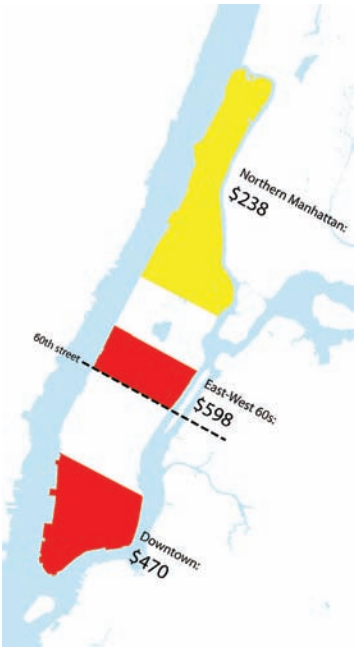

Figure 2. Off-street parking rates for selected districts in Manhattan
Data Source: BestParking.com

TRAFFIC AND PARKING

Overview

A chief concern of Northern Manhattan neighborhoods is that CBD commuters from outside the area could drive to these neighborhoods, walk to the nearest subway station, and take the train to their workplace downtown. For example, easy access from the George Washington Bridge make areas around the 181st and 168th Street stations on the A and 1 lines potential candidates for park-and-ride activity. Similarly, express stations on 125th Street could draw park-and-ride activity because of easy access from both the Henry Hudson Parkway and the FDR Drive. We have examined a scenario in which park-and-ride commuters park within ¼ mile of transit stations that have express service to the CBD and good highway access. The target stations in Northern Manhattan are as follows:

Table 2. Potential Sites of Park-and-Ride Activity in Northern Manhattan

Station	Lines
181st Street	A
181st Street/Broadway*	1
168th Street/Broadway*	1
168th Street/Broadway	A-C
145th Street	A-B-C-D
125th Street	A-B-C-D
125th Street	2-3
125th Street	4-5-6

*The 1 line is a local train; these stations are listed because they have relatively good highway access. The 2-3 is express below 110th Street; the 125th Street station is listed because of its accessibility via 125th Street.

The likelihood of park-and-ride activity first depends on the availability of either on- or off-street parking for commutes. Throughout Northern Manhattan, on-street parking is very difficult. In 2005, the City found that 92% of on-street parking spaces between 116th and 135th Streets were filled at any given moment.[1] A recent study by the New York City Department of Transportation looking at residential parking in Central Harlem found similar occupancy rates, ranging between 91 and 93 percent.[2]

When parking is so scarce, drivers must spend time searching for parking. Research by Donald Shoup, Professor of Urban Planning at the University of California at Los Angeles and an authority on parking, suggests that occupancy rates need to drop to 85% before drivers have some certainty of finding a space quickly.[3] The high occupancy rates seen in Harlem serve as a deterrent, then, to commuters wishing to make a fast park-and-ride transfer.
Off-street parking in garages or surface lots offers a more assured alternative, for a price. Nevertheless, this price is significantly less than the price for off-street

1 New York City Department of City Planning, Harlem/Morningside Heights Transportation Study, 2005, http://home.nyc.gov/html/dcp/html/transportation/harlem_study.shtml

2 The study looked at parking from 120th to 130th Streets between Madison Avenue and Frederick Douglass Boulevard. New York City Department of Transportation, "Workshop on Neighborhood Parking, Round 2 Participant Workbook: Harlem," January 24, 2008.

3 Donald Shoup, "Cruising for Parking," Access, No. 30, Spring 2007, pp.16-22.

parking in the CBD. Daily parking in Northern Manhattan can cost less than $10, compared with $25 downtown. On a monthly basis, lots above 110th Street charge an average $227, less than half the $470 for Financial District garages. These price differentials would tend to encourage park-and-ride activity in Northern Manhattan. Furthermore, parking in Northern Manhattan is much less expensive than just above the proposed 60th Street cordon, with monthly rates averaging $600 in the East and West 60s. This price differential would tend to encourage CBD commuters to park in Northern Manhattan rather than on the Upper East or West Sides, particularly if they cannot walk to work from the East or West 60s.[4]

