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(*JTFCapMed*) Joint Task Force National Capital Region. <http://www.bethesda.med.navy.mil>

(*Killion, B*) Telecons between Mr. Bob Killion and Mr. Mike Thornell

(*Kirkpatrick, J*) Meeting, telecons and site visit with SA Joe Kirkpatrick

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(*MDBED*) Maryland Department of Business and Economic Development <http://mwp.choosemaryland.org>

(*MDE*) Maryland Department of Environment, Maryland State Wetland Conservation Plan. <http://www.mde.state.md.us>

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(*WRAMC*) Walter Reed Army Medical Center, <http://www.wramc.amedd.army.mil>

(*WMATA*) Washington Metropolitan Area Transit Authority <http://www.wmata.com/metro rail>

Transportation Management Plan

National Naval Medical Center

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1.0 INTRODUCTION

This Transportation Management Plan (TMP) was prepared to support the further development of the National Naval Medical Center (NNMC) campus in Bethesda, Maryland, as required primarily by land use changes stipulated by the Defense Base Closure and Realignment Act of 1990 (BRAC Law). This law, as amended in 2005, mandates the realignment of certain medical functions from the Walter Reed Army Medical Center (WRAMC) in Washington, DC to the NNMC Bethesda campus which would then become the Walter Reed National Military Center (WRNMMC). In addition, the NNMC Master Plan is concurrently being updated to reflect the new mission of the WRNMMC.

The NNMC has prepared an Environmental Impact Statement (EIS) to determine the potential impacts, including those transportation-related, that would likely result from the planned land use changes. The EIS evaluated two development alternatives which would each add 2,200 employees to the campus. However, the potential transportation impacts of 2,500 additional employees were evaluated as a conservative approach, to include other staff that would be required to support future additional campus development. The EIS has identified potential transportation impacts and mitigation measures, including the implementation of an effective Transportation Management Plan (TMP) to be developed as part of the ongoing Master Plan study process. The TMP follows the EIS recommendations.

Apart from mitigating the projected transportation impacts identified by the NNMC EIS report, this TMP was prepared in compliance with federal requirements and goals established by the National Capital Planning Commission (NCPC) and documented in the General Services Administration (GSA) Federal Agency Transportation Management Program Handbook (2002). The requirements stipulate that federal agencies with master plan projects resulting in over 500 employees should prepare and effectively implement a TMP approved by NCPC.

The GSA guidelines stipulate that the TMP should include broad goals and objectives for reducing vehicular trips, influencing positive mode split changes, and increasing vehicle occupancy ratios, all of which are targeted towards reducing congestion and pollution levels. The TMP should also provide a description of existing and potential measures for achieving the stated goals and objectives. The TMP must be followed up with the execution of an implementation plan and a monitoring and evaluation program. The latter would facilitate an assessment of the effectiveness of the goals and objectives, and the implementation of necessary adjustments.

The TMP should also relate to the transportation management and air quality requirements of the local, state, and federal agencies, including working cooperatively with affected agencies to address those requirements. These requirements include the pollution reduction and clean air standards established by the 1990 Clean Air Act Amendment. This NNMC TMP document conforms to the above requirements. The key elements of the TMP are presented in the sections following.



2.0 EXISTING CONDITIONS

2.1 Site Description

The NNMC campus is located in Bethesda, Montgomery County, Maryland. The 243-acre center is bounded roughly by the Capital Beltway (I-495) and Cedar Lane to the north, the North Chevy Chase community to the east, Jones Bridge Road to the south and Rockville Pike (MD 355) to the west. The campus is also situated approximately one mile north of the Bethesda Central Business District. Other key surrounding land uses include Rock Creek Park to the north, Chevy Chase communities to the east and south, and the National Institutes of Health (NIH) and the Medical Center Metrorail Station to the west. Direct access to the site is provided via five gates, two of which are along MD 355 and the others are along Jones Bridge Road. Figure 1 shows the location of the NNMC campus within its regional context.

2.2 Access

2.2.1 Highway Access

Regional access to the NNMC campus is provided primarily by the Capital Beltway (I-495) and I-270 freeway systems, and arterial facilities including Rockville Pike (MD 355), Connecticut Avenue (MD 185), Old Georgetown Road (MD 187), Jones Bridge Road and Cedar Lane. Direct access to the center is provided by Rockville Pike and Jones Bridge Road. The NNMC Environmental Impact Statement (EIS) indicates that there is excessive peak period and directional congestion and delay along these roadways. Notably, traffic congestion occurs along Rockville Pike, Old Georgetown Road and Connecticut Avenue in the southbound direction during the morning peak period, and in the northbound direction during the afternoon peak period. There is also excessive traffic congestion in the eastbound direction along the Capital Beltway, during the afternoon peak period.

2.2.2 Pedestrian Access

The conditions of sidewalks, crosswalks and related signage along MD 355 and Jones Bridge Road were also noted. Notable deficiencies are narrow sidewalks without adequate buffer separation from adjacent traffic, utility poles obstructing pedestrian right-of-way, lack of “zebra” striping at some major intersection crosswalks, poorly marked crosswalks and lack of crosswalks at side streets and NNMC entrances. Pedestrian-related signs are in good condition, and are well placed along those roadways.

Accident data records were obtained from the State and County for the key external intersections, with respect to the last four (4) years for which such data was available. The data does not indicate any significant safety deficiencies, nor does the data satisfy the State criteria for designation as a Candidate Safety Improvement Location (CSIL) for any location.



Figure 1 - NNMC Site Location Map



2.3 Site Access Situation

Access to the NNMC campus is provided via the following five entrances/gates:

- Rockville Pike at North Wood Road (North Gate);
- Rockville Pike at South Wood Road (South Gate);
- Jones Bridge Road at Gunnell Drive (Navy Exchange/NEX Gate);
- Jones Bridge Road at Grier Drive (Navy Lodge Gate); and
- Jones Bridge Road at University Road (USUHS Gate).

The locations of these entrances are shown in Figure 2. The two Rockville Pike gates are connected by an internal loop road (Wood Road). The northern entrance (North Gate) is located just south of Cedar Lane, and is aligned with the entrance to the NIH truck inspection facility. The North Gate is configured with three lanes, two lanes can serve inbound traffic and one outbound lane. The entrance is closed from 7:00 pm to 5:00 am from Monday to Friday, and on weekends and holidays. In the very near future, electronic signal devices will be installed to allow view from MD 355 as to the Green “Down Arrow” travel lanes and the Red “X” no travel lanes.

The southern entrance (South Gate) is the main entrance to the campus, and is located across Rockville Pike from the NIH South Drive entrance and the Medical Center Metrorail Station. This gate is open all the time, except when there is activity related to the use of the adjacent heliport facility. The entrance is configured with one inbound lane and two outbound lanes. The South Gate is also the main access point for pedestrian traffic, most of which is generated by the adjacent Medical Center Metrorail Station.

The three entrances along Jones Bridge Road are located at Gunnell Road (Navy Exchange / NEX Gate), Grier Road (Navy Lodge Gate) and University Road (USUHS Gate). The Gunnell Road/Navy Exchange Gate is open to two-way traffic, from 5:00 am to 7:00 pm from Monday to Friday, and is closed at all other times including weekends and holidays. One travel lane is provided in each direction along Gunnell Road. The Grier Road/Navy Lodge Gate has a divided roadway cross-section, providing one inbound lane and two outbound lanes. All commercial vehicles are inspected at this gate between 5:00 am and 3:00 pm from Monday to Friday. The gate is closed at all other times and inspections during this timeframe are conducted at the South Gate. Only inbound truck traffic is served from 5:00 am to 3:00 pm. Between 3:00 am – 6:00 pm, the gate serves outbound vehicles. The University Road/USUHS Gate is open to one lane inbound traffic between 5:00 am to 8:30 am from Monday to Friday, and is closed during other times.

Vehicular turning movement counts at the gates as part of this study were used to determine the trip generation characteristics of the campus. The AM and PM peak hours of NNMC vehicular traffic were determined to be 6:30 - 7:30 am and 4:00 - 5:00 pm, respectively. The AM and PM peak hours of the adjacent ambient traffic were determined to be between 7:45 - 8:45 am and 4:30 - 5:30 pm, respectively.

