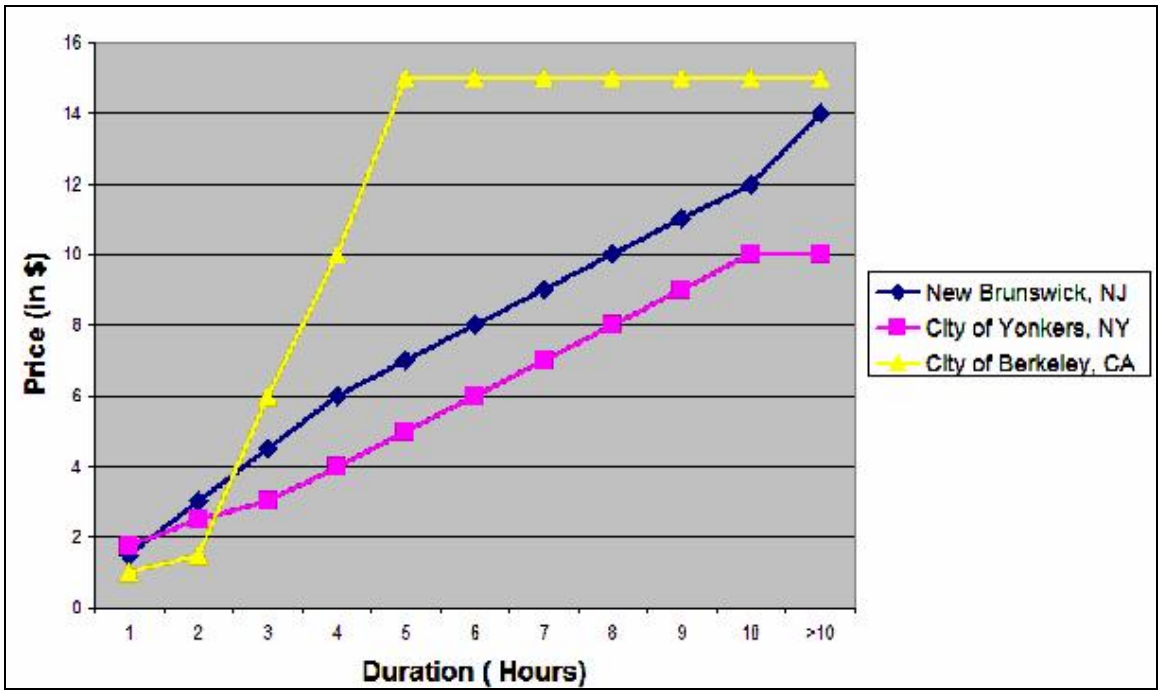

Figure 11: Variation in parking prices for different cities

Parking ordinances are more effective in regulating the supply of parking. The "72-Hour Rule" in Berkeley Parking ordinances prohibits parking of any vehicles upon any public street in the City for seventy-two or more consecutive hours (Parking ordinance, city of Berkeley). The "72-Hour Rule" applies to any public street in the City, regardless of other parking designations or restrictions. Such a policy helps in keeping the car on move rather than using that piece of land as storage for the vehicle.

Parking ordinances for New York City states parking maximums and off street parking requirements as a percentage of total dwelling units in case of residential as against providing the spaces for every dwelling unit. Different zones have different parking maximums depending on the availability of transit.

A parking district is another form of parking management. These are designated by local jurisdictions in which parking supply and rates are regulated to meet the parking needs

of the area. Municipal parking lots and centralized parking system can also be used to mange the supply of parking. These facilities are financed through fee in lieu, municipal bonds; parking tax on privately owned lots etc. This is seen in four municipalities in the study sample of the NYMTC region.

Supply management strategies and pricing policies can be designed for a balanced transportation system and enhance economic development. Local jurisdictions may require parking ordinances for development projects located in the district. In Baltimore, Maryland, no land may be used for parking lot nor shall any building be razed to create a parking lot unless approved by an ordinance of the mayor. Thus the city can control the overall parking supply regulating on site parking on a project by project basis.