Off-street park-and-ride activity in Northern Manhattan would also depend on the availability of spaces. As a whole, Northern Manhattan has a much lower density of parking lots than the Central Business District or the Upper East Side. However, there is some evidence of current park-and-ride behavior and the potential for additional activity. At least one parking lot in Harlem advertises itself as a park-and-ride facility, although current capacity suggests a relatively small number of CBD commuters are dropping their cars in Northern Manhattan. Within ¼ mile of the 125th Street station on the Lexington Avenue line, there are 6 publicly-accessible lots with a total of 1,469 spaces.[5] Assuming a utilization rate during the day of 69%, in line with the findings of the 125th Street Environmental Impact Statement, there could be as many as 455 free spaces within walking distance of the subway station.[6]

These existing spaces near 125th Street could accommodate a fairly modest increase in park-and-ride activity. However, if CBD commuters find park-and-ride a viable option, the increased demand could encourage owners of existing lots to provide more spaces by investing in vertical stacking equipment. As discussed below, higher demand could also encourage development of new parking lots.

Potential Impact of Park-and-Ride

If it occurs, increased park-and-ride activity could bring many new cars into neighborhoods throughout Northern Manhattan. Many streets suffer from congestion, particularly during the afternoon rush hour; additional traffic would slow all vehicles and worsen the already poor air quality. Yet much if not all of this increase might be offset by a reduction in through traffic induced by congestion pricing. A more detailed analysis, which could be included in a customized Environmental Impact Statement recommended by the Commission, could more precisely estimate potential increases in park-and-ride activity and compare the traffic impact against the projected overall reduction in through traffic. Here we provide a rough estimate of the potential traffic impact for one neighborhood, and identify additional impacts of increased park-and-ride activity.

4 Prices from BestParking.com, http://nyc.bestparking.com/#1, as of February 8, 2008.

5 Sources: BestParking.com, 125th Street EIS, and site analysis.

6 New York City Department of City Planning, 125th Street Corridor Rezoning and Related Actions Environmental Impact Statement, p. 3.15-89. http://www.nyc.gov/html/dcp/pdf/env_review/125th/0315_deis.pdf. Occupancy rate is for lots in Sub-Area 3 of table 3.15-9.