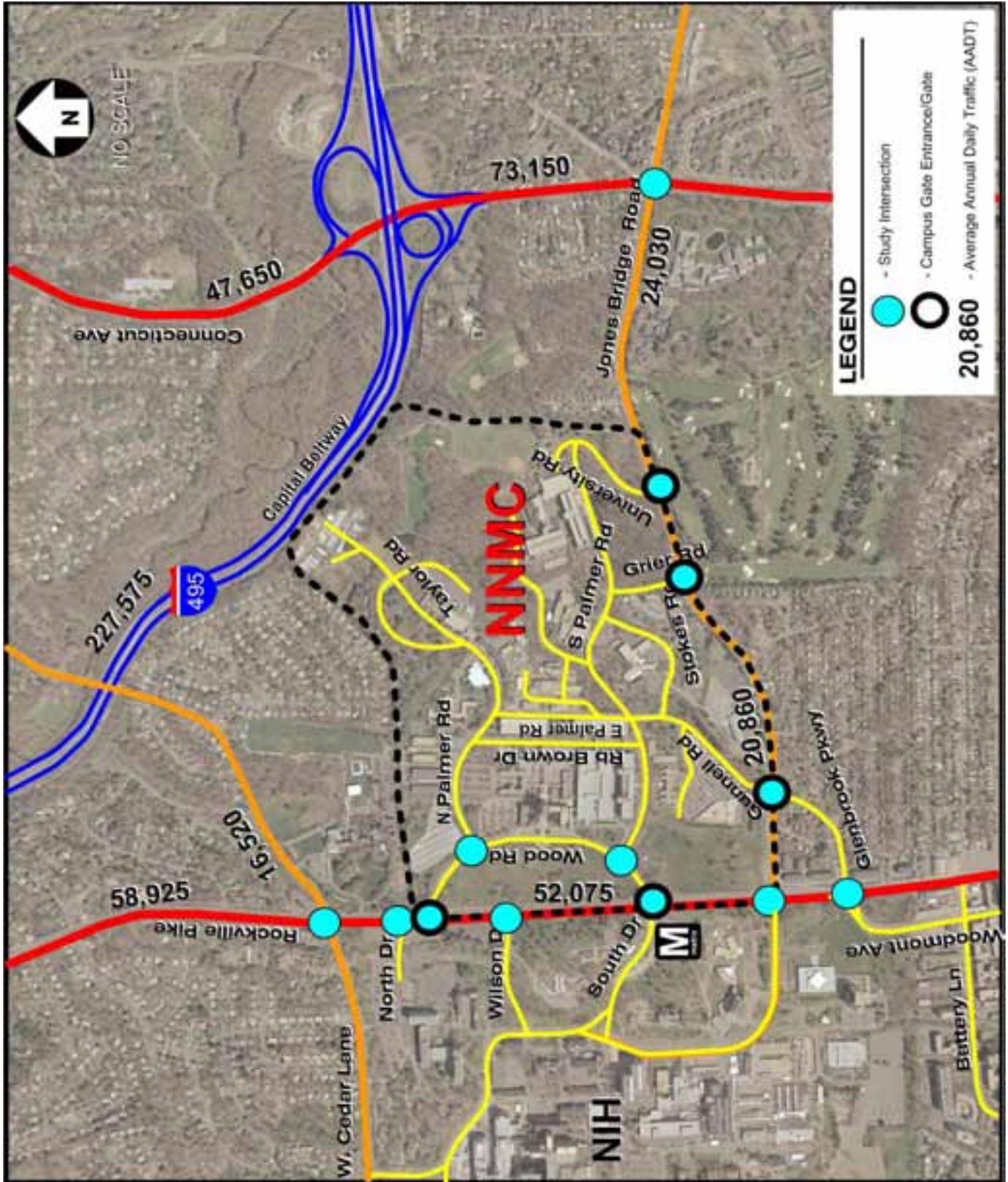


Figure 2 - NNMC Study Area Map



2.4 Public Transportation

The NNMC is well served by public transportation facilities as shown in Figure 3. The campus is situated across Rockville Pike from the Medical Center Metrorail Station on the Red Line of the Washington Metropolitan Area Transit Authority (WMATA). This station is also a major stop/transfer point for several WMATA and Montgomery Ride-On bus routes. The station opens at 5:00 am on weekdays and at 7:00 am on weekends; and closes at 12:30 am from Sunday through Thursday, and at 3:30 am on Friday and Saturday. The trains operate with headways of 3 to 6 minutes during the peak weekday morning and afternoon periods, and with headways of 6 to 15 minutes during the weekday off-peak periods. The current number of weekday boardings/alightings at this station is 5,100, representing an 88% increase since the opening of the station in 1985. During the weekday morning peak period (5:30 – 9:30 a.m), approximately 2,845 riders use this station. A significant amount (1,780 or 63%) of those riders arrives at this station as their destination to work.

The Metrobus routes serving the campus are noted below:

- J1 route provides rush hour service, with 30-minute headways, between the Silver Spring and Medical Center Metrorail Stations, and runs along Jones Bridge Road.
- J2 and J3 Routes offer through service between the Silver Spring Metrorail Station and Montgomery Mall, with intermediate stops in the Bethesda CBD and at the Medical Center Metrorail Station. These routes provide 7-minute headways during peak hours, and 20-minute headways during off-peak hours.
- Routes J8 and J9 are the two new lines that comprise the “I-270 Express”. They run between the Lake Forest Transit Center Station and the Bethesda Metrorail Station.

There are six (6) Ride-On Routes serving the Medical Center Metrorail Station. These are as follows:

- Route 30 is a local collector route that circles through the neighborhoods before terminating at the Bethesda Metrorail Station.
- Routes 33 and 34 provide rush hour service to/from Wheaton Plaza via separate routes.
- Route 42 provides service to Friendship Heights via Woodmont and Wisconsin Avenues.
- Route 46 connects NNMC with Rockville via Rockville Pike, with 20-minute headways and primarily serves as a feeder to the Metrorail Stations along this route.
- Route 70 is a new express service running between the Germantown Milestone park-and-ride lot and Bethesda.