Unbundling the price of parking from the price of housing realizes the actual cost of parking and makes housing more affordable. People can rent a parking space as per their choice (Shoup, 2005). In Gaslight Commons, South Orange, New Jersey, and Bank Street Commons in White Plains, New York, the developers charge separately for parking. Such a pricing strategy provides incentive to reduce demand for parking as all residents must pay for every additional space.

Shared parking is an effective strategy to reduce the demand for parking when the adjacent uses are complementary in nature such that they have different peak periods. A suburban office location requires four-five spaces per thousand square feet. An urban location such as Jersey City or Hoboken would need only one space per four thousand square feet. The city of New Brunswick adopts shared parking provision to fulfill the off-street parking requirement for different uses in the downtown. At the recently completed Heldrich Center, the mixed-use project uses shared parking provisions to reduce the overall

number of parking spaces required. Parking demand for the properties' different uses, hotel, residential and retail, were thus all satisfied. Please refer to Appendix 7 for summary of shared parking provisions for the city for the city of New Brunswick.

A park and ride at the Turtle Back Zoo and the South Mountain Arena in West Orange, serves as a commuter park and ride weekdays and parking for an entertainment venue during evenings and weekends[20].

In most communities however, reductions in parking requirements are handled on an ad hoc basis. For example, there are no specific provisions to reduce parking requirements in place for development in New Brunswick's Transit Oriented development (i.e., transit village area), though there are provisions for shared parking arrangements. Variance from parking requirements is granted on project basis, and is dependent on the negotiations between the developer and the municipal planner.

Transit friendly parking design in Los Angeles County Metropolitan transportation Authority developed is an important element of its congestion management program. It includes development credits for projects willing to implement parking pricing[17] .

Annual passes (eco program) have discounted low cost transit pass programs that reduce parking demand. The free or low cost transit passes or tickets reduce parking demand. At the University of Washington, the use of transit has reduced the need for parking; this has saved the university from investing in construction of parking decks. University of California, (UC) Berkeley has a short term visitor parking in limited supply. A discounted annual pass program for students has reduced the demand for parking increased parking revenue and increased the supply of spaces for short term visitors. UC works with transit in a program that allows full time students unlimited rides on transit.

Metro-North Railroad has been involved in the planning of a transit oriented development near the train station at Beacon, Dutchess County, New York. It has also undertaken a number of initiatives, such as the station net leasing program and parking and access improvements at Poughkeepsie[21].

RECOMMENDATIONS

New York is a home rule state. This gives the constituent municipalities the power to regulate the use of land. Despite this, there is little variation in parking practices across the municipalities. This may be due to similar parking problems and similar solutions adopted. This may also be attributed to limited resources or zoning regulations, that restricts innovation in managing the supply of parking. It is therefore clear that any strategy successful in one municipality is likely to be readily accepted in other municipalities.

Struggle for parking is a common symptom of a healthy business area, no matter how restrictive parking policies are, these will not be effective in eliminating the car use. How ever these policies may be a step in the direction of reducing the use of car. Cities do have power over building codes, land-use plans and zoning. Cities like Portland, Pasadena, Austin, Denver has used zoning tool to reduce the supply for parking and improve the efficiency of existing parking infrastructure. The requirement is tailored to cater to the needs of the users. Instead of copying parking numbers from neighboring cities or adopting Institute of Transportation Engineers (ITE) standards, it would be useful if parking requirements reflect the user needs and are more in context of location and geography. Zoning can be used as an effective tool in restricting the type of businesses. For example businesses that require large parking lots because of the type of merchandise should be restricted in transit oriented development.

A systems approach to identify parking need is required. To solve the problem of parking one must identify what is the cause of problem and whose problem we need to address. Solutions to parking problems would differ for residents, visitors, commuters and

businesses. Having identified the user group, a planner must know the location, days and timing when supply of parking is a problem. Is it cruising, inadequacy of spaces or simply the difference in pricing of on street and off street spaces which makes it more attractive to search for parking spaces? For example parking calculation for commercial should take into account transit users, walkers and shared parking arrangements.