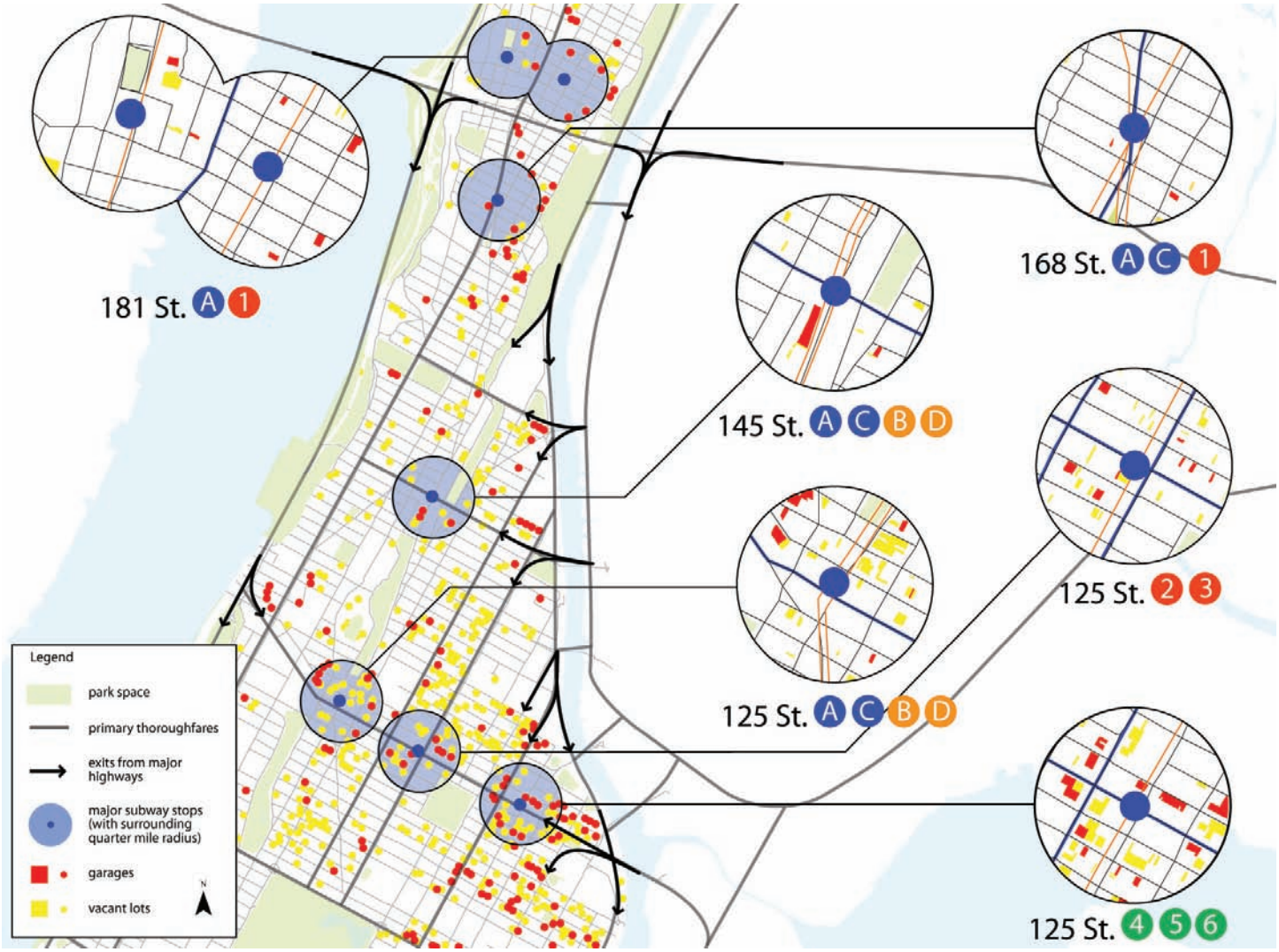

Figure 3. Northern Manhattan transit network, main roads and existing off-street parking
Data Source: New York City Department of Finance [Residential Tax Class 1 Garage, Garage - Two or More Stories, Garage - One Story (Semi-Fireproof or Fireproof), Garage and Gas Station Combined, Licensed Parking Lot, Unlicenced Parking Lot, Garage With Showroom, Miscellaneous]

First, we consider the potential for increased traffic. From the above analysis of off-street parking, we estimate a maximum of 455 new park-and-ride trips into East Harlem, near 125th Street and Lexington Avenue. This assumes that park-and-ride commuters take all of the available parking spaces in lots within ¼ mile of the subway station. We could further assume that park-and-riders leave the area in the afternoon over a two hour period.

Figure 4 shows the routes that CBD commuters might take through East Harlem if they transfer to the 125th Street/Lexington Avenue station for the 4, 5, or 6 train. Areas in red are surface lots; hash marks on streets indicate travel routes to those lots. Park-and-ride commuters seeking to use these lots might drive through East Harlem on 123rd, 124th, 125th, 126th and 128th Streets as well as Madison, Park, Lexington, 3rd and 2nd Avenues until they find an open lot.