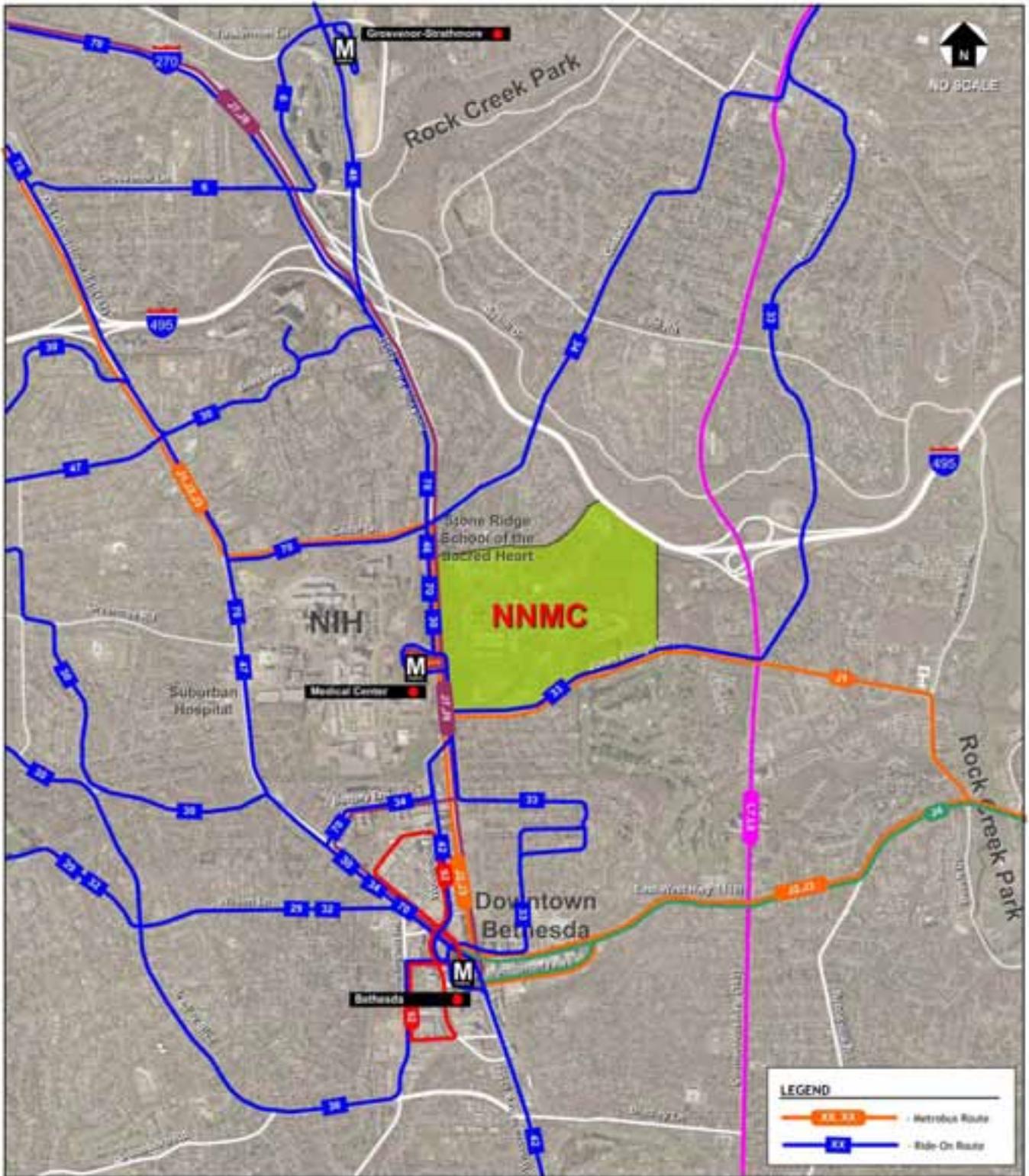


Figure 3 - Existing Public Transportation



Heavy rail commuter service is available via the Maryland Rail Commuter (MARC) “Brunswick” line. Trains originate in Martinsburg, West Virginia, or Brunswick and Frederick in Maryland, and travel to Union Station in Washington, D.C. in the morning hours with reverse movements occurring in the evening. MARC currently operates nine (9) trains inbound to Washington in the morning and ten (10) trains outbound in the evening. All stop in Rockville about six miles to the north of the NNMC Bethesda campus, where a connection can be made to the Metrorail Red Line.

2.5 Shuttle Service

NNMC operates two shuttle bus lines, i.e., the Blue Line and the Gold Line during the campus AM and PM peak periods. Both shuttle services connect major campus buildings to the Medical Center Metrorail Station from approximately 6:10 – 9:00 AM and 2:45 – 5:30 PM, Monday through Friday. Typical headways/intervals for each route are approximately 10 - 15 minutes.

The Blue Line Shuttle begins at the Medical Center Metrorail Station and runs primarily along South Palmer Drive, branches out on Stokes Road, loops around the Child Development Center (Day Care) and returns back to South Palmer Drive and continues down to loop around the USUHS underground garage. In April 2008 the ridership was 108 passengers per day.

The Gold Line Shuttle also begins at the Medical Center Metrorail Station runs along South Palmer Drive, branches out at Brown Drive, joins onto Taylor Road, continues towards the Research Institute to loop around the Navy Call Center and Health Services Building, before retracing its path back to South Palmer Drive, from where it branches out to Stokes Road and loops around the Child Development Center before returning back to the starting point. In April 2008 the ridership was 79 passengers per day. Both NNMC Shuttle bus routes are shown in Figure 3.

The NNMC is also accessed by shuttle bus services operated by other DOD agencies. These include the Walter Reed Army Medical Center, Annapolis Naval Station, Patuxent River/Naval Air Station and Quantico Marine Corps Base. The service is for official business and not intended to support commuters.

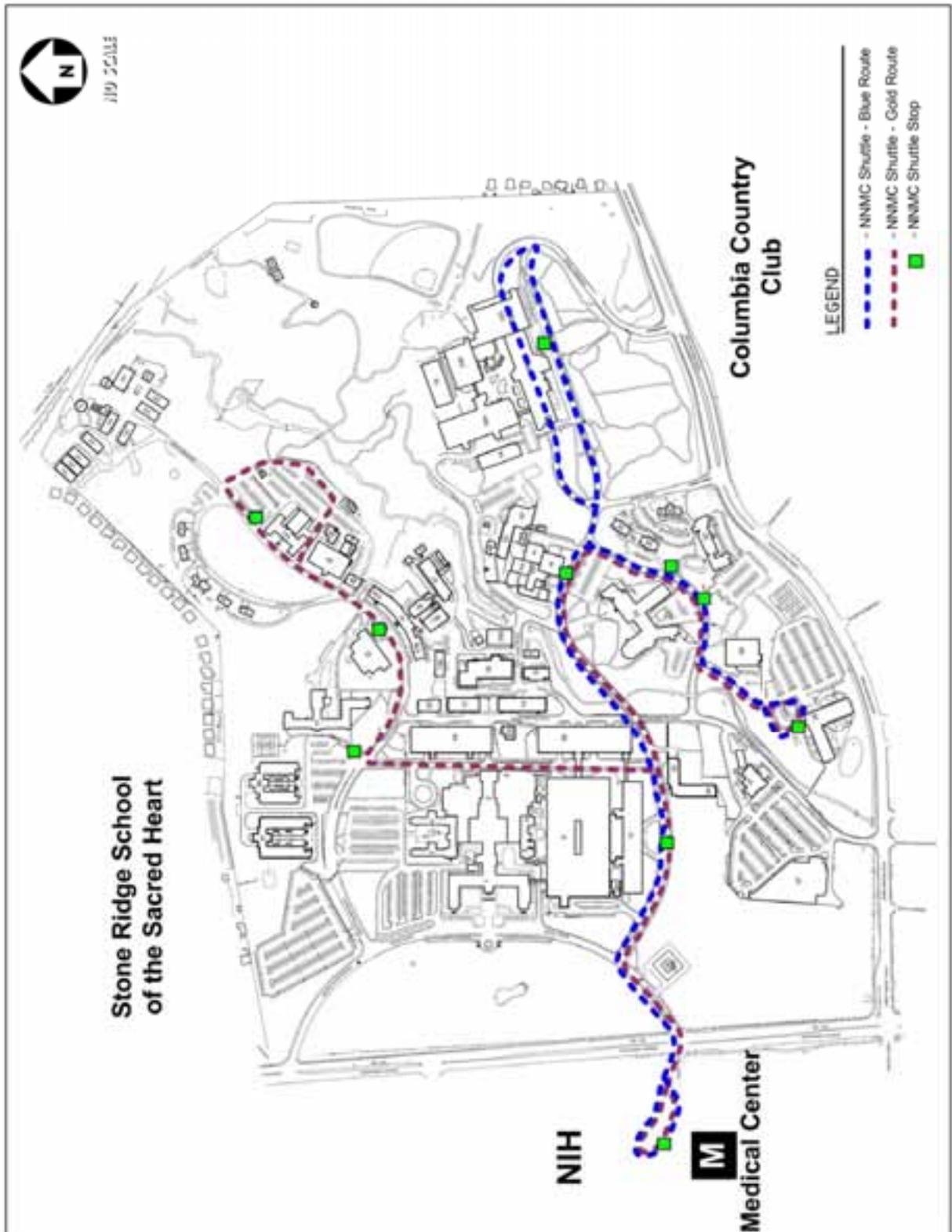


Figure 4 - NNMC Shuttle Services



2.6 Existing Parking

Parking inventory and occupancy survey was conducted during the late September-October (2006) to assess the existing campus parking situation. The survey indicated that the total parking supply consisted of 6,123 parking spaces. Based on information provided by NNMC staff, the current parking supply is 6,058 spaces. The reduction is due to the demolition of Building 12 parking, re-striping of some spaces to accommodate more handicap parking, and other construction related activities. The existing parking is distributed among several surface lots, garages and on-street areas. The locations of the campus parking facilities are shown in Figure 5. A breakdown of the parking by facility type and major user category is presented in Tables 1 and 2, respectively.