Finally, it is important to create and update inventory of parking spaces at a local level. Information on pricing for various on street and off street facilities is required to identify the real problem. Realistically, there will probably never be a systems process adopted to determine the parking requirements, but perhaps some progress can be made by bringing in awareness of the need to do so.

Zoning ordinances should reflect the flexibility in provision of parking spaces as per context. "One size fits all" does not work in determining the parking requirements. The need for parking differs by location and availability of transit and other facilities; the parking solution for a suburban location would differ from a solution for a downtown. Because of our car centric lifestyle, we cannot eliminate parking requirements altogether, however we can work towards reducing the supply of parking. Even a slight reduction from existing provisions will have a larger overall effect on reducing parking requirements.

CONCLUSIONS

There is a huge opportunity for adopting best practices across the different municipalities. Municipalities such as Mount Kisco, Ramapo and town of Riverhead from the sample, have the potential to grow and adopt innovative practice to stream line the development process. Some municipalities, which have been resolving parking problem by adopting policies such as parking district, residential fee in lieu and overlay zoning, have experiences that can be adopted by other municipalities facing similar problem. There is growing awareness among municipalities to encourage use of shared parking to optimize the use of available parking spaces.

Discussion with planners indicates that increasing the supply of parking will keep commuters and shoppers from filling up the on street parking spaces in nearby residential areas. According to municipal codes, minimum off street parking requirements are imposed primarily to relieve traffic congestion. Planners also mention that such policies have been carried on as a legacy and nothing much has been done to reflect the changing trends. Further research is required to justify these parking provisions and to understand how well they are working. It is therefore important to understand the impact of local conditions on parking requirements and vice versa. In case of transit oriented development (TOD), New York City and other municipalities operating as a natural Transit Oriented Development, there is a need to examine the relationship between parking requirements and success of a TOD. This will help understand if parking requirements prevents the system from being used to their full potential.

"Planners need to get good information that provides insights into the problem, and enables changes in policy and action" (Dandekar, 2003). Having identified the best practices,

further research is needed to explore the suitability and possibility of implementation of such practices to alleviate the problem and turn it into an opportunity for change and development.

APPENDIX: 1

	Municipality		Area in sq miles	Density per sq miles	Commuter Rail Station	Public parking	
						Parking Authority	Municipality
1	City of Glen Cove	Nassau County	12.2	4006	X		X
2	City of Long Beach	Nassau County	2.2	16594	X		X
3	City of Mount Vernon	Westchester County	4.3	15689	X	X	
4	City of New Rochelle	Westchester County	10	6973	X	X	
5	City of Peekskill	Westchester County	4.3	5189	X		X
6	City of Rye	Westchester County	5	2588	X		X
7	City of White Plains	Westchester County	9.8	5415	X		X
8	City of Yonkers	Westchester County	18	10847	X	X	
9	Clarkstown	Rockland county	38	2129	X		X
10	Hastings on Hudson	Westchester	1.96	3899	X		X
11	Town of Greenburgh	Westchester County	30	2842		X	
12	Town of Huntington	Suffolk County	93	2078	X		X
13	Town of Mamaroneck	Westchester County	6	4377	X		X
14	Town Of Riverhead	Suffolk County	67	410	X		X
15	Village of Great Neck	Nassau County	1.37	7062			X
16	Village of Larchmont	Westchester County	1.07	6073	X		X
17	Village of Mamaroneck	Westchester County	3.23	5799	X		X
18	Village of Ossining	Westchester County	3.22	7464	X		X
19	Village of Port Jefferson	Suffolk county	3	2587	X		X
20	Village of Tarrytown	Westchester County	2.98	3724	X		X
21	Village of Westbury	Nassau County	2.39	5979			X
22	Village of Bronxville	Westchester County	0.95	6824	X		X

Figure 12 Characteristics of sample municipalities in the NYMTC region, Source: Census 2000

APPENDIX: 2

Questionnaire for County Planner.