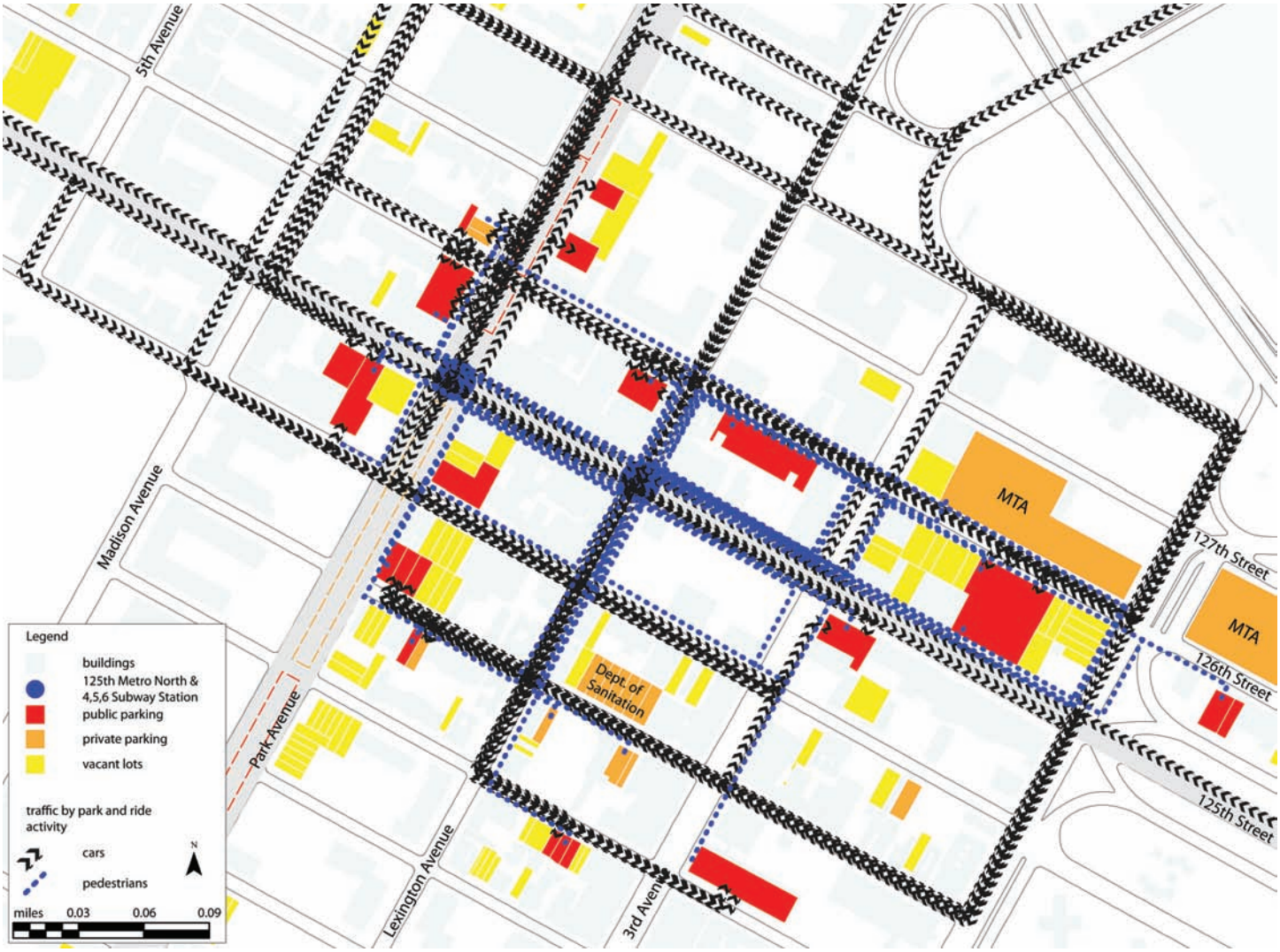

Figure 4. Traffic routes to parking lots near 125th Street/Lexington Avenue.
Data Source: New York City Department of Finance, BestParking.com, 125th Street EIS, and site analysis.

Any increase in local traffic congestion could have a detrimental effect on residents' health through increased local air pollution, although these effects might be offset by a drop in through traffic to the CBD. The significant health impacts that come from increased air pollution could spread 500 feet or more from these streets.[7] This increased air pollution would be a concern in even the most pristine community, but is of particular concern for Northern Manhattan residents. Communities in Northern Manhattan already suffer disproportionate environmental hazards from the local concentration of highways, bus depots, sewage treatment plants, and other pollution sources.[8] These communities also suffer the city's highest asthma hospitalization rates.[9] New vehicular traffic could further exacerbate these conditions.

7 See Environmental Defense, All Choked Up: Heavy Traffic, Dirty Air and the Risk to New Yorkers, March 2007. http://environmentaldefense.org/documents/6117_AllChokedUp_NYCTrafficandHealthReport.pdf

8 West Harlem Environmental Action, "Asthma Hospitalization Rates by ZIP Code," 2003.

9 New York City Department of Health and Mental Hygiene, Asthma Facts, Second Edition (2003).

Figure 5. Vacant lots in Manhattan
Data Source: New York City Department of Finance.