Table 1 Parking Space Distribution by Facility Type

Structured Parking	3,087 (51%)
Surface Parking Lot	2,735 (45%)
On-Street Parking	236 4%)
TOTAL	6,058 (100%)

Table 2 Parking Space Distribution by User Category

Parking User Category	Supply	Occupancy ⁶
Staff	4056 ¹	3609
Lodging (Temporary and Permanent)	685 ²	212
Patient/Visitor/Resident	961 ³	770
NEX/MWR Visitor	291 ⁴	217
Government Vehicles	65 ⁵	0
TOTAL	6,058	4808

Notes:

1. The Staff Parking areas include: Complete Lots A, E, J, K, L, M, N, P, R, W, X, Y, NX, Partial Lots D, G, H, I, S, T, on-street along N. Palmer Road, on-street front of Bldg.17, on-street along Stone Lake Road (west), Bldg 241, Bldg 242, USUHS Garage, Gravel Lot behind USUHS (Stone Lake Road east), adjacent surface parking (ball field), Circle 7 north of Bldg. 7 and Bldg. 74. Staff category includes medical staff, warehouse staff, contractors, major tenants like USUHS and AFFRI, other administration staff, childcare staff, volunteers and other reserved spaces for Senior NCO’s and Officers.
2. The Permanent Lodging parking areas include: Partial Lots C, G, H, Complete Lot Q, Bldg. 50, Bldg. 60, Bldg. 61, Parking areas for Temporary Lodging are Lot H (Partial), Lot U (Complete) front of Bldg. 24, and 25. The permanent lodging includes three existing BEQs, while the temporary lodging includes the Navy Lodge and the Fisher Houses.



3. The NNMC Patient/Visitor areas include: Bldg. 55 Garage (majority), open spaces of all staff lots except Lot H are also shared with visitors . This category includes medical In/Out patients, visitors and Resident Doctors.
4. The NEX/MWR visitor parking is Lot C (majority), Partial Lots S , T, I and Z (complete). Apart from the NEX store, this category includes the Quick Mart/NEX Gas Station and McDonalds, bowling alley, and package store.
5. Government Vehicles: Partial Lots C, D, H, I, Partial Bldg 55 Garage, Taylor and Van Rypen laydown area east of flag housing and Bldg 7. This category includes all motor pool, police and security vehicles, ambulances, shuttle buses and buses.
6. The occupancy was based on parking occupancy spot survey conducted by G/SA.

Table 2 also shows the parking occupancy results, by major user categories. The data indicates a peak parking demand of approximately 80 percent for the entire campus. The data also indicates that the existing employee- parking supply ratio is 0.507 spaces per employee. This was computed by using the staff parking spaces (4,056) and the total employee population (8,000).

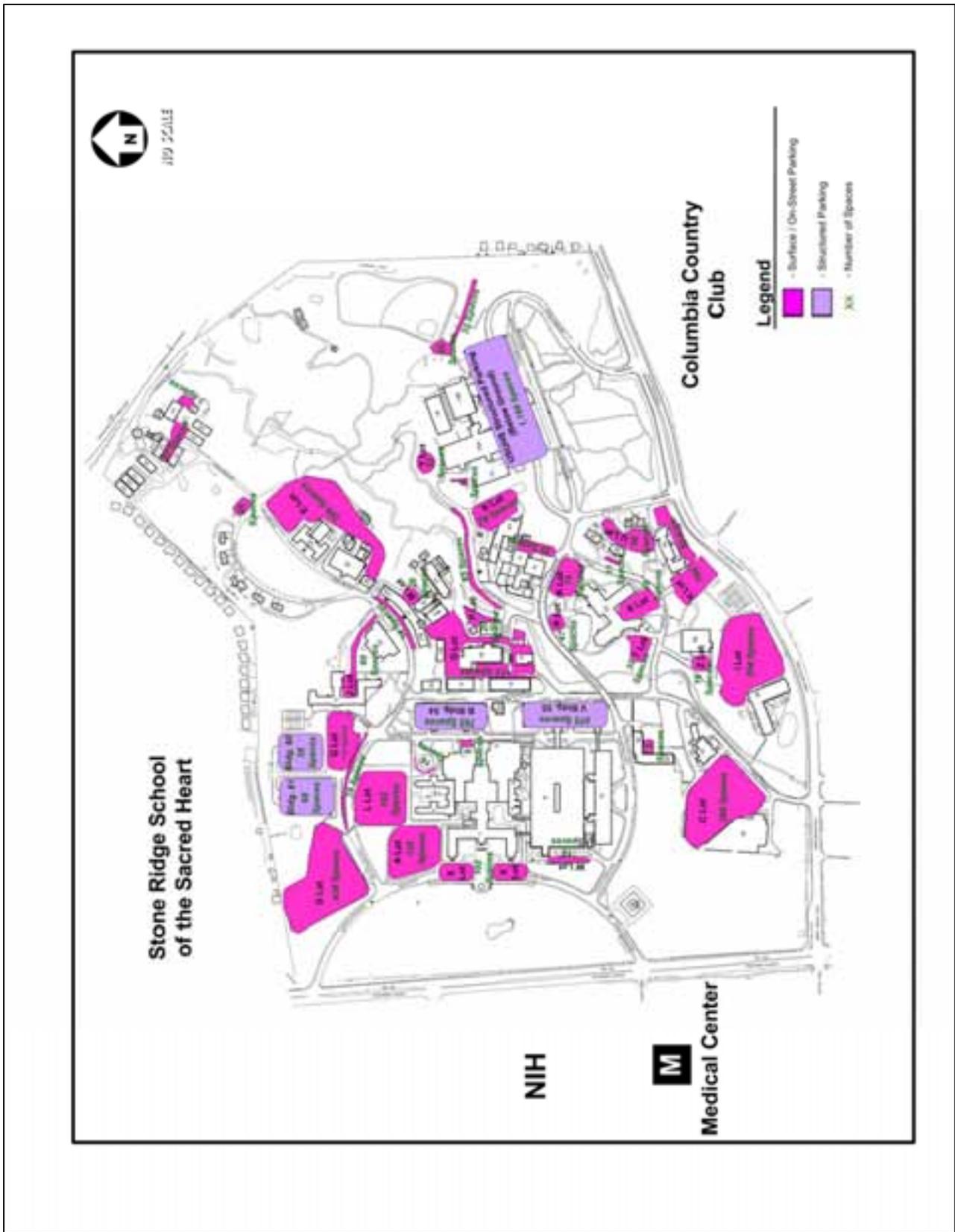


Figure 5 - Existing Distribution of Parking within Campus



2.7 NNMC Transportation Demand Management Programs

Mass Transportation Fringe Benefit (MTFB) Program

The MTFB Program is sponsored by the Department of Transportation (DOT) and is for both military and government employees. Civilians not employed by the Federal Government are not eligible. Employees are reimbursed (as of 2008, up to \$115 per month) for their mass transportation expenses to and from work. Program participants are issued Metrocheks by DOT on a quarterly basis. The Metrocheks can be used on any of the established mass transit systems, such as the Metrorail, Metrobus, MARC Train and registered vanpools. The program participants must remove any previously issued parking sticker from their vehicles. There were approximately 1,187 Metrocheks which were distributed at NNMC and 1,500 at Walter Reed during the first quarter of 2008.

Commuter Solutions Program

The NNMC operates a Commuter Solutions program. The primary objectives of the program are to reduce the campus trip generation and parking demand by encouraging employees to use alternative commuting modes including public transportation, ridesharing (carpool and vanpool). The NNMC intranet website has a new web page called **Commuter Solutions**. It lists all the commuting options for NNMC staff who work at the campus. This link provides information about mass transit, carpool or vanpool via commuter connections, military shuttles in the National Capital Region, Commuter Alerts in the form of live traffic web cams and Park-and-Ride Lot information. It lists staff FAQs which are parking or transportation related questions received via email, phone or town hall discussions that are relevant to the entire staff. The announcement/newsroom section provides internal/external parking and transportation related delays and construction projects. In addition, it also indicates bike rack locations within campus and other general staff and open parking available within campus.

Medical Center Transportation Management Organization

This organization was formed by the NNMC, Uniformed Services University of Health Sciences, NIH, Suburban Hospital and the North Bethesda Transportation Management Group to initiate and coordinate traffic and parking demand management programs in keeping with local and regional traffic and pollution reduction goals. It has initiated programs to encourage employee use of public transportation and to foster car and van pools. The County and the Washington Metropolitan Area Transit Authority (WMATA) contribute to the funding of this organization's operations.