1. Which of the towns in your county is more important from development point of view or which is more likely to have development in future?

2. Which of the villages in your opinion are more likely to emerge as a potential growth center in the future? Please elaborate the reasons

3. Which municipality (Town /Village) in your view is having problems related to parking (For example inadequacy of parking spaces in the downtown, park and ride or any other location.) Please explain.

4. Who is responsible for zoning ordinances for small villages which do not have municipal authorities? How do they determine parking requirements for different uses?

5. Is there any information available on list of unincorporated villages?

	Westchester County	Putnam County	Rockland County	Nassau County	Suffolk County
Cities	Mount Vernon			Long Beach	
	New Rochelle				
	Peekskill				
	White Plains				
	Yonkers				
Towns	Mamaroneck	Patterson	Clarkstown	Oyster Bay	Huntington
		Southeast	Ramapo	Hempstead	Islip
		Carmel		North Hempstead	Babylon
					Riverhead
Villages	Hastings on Hudson	Brewster	Upper Nyack	Lynnbrook	Patchogue
	Tarrytown	Cold Spring		Westbury	Lindenhurst
	Ossining	Nelsonville		Garden City	Great Neck
	Portchester			Freeport	Port Jefferson
	Mount Kisco				
	Pelham				
	Bronxville				

Figure 13: List of major municipalities- Responses from County Planner

APPENDIX: 3

Questionnaire for City Planner

Municipality:
County:
Area:
Density:
Date of Interview:

1. Who manages public parking lots within the municipality (for example, a parking authority)?

2. What kind of parking problems do you have in your municipality? Please describe.
   a. Inadequacy of spaces in number ____
   b. Spillover ____
   c. Any other ____

   If so where?
   a. Downtown _____
   b. Park and ride _____
   c. Any other _____
   d. None _____

3. How does your [town/city/etc] regulate on-street parking? If so, how?
   i. Parking permits
   ii. Metered parking
   iii. Variable prices
   iv. Any other

5. Does your municipality charge for on street parking?

6. How does your [town/city] regulate off-street parking?
   i. Parking permits
   ii. Metered parking
   iii. Signage
   iv. Any other

7. Does your municipality charge for off street parking?

8. Do developers often apply for variances to parking regulations to allow fewer parking spaces to be provided? If so, what kind of developments typically applies for a variance?

APPENDIX: 4

Questionnaire for Developer

1. What kind of projects do you normally take? For example commercial, residential or parking lots

2. Which municipalities do you typically have projects. Do you find significant differences in the parking requirements? Please explain.

3. Do you find the required number of parking spaces, as laid down in the ordinances are enough or more than required?

4. If you feel parking requirements is too much, how much does it increase the cost of development per sq. ft.?

5. How would you like to modify the number of spaces required, to better cater to the requirements of the project?

6. Do you need to frequently apply for variances from the parking requirements as laid in the ordinances? Please elaborate on the situations where you need to apply for variances.

7. Have you come across parking provisions for a specific project which has its own requirements? Please elaborate (For example redevelopment project might have parking provisions different from as laid down in the zoning ordinances).