We compare the possible increase in traffic with the potential reduction in through traffic from congestion pricing. A more detailed analysis could establish the number of vehicles traveling to and from the CBD through this area, but a cursory look at vehicle count data shows that tens of thousands of vehicles travel through the area every day. For example, during the afternoon peak (between 4 and 5 pm), more than 5,000 northbound vehicles cross 125th Street between Madison Avenue and 1st Avenue.[10] On a daily basis, nearly 67,000 outbound vehicles cross the nearby Willis Avenue Bridge.[11] Congestion pricing is likely to have a significant impact on facilities such as this bridge that are currently not tolled, since drivers would face the full congestion charge.[12] If these volumes fall by 3.8% -- the forecast for Manhattan above 86th Street – the daily reduction in traffic would far exceed the modest increase in traffic from new park-and-ride activity. Again, a more detailed analysis could identify impacts on individual intersections, but the impact of park-and-ride appears to be small compared to the broader reduction in traffic from congestion pricing.

However, park-and-ride activity could have other adverse impacts. Sidewalks between parking lots and the subway stations would become more crowded. Area residents and employees could find themselves paying higher parking prices in their neighborhood if increased demand causes lot owners to raise prices. If congestion pricing increases the demand for park-and-ride, landowners could be tempted to convert vacant lots near subway stations into parking. Likewise, developers of new commercial and residential projects could consider augmenting their parking plans to include park-and-ride spaces. While growth has accelerated in Harlem and Washington Heights in recent years, there are still many vacant lots with parking potential. Figure 4 shows these lots in yellow for a portion of East Harlem and Figure 5 shows vacant lots in blue for the entire Manhattan.

10 Ibid., calculated from Figure 3.15-4A. Traffic heading south was excluded because during the afternoon peak, it would seem less likely to be CBD-bound and thus affected by the congestion charge.

11 Source: New York City Department of Transportation.

12 CBD-bound drivers using tolled crossings would receive a credit for those tolls, if they used EZ-Pass.

Congestion Reduction in London and Stockholm

Congestion pricing programs in which drivers pay a fee to drive into and/or within an area have been implemented in just a few cities worldwide. The most notable examples are London, where congestion pricing has been in place since 2003, and Stockholm, where congestion pricing was introduced in 2005. Both cities saw significant reductions in traffic within as well as outside their congestion zones. But they also took significant measures in advance to prevent adverse impacts outside the charging zone and ensure sufficient transit capacity to accommodate the expected increase in demand Both cities relied heavily on expansions of their bus networks to facilitate the shift in mode choice.

Congestion Charging was introduced in Central London in February, 2003.[1] There was considerable opposition to the Congestion Charging scheme before it went into effect. However, many of the negative impacts predicted by the critics never materialized, and the program has generally been regarded as successful. Decreases in congestion (as measured by time spent waiting in traffic), decreases in total vehicle kilometer miles traveled, and improvements in air quality were all observed within the congestion zone. Significantly, benefits were not limited to the congestion zone itself, but were observed in neighborhoods outside the zone as well.

The city used a range of tools to prevent or mitigate potential negative impacts outside the congestion zone. For example, a residential parking permit program discouraged unwanted commuter parking in areas adjacent to the zone. Traffic calming measures such as sidewalk extensions and raised crosswalks deterred drivers who might consider switching to local streets to avoid congestion or fees. Improvements to pedestrian and bicycle facilities encouraged residents to use those forms of transportation.

In addition to local traffic mitigation schemes, the government enacted a number of measures to increase transit capacity, with a particular focus on bus service. The bus program included new routes, more frequent service, and the purchase of bigger vehicles. The expanded bus service accommodated most of the new transit demand resulting from congestion charging and in fact drew some existing riders from the Underground (subway).

In Stockholm as in London, the government took advance measures to ease the shift from automobiles. Enhancements to the transit system included increased capacity at suburban park-and-ride facilities, increased rail service (longer trains and more departures) and significant increases in bus service (including the addition of almost 200 new buses). As in London, the congestion charge was effective at reducing congestion and improving traffic flow, both inside and outside the charging zone.[2]

1 Transport for London, Congestion Charging Central London Impacts Monitoring: Second Annual Report, 2004. This is the fourth annual report from the governmental body responsible for implementing the congestion charging scheme in London. There are some excellent details regarding the effects of the congestion charging scheme on auto emissions (p.114).