3.0 EXISTING EMPLOYEE TRAVEL CHARACTERISTICS

As noted earlier, certain medical functions and employees from the Walter Reed Army Medical Center (WRAMC) in Washington, DC would be realigned to the NNMC Bethesda campus, as mandated by the Defense Base Closure and Realignment Act of 1990 (BRAC Law). Further campus development is also planned to support BRAC and other envisaged needs. These land use changes would accommodate approximately 2,500 additional employees and 484,000 additional visitors and patients. All planned campus development will be included in a Master Plan Update.

Based on the above, and to facilitate the transportation management analyses and recommendations presented later in this report, the current and projected travel characteristics of WRAMC and NNMC employees are summarized below.

3.1 *WRAMC Employee Travel Characteristics*

The Walter Reed Army Medical Center Main Section (WRAMC-MS) distributed a survey to its employees in November and December of 2002 via internet site of WRAMC. The survey was completed by 1,049 employees (representing 12% of the total population of 8,910). Key elements of the survey results are summarized below:

Residential Distribution

A large majority of the employees live in Maryland. The largest concentration of the residences is located directly to the north of the District of Columbia, in the Silver Spring and White Oak areas of Montgomery County, Maryland. Table 3 shows the breakdown of employee residences by state.

Table 3 Residential Location

Employees State of Residence	
Maryland	80.1 %
Virginia	14.2 %
District of Columbia	5.5 %
West Virginia	0.2 %

Commuting Distance and Time

The employee travel distance and time characteristics are presented in Tables 4 and 5, respectively. Table 4 shows that the majority of the employees travel more than 10 miles between home and work. Table 5 indicates that travel time to and from work is longer than 30 minutes for most employees.

Table 4 Distance from Home to Work

Miles WRAMC employees travel to work – one way	
Less than 0.5	1.3 %
2 – 5	9.3 %
5 – 10	20.3 %
Greater than 10	68.3 %



Table 5 Travel Time for Daily Commuter from Home to Work

Time WRAMC employees spend commuting to and from work			
Time spent traveling to work	% of employees	Time spent traveling home from work	% of employees
Less than 5 minutes	0.4 %	Less than 5 minutes	0.65 %
5 - 15 minutes	6.4 %	5 - 15 minutes	3.8 %
15 - 30 minutes	26.0 %	15 - 30 minutes	14.0 %
30 - 45 minutes	35.9 %	30 - 45 minutes	30.4 %
Greater than 45 minutes	30.6 %	Greater than 45 minutes	50.5 %

Commuting Mode Split

The percentage of employees using each mode of transportation is shown in Table 6. This data clearly indicates that the predominant commuting mode is drive alone, which was used by over 80 percent of the employees.

Table 6 Mode of Commute

Employee mode of travel to and from work (Average Weekday)	
Mode	% of employees using mode
Drove Alone	81.2 %
Carpool/Vanpool	8.0 %
Metrotransit/Commuter Rail	3.2 %
Bus	1.4 %
Dropped Off	0.0 %
Walk/Bike	1.5 %
Other	4.7 %
Total	100.0%

Compressed Work Weeks

Some employees have compressed workweeks, i.e., four 10-hour days with one day off each week or four 9-hour days each week with one day off every other week. According to the results of the transportation survey, approximately 10 percent of the respondents are involved in a compressed work week program.

3.1.1 WRAMC Employee Attitudes Toward Alternative Modes

The WRAMC transportation survey also asked questions in order to determine the attitudes of employees towards carpooling, using mass transit, and working a compressed workweek. According to the results of the survey, there is some interest among the employees regarding the use of these modes, as noted below.



Employee Attitudes about Carpooling

The survey asked employees the reasons they do not carpool and what incentives would encourage them to use this mode. Table 7 shows the days employees indicated they would be interested in carpooling to or from work. Approximately 30 percent of the employees who responded to the survey are interested in carpooling during the week (Monday through Friday).

Table 7 Willingness to Use Carpool

Day	% of respondents interested in carpooling that day
Monday	29.6 %
Tuesday	31.7 %
Wednesday	30.9 %
Thursday	32.2 %
Friday	28.7 %
Saturday	1.1 %
Sunday	1.1 %

The survey also asked employees why they were not currently carpooling to or from work. The respondents provided several reasons for not carpooling, as indicated in Table 8. The primary factors include irregular work schedules, the need for a car before and after work, not having anyone to ride with and the desire to not depend on other people for a ride.

Table 8 Reasons for Unwillingness to Use Carpool

Reason	% of employees choosing reason
Irregular Work Schedule	46.4 %
Need car before or after work	43.9 %
Don't have anyone with whom to ride	34.3 %
Don't like to depend on others for a ride	34.1 %
Other	14.9 %
Need car at work for personal errands	13.3 %
Takes too much time	11.7 %
Need car at work for agency business	10.4 %
Live close to work	9.2 %
Costs more than driving alone	3.8 %
Need a specially equipped vehicle	0.3 %

The survey also asked the employees of WRAMC what would encourage them to share a ride to work in a carpool or vanpool. Various incentives were listed and the respondents were asked to choose five answers and rank them in importance with 1 being the most important and 5 being the least important. A points system was developed in order to determine the strategies which would encourage employees to share a ride to work. The calculation of points for a particular incentive was done by using a weighted number of respondents. The number of respondents who indicated that a particular incentive was the most important was multiplied by 5. The number of respondents who indicated that this was their second most important answer was multiplied by 4, and so on. These weighted numbers were then added together in order to determine which strategies were the most important to the respondents of the survey. The results are presented in Table 9.



Table 9 Incentives to Use Carpool

Incentive	Weighted Points*
Guaranteed ride home in case of emergencies or unscheduled overtime	910
Help finding people with whom to share a ride	813
Regular shuttle service to metro station	634
Agency subsidy or payment	571
Preferential parking for carpoolers/vanpoolers	513
More flexible hours	443
Easier access to services for personal errands during the day	315
More fixed hours	285
Limited spaces for single occupancy vehicles and vigorous parking enforcement	270
Child care facilities at or near work site	176
Change of work shift	119

* See previous paragraph for discussion of how points were calculated

The incentive with the highest potential for increasing carpool usage is the provision of a guaranteed ride home in the case of emergency or unscheduled overtime. The Metropolitan Washington Council of Governments (MWCOG) currently operates a guaranteed ride home program which provides a free ride home for commuters who regularly carpool, vanpool, bike, or take transit to work in the case of emergencies or unscheduled overtime. The two next highest potential incentives appear to be the provision of ride matching information and assistance, and regular shuttle services to a Metrorail station.

Employees Attitudes about Transit

The commuting survey also attempted to determine the attitudes of employees towards the use of public transportation services. Table 10 indicates the key factors that would encourage employees to shift to public transportation for their commute to and from work.

Table 10 Incentives to Use Public Transit

Incentive	Weighted Points*
More frequent service and more convenient stops by public transit providers	782
Help finding bus or rail service to meet my schedule	580
Agency subsidy or payment for transit riders	566
Guaranteed ride home in case of emergencies or unscheduled overtime	552
Sale of transit passes on site	328
More flexible hours	322
More fixed hours	179
Child care facilities at or near work site	167
Limited spaces for single occupancy vehicles and vigorous parking enforcement	154
Easier access to services for personal errands during the day	150
Change of work shift	110

* Based on same methodology used for results in Table 9.

The incentive having the highest potential to increase transit usage is the provision of better route coverage and more frequent service. The next three highest incentives are the provision of transit real time information, transit subsidies and a guaranteed ride home in the case of emergencies.



Employees Attitudes about Compressed Workweeks

The transportation survey also attempted to determine the attitudes of employees towards working a compressed workweek. According to the results of the survey, approximately 55 percent of the employees at WRAMC are interested in working some type of compressed workweek. Of those employees, 67 percent indicated they would prefer to work four 10-hour days per week, 24 percent indicated they would like to work nine 9-hour days every two weeks. The remaining 9 percent indicated they would like to work another type of workweek not listed in the survey.

3.2 NNMC Employee Travel Characteristics

NNMC conducted an employee transportation survey in June 2007 in order to collect information on existing travel patterns and influences. Approximately 16% of the total employee population (1,285 employees) completed the survey. The highlights of the survey results are presented below.