8. Has parking requirements stopped you from building a project? Please elaborate.

APPENDIX: 5

Parking Provision for Cities					
Land Use classification	City of Glen Cove	City of White Plains	City of Long beach	City of Mount Vernon	City of New Rochelle
Multi family dwelling unit	2	2	2	2	2
Hospital	(in residential use) 1 per 3 beds	1.25 per bed+1 per 400 sq ft of out patient clinic	1 per 6 beds+1 per 3 doctors+1 per 4 employees	2.5 per bed	2.5 per bed
				1 per 400 sq ft	1 per 400 sq ft
	1 per 300 sq ft			5 per 1000 sq ft	
			40% of number of employees		
Club(commercial use)	1 per 2 employees+1 per 300 sq ft or 1 per 5 seats in meeting room				
Public assembly/theater	1 per 4 seats	.33/seat	1/4 seats	NA	1for 3 seats
School			1 for 2 employees		
elementary	1.25	NA	NA	NA	1 for 4 children+1 per employee
secondary	1.25+1 per 5 seats				1 per faculty+1 per 3 staff+1 per 30 students
College/university/ similar	1.25+1 per 5 seats+.75 per each student				1 per faculty+1 per 3 staff+1 per 10 students
Business/ Professional	1 per 200 sq ft				
Retail	1 per 250	3.3 per 100sq m of GFA (CPA)		1 per 200 sq ft	1 per 250 sq ft
Banking	3 per each teller	3 per each teller		5 per teller	2 per teller+5 queuing space
		3.3 per 1000 sq ft.		1 per 300 sq ft	1 per 200 sq ft
Restaurant	1 per 3 seats+1 per 2 employee		1 per 4 seats+employee parking	1 per 3 seats	
				1 per 100 sq ft	
Fast Food restaurant	NA	NA	1 per 2 seats+employee parking	1 per 3 seats+5 queueing spaces each window	1/50sq ft
Doctor's office	1 per 150 sq ft	3.3 spaces(CPA) or 5 elsewhere	1 per doctor+1 per employee+2 spaces each treatment room	1 per 300 sq ft	1 per 250 sq ft
	4 per doctor +1 per employee				
Non doctor's office	NA		1 per office+1 per 4 employees	1 per 300 sq ft	
Theater	1 per 4 seats			1 for 3 seats	1 for 3 seats
Hotel	1 per room+1 per 2 employees	NA	1 per 2 rooms+1 per 4 employees	1 per room+1 per emp	1 per room+1per employee
Industrial	1 per employee	NA			
manufacturing	2.5 spaces+1 per commercial vehicle on lot		1 per 4 employees	1 per 1000 sq ft+ 1 per commercial vehicle on lot	1 per employee+1 per commercial vehicle on the lot
wholesale/storage	13 spaces+1 per commercial vehicle on lot			1 per 3000 sq ft+ 1 per commercial vehicle on lot	
GFA:gross floor area,CPA: central parking area					

Figure 14: Parking provisions for cities in the NYMTC region; Source: City municipal codes

APPENDIX: 6

Parking Provisions for Towns and Villages					
Land Use classification	Town of Riverhead	Town of Huntington	Port Jefferson	Town of Greenburgh	Village of Tarry Town
Multi family dwelling unit	1.5	1.5	2	1.5	2.5
Hospital	1 per 1.5 patients	1 per 2 beds	1 per 400 sq ft	1 per 500 sq ft	2 per 3 patient beds +1per employee
Public assembly/theater		1 per 5 seats			1 per 5 seats
School			1 per 12 students		
elementary	1 per classroom	1 per 10 seats		1.25 per staff member	
secondary		1 per 8 seats in assembly room		1 per staff member+1 per	
College/university/similar		5 per classroom+ 1 per staff member		1 per 200 sq ft	
Retail	1 per 200 sq. ft	1 per 200 sq. ft	1 per 100 sq. ft		
Furniture store		1 per 500 sq ft			
Restaurant	1 per 3 seats	1 per 50 sq ft		1 per 3 seats or 1 per 75 sq ft	1 per employee on shift+1 per 3 seats or 1 per 100 sq ft per GFA
Doctor's office	1 per 150 sq ft	1 per 200 sq. ft			
Non doctor's office	1 per150 sq ft	1 per 200 sq. ft		1 per 300 sq. ft	1 per employee+1 per 300 sq ft
Theater	1 per 3 seats	1 per 3 seats		1per 3 seats	
Hotel	1 per room	1.2 per room	1 per room		1 per room+1 per employee+1 per resident
Industrial					
manufacturing	1 per 2 employees	1 per 500 sq ft GFA+ 5 spaces per site		1 per 500 sq ft	1 per employee or 1/400 sq ft
wholesale/storage	1 per 1000 sq ft plus 1 space per 10,000 sq ft			1 per 1000 sq ft	1 per employee or 1 per 1000 sq ft
GFA: gross floor area					