2 Congestion Charge Secretariat, City of Stockholm, Facts and Results from the Stockholm Trials, 2006.

Economic Analysis

A look at the economics of park-and-ride suggests, however, that few drivers will have an incentive to park and ride. As explained below, the majority of drivers to the CBD do not pay for parking; for the remainder, the cost savings of uptown parking must be weighed against the inconvenience of switching modes, the inability to use the car during the day, and round-trip transit fares. Here we examine these trade-offs in detail.

First, we identify the group of drivers to the CBD who might consider parking uptown. An independent study by Bruce Schaller in 2007 found that less than half of all drivers pay for parking in the CBD.[13] Nineteen percent park in unmetered spaces, while 38% receive free parking at work or are reimbursed for their parking. Another five percent pay for metered parking, and 38% pay for parking in a garage or surface lot.

For the 57% of drivers who do not pay for parking, congestion pricing is not likely to induce park-and-ride behavior. On-street parking uptown is scarce, and off-street parking costs more than the congestion charge. The 5% who pay for metered parking downtown presumably need their cars throughout the day (although some may feed the meter every hour). This leaves the 38% who pay for off-street parking downtown as potential park-and-ride commuters.

More than four-fifths of these 38% pay a daily rate instead of the less expensive monthly rate, suggesting that they have a specific reason for driving that day. It may be that they are carrying merchandise, or that they need to make multiple stops around the region, or that they have poor transit access and only work in the CBD on certain days. For the first two classes of drivers, leaving their car uptown is not an option.

To evaluate whether the remaining drivers are likely to park uptown and take transit downtown, we look at the financial and time trade-offs faced by a driver who considers park-and-ride at a lot near the 125th Street station on the Lexington Avenue line. There are several parking lots east of the station near the Willis Avenue bridge and the off-ramp from the FDR Drive/Triborough Bridge interchange. If we assume that it takes three minutes to drive from the highway to the parking lot, five minutes to walk to the subway station, and three minutes to wait for the train, the total park-and-ride transfer takes eleven minutes, or twenty-two minutes for both inbound and outbound trips.

Comparing this with the benefit of avoiding the proposed congestion charge shows that park-and-ride is in fact not financially viable for most drivers. Park-and-ride commuters save $8 on the congestion charge but must pay $1.74 each way in transit fares (under the MTA's new fare plan), assuming that they buy

13 Schaller Consulting, Free Parking, Congested Streets. Report for Transportation Alternatives, March 2007. http://www.transalt.org/campaigns/reclaiming/freeparking_traffictrouble.pdf.

a multiple-ride pass and receive the 15% discount. Park-and-ride saves $5.52 and-ride commuters save $8 on the congestion charge but must pay $1.74 each way in transit fares (under the MTA's new fare plan), assuming that they buy a multiple-ride pass and receive the 15% discount. Park-and-ride saves $5.52 but requires twenty-two minutes in additional travel time, implying a time value of $15.05/hour. This is well below the $23 established by the New York Metropolitan Transportation Council in 2005 as the baseline value for a vehicle hour and indicates that a park-and-ride trade-off would be uneconomic for most area travelers.[14] This analysis ignores other benefits of driving such as personal comfort and the ability to carry merchandise or personal belongings. These benefits may explain why the existing differential in off-street parking rates does not currently induce significant park-and-ride activity.[15]

To the extent that congestion pricing encourages CBD commuters to switch to transit before entering Manhattan, the plan is likely to have a positive impact on Northern Manhattan. While only about 3% of Northern Manhattan workers drive to the CBD, congestion pricing may also encourage some of them to switch to transit. Both of these effects could make a small contribution to cleaner air in the community.

14 New York Metropolitan Transportation Council, Congestion Management 2005 Status Report.

15 This analysis does not consider the possibility that transit will be faster than highway travel. In some cases the subway will be faster and in others, driving. Here we assume that subway and highway travel times are the same and only consider the additional travel time to and from the uptown lot. This analysis also assumes that walking time between the workplace and subway station is similar to walking time between the workplace and a parking lot. In fact, the nearest parking lot is probably closer than the nearest subway station, given the density of parking lots in the CBD.