Residential Distribution

Based on the zip codes of the existing employees, Table 11 summarizes the location of the residences. The findings show that over 53% of NNMC employees live in Montgomery County. The next highest areas of residential location are Prince George’s County and Virginia.

Table 11 Residential Location

Employees State of Residence	
Montgomery County	53.0%
Frederick County	7.0 %
Prince George’s County	11.0 %
Howard County	2.0%
Other MD	9.0 %
Washington, DC	6.0%
Virginia & Other	12.0%
Total	100.0%

Figure 6 identifies where current NNMC employees live by zip code in relation to the NNMC campus. This figure shows that NNMC employees live throughout the region with a concentration of employees living to the north of the NNMC campus.

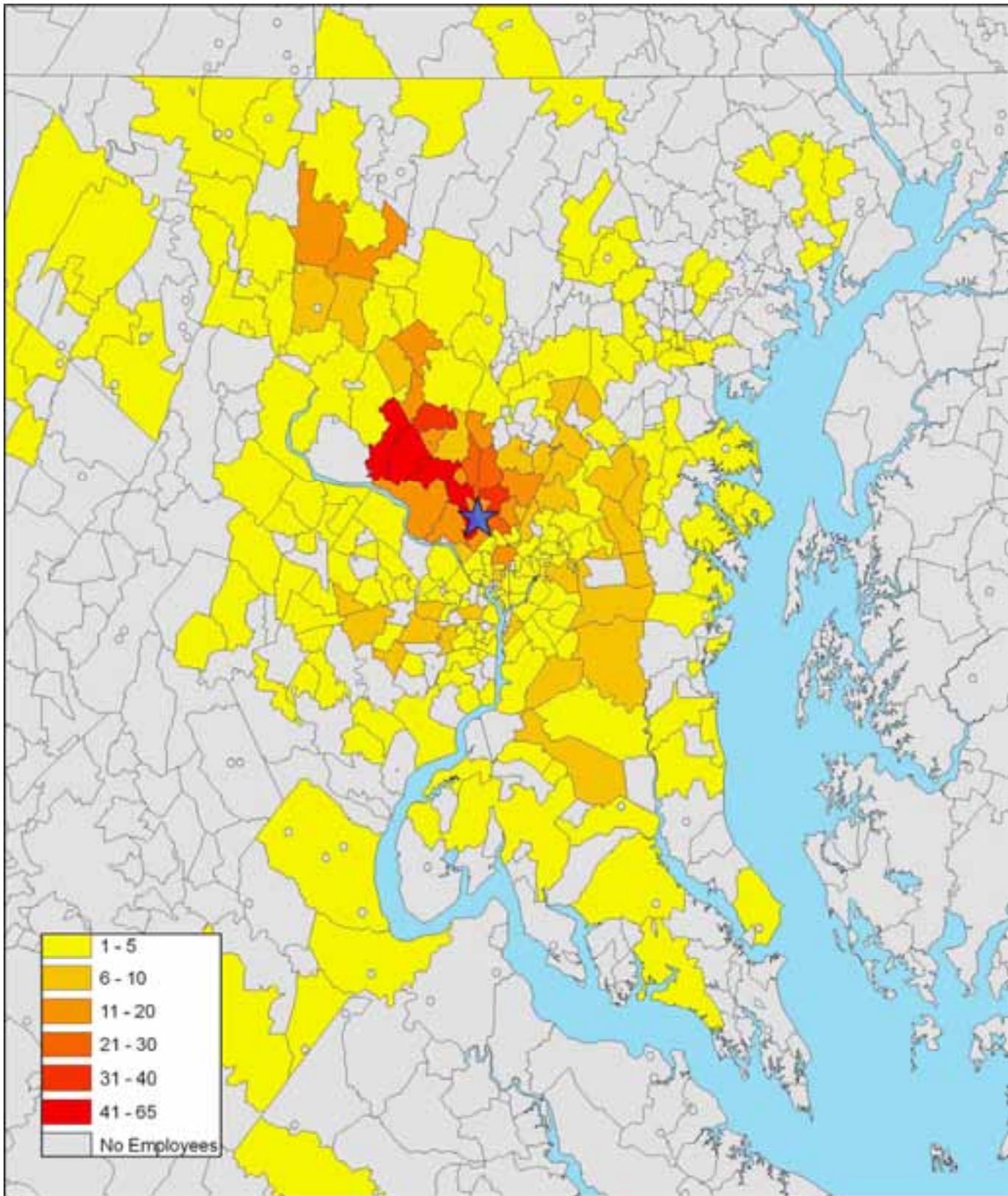


Figure 6 - Location of NNMCC Employee Residences by Zip Code



Commuting Mode Split

The percentage of employees using each mode of transportation is shown in Table 12. This data indicates that the predominant commuting mode is drive alone, involving over 70 percent of the employees.

Table 12 Mode of Commute

Employee mode of travel to and from work (Average Weekday)	
Mode	% of employees using mode
Drove Alone	72.4%
Carpool	8.8%
Vanpool	4.7%
Metrorail	9.9%
Commuter Rail	1.2%
Bus	0.2%
Dropped Off	1.9%
Walk/Bike	0.4%
Other	0.5%
Total	100.0%

Current Work Schedule

Employees were asked about their current work schedules. Of the 1,285 survey respondents, almost 70 percent indicated that they typically work consistent hours. The start and end times for the employees with consistent schedules are spread out between 6:00 - 9:00 AM and 3:00 - 6:00 PM.

Transit Subsidies

Eleven percent (11%) of the employee survey respondents indicated that they receive transit subsidies.

Willingness to Use Alternative Mode

The survey asked employees if they were willing to shift to an alternative commuting mode and what incentives would cause them to make this change. Table 13 summarizes the survey results. The incentives that could have the greatest influence in shifting employee to alternative commuting modes are the provision of express bus from the home community to work, flexible work schedules and transit subsidies.



Table 13 Willingness to use alternative mode

	First Choice		Second Choice	
	Number of Employees	Percentage	Number of Employees	Percentage
I do not drive alone	147	11%	108	8%
Extended daycare hours	18	1%	20	2%
Daycare services on-site	23	2%	23	2%
Discounted bus or rail passes	124	10%	133	10%
Flexible work schedule	214	17%	196	15%
Express bus from your community to work	283	22%	185	14%
Ride-matching services for car/van-pooling	79	6%	94	7%
Emergency or guaranteed ride-home, free	63	5%	115	9%
Preferential parking for car/van-pooling	33	3%	62	5%
Free shuttle from NNMC to Metrorail station	46	4%	67	5%
Transit subsidy up to \$100 per month	186	14%	178	14%
Other	67	5%	103	8%
Total	1283		1284	



4.0 BUILD-OUT CONDITIONS

4.1 Future Background Traffic Conditions

These traffic conditions would occur in year 2011 without the BRAC Action. The NNMC Environmental Impact Statement (EIS) indicates that excessive peak period and directional traffic congestion would worsen along the external perimeter roadways, before the implementation of the BRAC Action and other planned land uses changes. Four (4) intersections would operate above the established County congestion standards. These are *Rockville Pike at Cedar Lane*, *Connecticut Avenue at Jones Bridge Road*, *Rockville Pike at Jones Bridge Road* and *Old Georgetown Road at Cedar Lane*.

4.2 Future BRAC Traffic Conditions

The NNMC EIS indicates that five (5) intersections would operate above the established congestion standards, upon implementation of the BRAC Action and other planned land use changes. These are *Rockville Pike at Cedar Lane*, *Connecticut Avenue at Jones Bridge Road*, *Rockville Pike at Jones Bridge Road*, *Old Georgetown Road at Cedar Lane* and *Rockville Pike at North Drive*.

Analysis of the BRAC traffic impacts on the campus indicates that the existing roadway network would continue to operate efficiently except for the following intersections:

- North Palmer Road at Wood Road
- South Palmer Road at Wood Road
- Robert Brown Road at North Palmer Road

4.3 Future Parking Conditions

The NNMC campus is provided with 6,058 structured and surface parking spaces. The Master Plan proposes the elimination or modification of several surface lots due to construction or AT/FP needs, and the provision of new structured and surface spaces to serve patients, medical facility, administrative, university, lodging and other uses. An assessment of additional parking needed to serve the future/planned campus development was undertaken considering the following factors:

- a) The Department of Defense (DoD) parking requirements for planned land uses; and
- b) The National Capital Planning Commission (NCPC) parking policies and parking ratio goal for federal facilities within the National Capital Region.