Figure 15: Parking provisions for towns and villages in the NYMTC region; Source: Municipal codes

APPENDIX: 7

		Parking problems			Regulation for parking					
	Municipality	Park and Ride lots	Downtown	Any other	Regulate on street parking			Regulate off street parking		
					permits	meters	other	permit	meters	other
1	Town Of Riverhead (Suffolk County)			No problem			NA			NA
2	Town of Huntington (Suffolk County)					X		X		NA
3	Clarkstown (Rockland county)	X		Inadequacy of spaces					X	
4	Town of Greenburgh (Westchester County)		X	Inadequacy of spaces		X		X	X	
5	Village of Port Jefferson (Suffolk county)		X	Inadequacy of spaces,old neighborhood		X		X	X	
6	City of Rye (Westchester County)	X	X	Inadequacy of spaces			time limit only	X	X	
7	Village of Tarrytown (Westchester County)		X	Cruising		X		X	X	
8	Hastings on Hudson (Westchester)	X	X	Inadequacy of spaces		X		X	X	pay stations
9	City of Glen Cove (Nassau County)			Adequate parking lots			time limit only			
10	Town of Mamaroneck (Westchester County)	X	X	Resident parking		X		X	X	
11	City of Peekskill (Westchester County)	X	X	charge for downtown only		X		X	X	
12	City of White Plains (Westchester County)		X	Old Neighborhood	X	X		X	X	
13	Village of Mamaroneck (Westchester County)	X	X		X	X		X	X	
14	Village of Westbury (Nassau County)	X	X			X		X	X	
15	Village of Larchmont (Westchester County)	X		metered commuter lots			NA	X	X	
16	City of New Rochelle (Westchester County)	X	X	expired meters		X		X	X	
17	Village of Great Neck (Nassau County)		X	Parking tickets (free metered parking)	X	X				NA
18	Village of Ossining (Westchester County)		X	Inadequacy of spaces		X		X	X	
19	City of Yonkers (Westchester County)			No problem		X				
20	City of Mount Vernon (Westchester County)	X	X		X	X		X	X	
21	City of Long Beach (Nassau County)	X	X	metered commuter lots						
22	Village of Bronxville	X	X		X	X		X	X	

Figure 16: Summary of parking characteristics of the sample municipalities in the NYMTC region

APPENDIX: 8

		Price for parking				Parking rates					
	Municipality	on street		off street		on street	off street	Special provisions due to proximity to transit	Developers applying for variance		Any other comments
		Yes	No	Yes	No				Yes	No	
1	Town Of Riverhead (Suffolk County)		X	X		time limit only		no	X		Parking District
2	Town of Huntington (Suffolk County)						$300 annually				rsidents park for free
3	Clarkstown (Rockland county)		X	X					X		Overlay hamlet District
4	Town of Greenburgh (Westchester County)	X		X		0.25/20 minutes	$130/3 months			NA	
5	Village of Port Jefferson (Suffolk county)	X			X			no	X		Seaside community,parking problem is seasonal
6	City of Rye (Westchester County)	X		X		0.25-0.50/hour				X	Parking Credits
7	Village of Tarrytown (Westchester County)	X		X		0.25/25 minutes or $3/6 hours	175 annually			X	NA
8	Hastings on Hudson (Westchester)	X		X		0.25/3 hours	$200 annually		X		Parking District
9	City of Glen Cove (Nassau County)		X		X				X		
10	Town of Mamaroneck (Westchester County)	X		X			$30 annually for resident,$350 daytime NR permit			X	special permits for area businesses,24 hour lot,overnight parking daytime only
11	City of Peekskill (Westchester County)	X		X						NA	
12	City of White Plains (Westchester County)	X		X		$1 /hour	0.75/hour or $6/12 hour max of $ 10 for 24 hours			X	Parking in lieu, parking credit, satellite parking
13	Village of Mamaroneck (Westchester County)	X		X		0.25/ hr or $2.50/10 hours	360/annually			X	Parking District
14	Village of Westbury (Nassau County)								X		
15	Village of Larchmont (Westchester County)		X	X			$550 annually daytime, meterd lots have daytime parking for $30/month			NA	
16	City of New Rochelle (Westchester County)	X		X					X		overlay zoning
17	Village of Great Neck (Nassau County)		X		X					NA	Parking District
18	Village of Ossining (Westchester County)	X		X		0.25/20 minutes	$60/ 3 months		X		on street nightime parking for $30/year
19	City of Yonkers (Westchester County)	X		X		1.75/ihr,2.50/2 hr,$10 for 10 hours	$70/month		X		variable pricing(linear)
20	City of Mount Vernon (Westchester County)	X		X		0.25/30 minutes	$35/month		X	No	variable pricing
21	City of Long Beach (Nassau County)					$2/hour+$1 for each additional hour				Varies	parking requirements based on building frontage
22	Village of Bronxville		X	X						X	