DOD Parking Requirements

The Department of Defense uses the UNIFIED FACILITIES CRITERIA (UFC) series of design documents to design military facilities. One aspect of the design is parking requirements. These requirements are used uniformly by all services and are well studied and provide validated parking



needs. The parking requirements are considered conservative and when compared to minimum requirements for similar facilities in Montgomery County the parking requirements are usually either the same or less than Montgomery County's. The UFC does suggest some adjustment to allow for public transportation systems such as Metro. However, this would only be to offset the actual usage. These numbers incorporate the need for various mission critical aspects that are not reflected in other documents or selected ratios. NNMC believes that following the UFC criteria is the appropriate way to set parking limitations. An analysis and projection of additional parking needs based on DoD requirements was performed. It shows that additional parking would be required to serve the future land use developments and to replace existing parking spaces that would be lost to facilitate those developments and certain roadway improvements including the realignment of North Wood Road. The analysis results are presented in Table 14 following, with respect to the four user categories considered for the existing conditions assessment (NNMC Staff, Lodging, Patient/Visitor NEX/MWR and Government Vehicles). Table 14 also compares the projected additional parking requirement with the proposed parking supply.

Table 14: Future Additional Parking Need - Supply Situation (Based on DoD Parking Requirements)

Categories	Eliminated Parking Spaces	Additional Minimum Parking Requirement	Total New Additional Parking Requirement	Proposed New Parking	Projected Parking Deficit
Staff ^a	666	2,007	2,673	1,653	-1,578
Lodging ^b	58	500	558		
Patient/Visitor ^c	128	993	1,121	943	-178
NEX/MWR Visitor ^d	210	580	790	584	-206
Government Vehicles ^e	31	40	71	31	-40
Total	1,093	4,120	5,213	3,211	-2,002

Notes:

- a. Staff category includes medical staff, warehouse staff, contractors, major tenants like USUHS and AFFRI, other administration staff, childcare staff, volunteers and other reserved spaces for seniors.
- b. Lodging category includes three existing BEQs (as permanent and temporary housing within campus), the Navy Lodge and the Fisher Houses (as temporary housing within campus).
- c. This category includes medical In/Out patients and their visitors and Resident Doctors.
- d. Apart from NEX store, this category includes the Quick Mart/NEX Gas Station, Package Store, Fitness Center, Bowling Center, and McDonalds.
- e. Government Vehicle category includes all motor pool, police and security vehicles, ambulances, shuttle buses and buses.
- f. Proposed Multi-use Garages of 1,694 spaces includes: Multi-use Garage (1,204 spaces), Multi-use Garage (484 spaces), 24 surface spaces for BEQs and 6 on-street spaces for Govt. Vehicles.
- g. 943 spaces are provided as a patient and visitor garage.
- h. 550 spaces are assumed provided as NEX Deck Parking replacing the current Lot C.

Table 14 shows that there will be a total deficit of 2,002 spaces, considering the DoD requirements against the proposed new parking supply.



The above analysis is very conservative from several perspectives including the following:

- 1) It does not reflect the implementation of the NNMC Transportation Management Plan to shift employees from single-occupancy vehicle use to alternative modes including bus and rail transit, carpooling, vanpooling, telecommuting, walking and bicycling. Based on several national studies, and the results of employee transportation surveys conducted for NNMC and WRAMC, it is concluded that an employee trip and parking reduction of 15% is realistically achievable with an effective TMP. This reduction would reduce the deficit from 2,002 spaces to 1,597 spaces.
- 2) Field observations prior to elimination of any parking indicate that the peak weekday parking occupancy for the entire campus is approximately 80 percent. This implies that approximately 10% of the campus parking is available during the peak demand period, considering a practical parking capacity of 90 percent.

NCPC Parking Goals

The parking inventory (presented in the existing conditions assessment) shows that currently there are 4,056 spaces available for 8,000 employees working at the NNMC campus. This equals a parking ratio of 0.51 spaces per employee. In the future, there will be 4,157 parking spaces for 10,500 employees working at NNMC. Hence the future parking ratio would be 0.40 spaces per employee or one space for every 2.5 employees. NCPC policies suggest a parking ratio for suburban federal facilities within 2,000 feet of a Metrorail station (such as the NNMC hospital complex) of 0.33 spaces per employee or one space for every three employees. Effectiveness of transportation demand management measures aimed at reducing single-occupant vehicle trips and related parking demand by employees would need to become significantly more effective to meet the NCPC goal.

Further analysis was done to project a realistic reduction in the parking ratio within the Master Plan horizon period of 20 years. The Table 15 below summarizes this analysis.

Table 15: Projected Parking Ratios

Year	2011	2018	2028
Reduction in Parking Requirement ¹	N/A	15%	17%
Total Parking Required for 10,500 Employees ²	4,157	3,533	3,465
Parking Ratio	0.40	0.34	0.33

Notes:

1. Assumed reduction in parking requirement due to effective implementation of TMP measures.
2. The total parking requirement accounts for the existing parking that will be eliminated in future due to construction by subtracting it from current 4,057 spaces available to employees.



Table 15 indicates a 17% reduction by 2028 which is not realistic given the current and anticipated trip-making characteristics for the WRAMC and NNMC employees, as described in Section 3 above. It also shows that even with a 15% reduction in parking, the NCPC goal would be difficult to achieve within the Master Plan horizon period. In addition, when taking operational requirements into consideration there is a substantial need to have extra parking available to meet wartime surge needs. Parking for surge conditions is a requirement. Another requirement based on operational needs is contractor laydown areas. The Hospital and University always have construction or renovation going on. This is typically 5 projects with about 20 or more spaces needed for each project. With the addition of the new facilities a need for 7 or 8 areas is anticipated.

Based on the above considerations, the TMP goals and objectives are presented in Section 5 following.



5.0 TMP GOALS AND OBJECTIVES

The implementation of an effective TMP will require that a set of goals be established, based on which appropriate strategies are identified to reduce the existing and future vehicle trip generation and parking demand of the NNMC campus. The proposed goals and objectives for the NNMC TMP were developed based on the following:

- Meeting all operational and mission requirements
- The TMP requirements and strategies presented in the Federal Agency Transportation Management Program Handbook (GSA 2002) and the Comprehensive Plan for the National Capital: Transportation Element, National Capital Planning Commission (2005);
- The existing travel characteristics of WRAMC and NNMC employees, and potential measures to encourage positive changes in commuting modes (Section 3); and
- The projected traffic and parking impacts of the BRAC Action (Section 4).

The goals and objectives of the NNMC TMP are as follows:

Goals

The main goals of the TMP are as follows:

- Mitigate identified adverse traffic impacts of the proposed new developments, as noted in the EIS Transportation Study.
- Influence the travel choices of the users of the NNMC site towards reducing their potential adverse impacts on local area traffic congestion and air pollution.
- Establish an opportunity to work cooperatively with federal and local agencies, towards reducing local area traffic congestion and air pollution.
- Mitigate identified adverse traffic impacts of the proposed new development, as noted in the EIS Transportation Study.
- Reduce obstacles for patient parking (distance, signage, access, and availability)
- Obtain better information needed for analysis of transportation and parking issues.



Objectives

The primary objectives of the TMP are:

- Reduce existing and future single-occupant vehicular (SOV) trips to/from the NNMC campus, particularly during weekday morning and afternoon peak periods.
- Increase Average Vehicle Occupancy (AVO) ratios from 1.12 to 1.5 by 2018.
- Increase transit mode share by 3% by year 2011 and by 8% by year 2018.
- Reduce parking supply and demand ratios through effective management strategies. Identify TDM strategies that will allow the employee-parking ratio to realistically approach the NCPC goal of 1 parking space for every 3 employees by 2018. NCPC also stipulates that the 1:3 parking ratio is only for the locations that fall within the 2000 feet distance from the metro portal.
- Identify strategies that can be implemented with other local area agencies and organizations to achieve the TMP goals and objectives, as well as address local area roadway capacity and safety deficiencies.
- Improve patient access and parking
- Establish procedures and methods to obtain reliable transportation and parking information and data.