Figure 17: Summary of parking characteristics of municipalities in the NYMTC region

APPENDIX: 9

Example of Parking Maximums
Jersey City, New Jersey

Required parking provisions for all new construction in the Liberty Harbor Project is as follows:

Use	Max parking
Residential	1 per unit (min 0.5 per unit)
Hotel/lodging	0.5 per unit
Office	0.8/1000 sq ft
Retail	1.0/1000 sq ft
Restaurant/bar	1.0/1000 sq ft
Civic/School	1.0/1000 sq ft
Marinas	0.25 per slip

Figure 18: Parking requirements, Liberty Harbor North Project; Source: Duany Plater-Zyberk & Company. Project report: Redevelopment Plan, Liberty Harbor North, Jersey City, NJ.

APPENDIX: 10

Shared parking Ordinance: City of New Brunswick

Off-street parking requirements of a given use may be met with off-site, off-street parking facilities of another use when, and if, all of the following conditions are met:

In non-residential zoning districts, the parking may be up to five hundred (500) feet from the principal structure;

The parking demands of the individual uses, as determined by the Administrative Officer, based upon minimum off-street parking requirements, are such that the total parking demand of all the uses at any one time is less than the total parking spaces required; and

A written agreement between the owners and lessees is executed for a minimum of ten (10) years, approved by the Administrative Officer, recorded, and a copy maintained in the project file. Should the lease expire or otherwise terminate, the use for which the off-site parking was provided shall be considered to contain nonconforming site improvements. Future expansion of the use shall be prohibited unless the use is brought into compliance with the parking regulations of this Ordinance.

Developments which contain a mix of uses on the same parcel, as set forth in Table 22-5.1 below, may reduce the amount of required parking in accordance with the following methodology:

Determine the minimum parking requirements in accordance with Table 22-5.1 for each land use as if it were a separate use, multiply each amount by the corresponding percentages for each of the five time periods set forth in Columns (B) through (F) of Table 22-5.1, (3) calculate the total for each time period (Columns), (4) select the Column with the highest total, and (5) use this number as the required minimum number of parking spaces.

Table 22-5.1 Shared Parking Allowances by Land Use.					
	Weekday		Weekend		
Land Use	Daytime*	Evening*	Daytime*	Evening*	Nighttime*
Office/Industrial	100%	10%	10%	5%	5%
Retail	60%	90%	100%	70%	5%
Hotel	75%	100%	75%	100%	75%
Restaurant	50%	100%	100%	100%	10%
Entertainment/Commercial	40%	100%	80%	100%	10%
*Key					
Daytime	6am – 5 pm				
Evening	5 pm – midnight				
Nighttime	Midnight-6am				

Figure 19: Shared parking provisions, City of New Brunswick; Source: Municipal codes

M. Parking provided on same lot as principal building.

Off-street parking spaces for multi-family dwellings shall be located on the same lot as the main building to be served or not more than three hundred feet (300') in distance from the subject site, as measured along the nearest pedestrian walkways. Off-street parking spaces for all other uses shall be provided on the same lot as the main building to be serviced or not more than five hundred feet (500') in distance from the subject site, as measured along the nearest pedestrian walkway.

N. Requirements for combined uses.

The number of off-street parking spaces required by land or buildings used for two or more uses shall be the sum of the requirements for the various individual uses unless in conformance with the shared parking regulations of this section.

O. Other uses of off-street parking spaces prohibited.

No off-street parking or loading area shall be used for the repair, or dismantling or servicing any vehicle, equipment, materials or supplies.

REFERENCES

1. Available from www.dot.wisconsin.gov/local/docs/smart-growth-parking.pdf.

2. Driving urban environments: Smart growth parking best practices, http://www.smartgrowth.state.md.us/pdf/Final%20Parking%20Paper.pdf.By Christopher V. Forinash, Adam Millard-Ball, Charlotte Dougherty and Jeffrey Tumlin.

3. Smart growth alternatives to minimum parking requirements http://www.urbanstreet.info/2nd_sym_proceedings/Volume%202/Forinash_session_7.pdf

4. Center for Neighborhood Technology. November 2006. Paved over: Surface parking lots or opportunities for tax generating, sustainable development, http://www.cnt.org/repository/PavedOver-Final.pdf (accessed 05/20/2007).

5. De Cerreno, A. L. C. 2004. Dynamics of on-street parking in large central cities. Travel Demand and Land use 2004(1898): 130-137.

6. EPA Parking spaces/community places finding the balance through smart growth solutions (Jan 2006), http://www.epa.gov/piedpage/pdf/EPAParkingSpaces06.pdf.

7. Feitelson, E., and O. Rotem. 2004. The case for taxing surface parking. Transportation Research Part D-Transport and Environment 9, (4) (JUL): 319-333.

8. Ferguson, E. 2004. Zoning for parking as policy process: A historical review. Transport Reviews 24, (2) (MAR): 177-194.

9. Leonard Bier, Gerard Giosa, Robert S goldsmith, Richard Johnson, Linda P Morgan, Darius Sollohub. July 2006. Parking Matters: Designing, operating and financing structured parking in smart growth communities.

10. Levine J, Inam A. 2003. The market for transportation-land use integration: Do developers want smarter growth than regulations allow?

11. Marsden, G. 2006. The evidence base for parking policies- A review. Transport Policy 13, (6) (NOV): 447-457.

12. Michael Manville and Donald Shoup. December 2005. Parking, people, and cities Journal of Urban Planning and Development.

13. Schaller Consulting. March 2007. Free parking congested streets; the skewed economic incentives to drive in Manhattan.

14. Shoup Donald. 2005. The high cost of free parking.

15. http://www.pcac.org/reports/pdf/TOD%20Report.pdf

16. Still, B., and D. Simmonds. 2000. Parking restraint policy and urban vitality. Transport Reviews 20, (3) (JUL-SEP): 291-316.

17. Valerie Kepper. Developing parking policies to support smart growth in local jurisdictions: Best practices. June 2007 [cited 07/25 2007]. Available from http://www.mtc.ca.gov/planning/smart_growth/parking_seminar/BestPractices.pdf.

18. Vincent M Mallozzi. Aug. 2006. Same problem, different stations. New York TimesAug. 2006.

19. Voith, R. 1998. Parking, transit, and employment in a central business district. Journal of Urban Economics 44, (1) (JUL): 43-58.

20. Voorhees Transportation Center; Transit Oriented Development Newsletter 3, (1) (April 2007).

21. William Henderson, Ellyn Shannon, Karyl Berger. Available from http://www.pcac.org/reports/pdf/TOD%20Report.pdf (accessed 05/20/07).

22. Willson, R. W. 1995. Suburban parking requirements - a tacit policy for automobile use and sprawl. Journal of the American Planning Association 61, (1) (WIN): 29-42.

23. http://nnj.uli.org/Content/NavigationMenu19/RelatedLinks/final_july3106.pdf (accessed 05/20/07).

24. www.ci.berkeley.ca.us/transportation/Parking/OffStreet.html (accessed 05/20/07).