5.1 Potential TMP Strategies

In order to achieve the objective of the TMP, the NNMC will make a significant aggressive effort to implement measures which could dissuade employees from driving to work alone or during peak commuter periods. Potential measures would include the following:

- Transportation Coordinator / Program Manager (PM): This position has been established to coordinate and administer the TMP. This person will be responsible for developing and administering a promotional program for ridesharing and transit usage by employees, visitors and lodgers. The PM will develop and distribute informational and promotional brochures regarding ridesharing and various transit services. The information will stress the convenience factor, environmental and economic benefits, and the traffic reduction benefits to carpooling, vanpooling and transit. This person will provide information on the campus parking permit program, and coordinate “zip code get together” meetings to encourage carpool and vanpool pairings within NNMC. The PM will compile or coordinate NNMC employee participation in



the bi-annual State of the Commute Survey, and will participate in the Commuter Connections meetings.

- Ridesharing (Carpool and Vanpool): The Program Manager will promote employee participation in carpooling and vanpooling, through the measures noted above and more. Carpooling occurs when two or more people share a ride in a private vehicle. Carpools generally consist of persons who live in the same neighborhood or along the same route, and use a private vehicle to reach a common or nearby destination. Vanpools consist of seven or more people who share a ride in a prearranged van that could be owned or leased by the riders or the employer. Currently, the NNMC employees interested in a carpool or van pool are directed to the web link for **Commuter Connections** which is a network coordinated by Metropolitan Washington Council of Governments (COG). This allows users to access a regional database of commuters and gives an opportunity to NNMC employees to find a match for their commute not only from within NNMC but also from other institutes and offices in the Bethesda – Chevy Chase area. NNMC will seek to develop a Kiss-and-Ride area (potentially along Jones Bridge Road near the Navy Exchange and CDC) to help promote carpool/vanpool options with drivers who are not NNMC staff members.
- The NNMC website has a new web page called **Commuter Solutions**. It lists all the commuting options for NNMC staff and contractors who work at the campus. This link provides information about mass transit, carpool via commuter connections and NNMC's internal carpool connection website, military shuttles in the National Capital Region, commuter alerts in the form of live traffic web cams and Park-and-Ride lot information. In addition, it lists staff parking or transportation FAQs which are received via email, phone or town hall discussions that are relevant to the entire staff. Furthermore, announcement/newsroom section provides updates to internal/external parking, transportation related delays, and construction projects. Finally, the web site also indicates the locations of bike racks within campus.
- Parking Cash-Out Program: This involves assigning a value to each parking space and paying employees for not using it. This would be a suitable alternative to reducing the number of parking spaces on the campus, however this option would not be practiced since there is no charge for parking and paid parking is not authorized for DoD facilities.
- Parking Management: Priority parking spaces will be served for employees arriving by carpool or vanpool, or even those arriving during the less-congested times of the day. The web page on the NNMC website, Commuter Solutions, lists the currently assigned preferential parking spaces reserved for carpoolers.



- **Fringe Parking:** The NCPC will support a feasibility study for the provision of fringe parking lots for use by NNMC employees, with shuttle bus connections to the campus. M-NCPPC transportation staff has identified two parcels of land owned by the State which could be developed for fringe parking. These parcels are located within the northeast quadrant of the I-495 at Connecticut Avenue Interchange. A preliminary study conducted by M-NCPPC staff indicates that the total capacity of the lots could be approximately 250 spaces. These facilities would reduce NNMC employee trips and related local area congestion impacts. However, the Navy can neither fund the development of such facilities nor run shuttles between the campus and any fringe parking site due to DOD regulations. Hence, this recommendation will not be feasible in the future.
- **Guaranteed Ride Home:** This program, sponsored by the Metropolitan Washington Council of Governments, will be used to provide reliable and free emergency ride home from work for commuters who regularly carpool, vanpool, bicycle and walk, or take transit to work.
- **Flextime/Compressed Work Week Programs:** Those employees who are eligible could participate in a flextime program which allows employees to arrive and depart to and from work during the off-peak periods. The compressed workweek program would provide employees the opportunity to work the same number of hours in fewer days per week, or per pay period. Currently, approximately 10% of employees participate in a compressed work week program. Due to patient care needs this is a limited option for NNMC.
- **Telecommuting:** Some employees, whose jobs allow working remotely, could be given the opportunity to work from home one day or more a week, maintaining contact with their office via fax machine, e-mail, and/or telephone. This would be limited to administrative staff only since patient care requires a physical presence.
- **Transit Amenities and Subsidies:** The NNMC campus is situated adjacent to the Medical Center Metrorail Station. The campus also has very easy access to WMATA and Montgomery County Ride-On bus transit routes along Rockville Pike (MD 355) and Jones Bridge Road. The Maryland Transit Administration (MTA) is currently undertaking studies to establish a Purple Line light rail or bus rapid transit connection between the New Carrollton Metrorail Station (in Prince George's County) and the Bethesda Metrorail Station (in Montgomery County). The Purple Line route would also run through Silver Spring where most of the WRAMC employees live, and a potential alignment would be along Jones Bridge Road to the Medical Center Metrorail Station and south along Woodmont Avenue to the Bethesda Metrorail Station. The Washington Metropolitan Area Transit Authority (WMATA) is also conducting a station area access study including the provision of an east side/NNMC station portal and a pedestrian tunnel connecting NIH and the bus station to the NNMC campus. The NNMC transportation



program manager will be directed to support those transit and pedestrian improvements and encourage employees to use transit through the issuance of Metrocheks as transit subsidies. However, about ½ of the total personnel work over 2,000 feet from the Medical Center Metrorail Station and studies show a sharp dropoff in ridership as distance increases.

- **Shuttle Bus Services:** The NNMC shuttle bus services (noted in Section 2) will be enhanced with the improvements illustrated in Masterplan. Ten to fifteen minute peak period shuttle headways will be provided together with transit stop amenities including striving for real-time shuttle bus arrival information, posted transit route maps and schedules, and shelter and seating on all area shuttle routes will enhance the user experience and make the shuttle system more attractive to non-users.
- **Extension of Bethesda Circulator Route:** The NNMC will investigate the feasibility of providing quick and frequent shuttle connections to Downtown Bethesda, where extensive dining, retail, services and other amenities are located, further helping to discourage single-occupant driving.
- **Shared Vehicles:** NNMC currently has few DoD vehicles on campus that are provided to employees who rely primarily on public transportation or alternative travel modes but require a vehicle to make official trips or special personal trips to areas not accessible via transit. NNMC will provide more of such vehicles in the future under the label “motor pool”.
- **Bicycle/Pedestrian Improvements:** The use of alternative travel modes will be promoted through the provision of bicyclist amenities (on-campus Class II or III bikeways and connections to area Class I bikeways, area bicycle network maps and wayfinding signage, racks, bike lockers, and showers located at key locations). The NNMC will support the provision of a Metrorail entrance on their side of 355/Rockville Pike, with a pedestrian link below ground between the NIH/Metrobus area and the NNMC Metrorail portal. These improvements will increase the use of Metrorail and Metrobus services and eliminate pedestrian/bicyclist crossings and related safety hazards along Rockville Pike. Finally, the Program Manager will support County efforts to provide improved off-campus paths, sidewalks, and crossings to better connect employees, lodgers, and visitors to Downtown Bethesda.
- **Inter-Agency Coordination:** This strategy provides an opportunity for inter-institutional coordination and collaboration towards the achievement of administrative efficiency and economies of scale in the effective implementation of TMP measures, which ultimately benefit those institutions. NNMC will continue to participate in the Medical Center Transportation Management Organization (MTO), Keep Montgomery County Moving Forward and similar organizations to help reduce vehicular trips related congestion and pollution within the local area.



- Base Transportation Committee (BTC): NNMC will work towards creation of a BTC, which would consist of the Transportation Program Manager, Safety, Facilities, Security and Fire Department at the minimum. This group would work together to define and address commuting and transportation related concerns from patients and staff members.
- Delivery and Service Vehicles: Delivery and service trips shall be scheduled to occur outside the AM and PM commuting peak periods of the adjacent roadways, as much as possible.

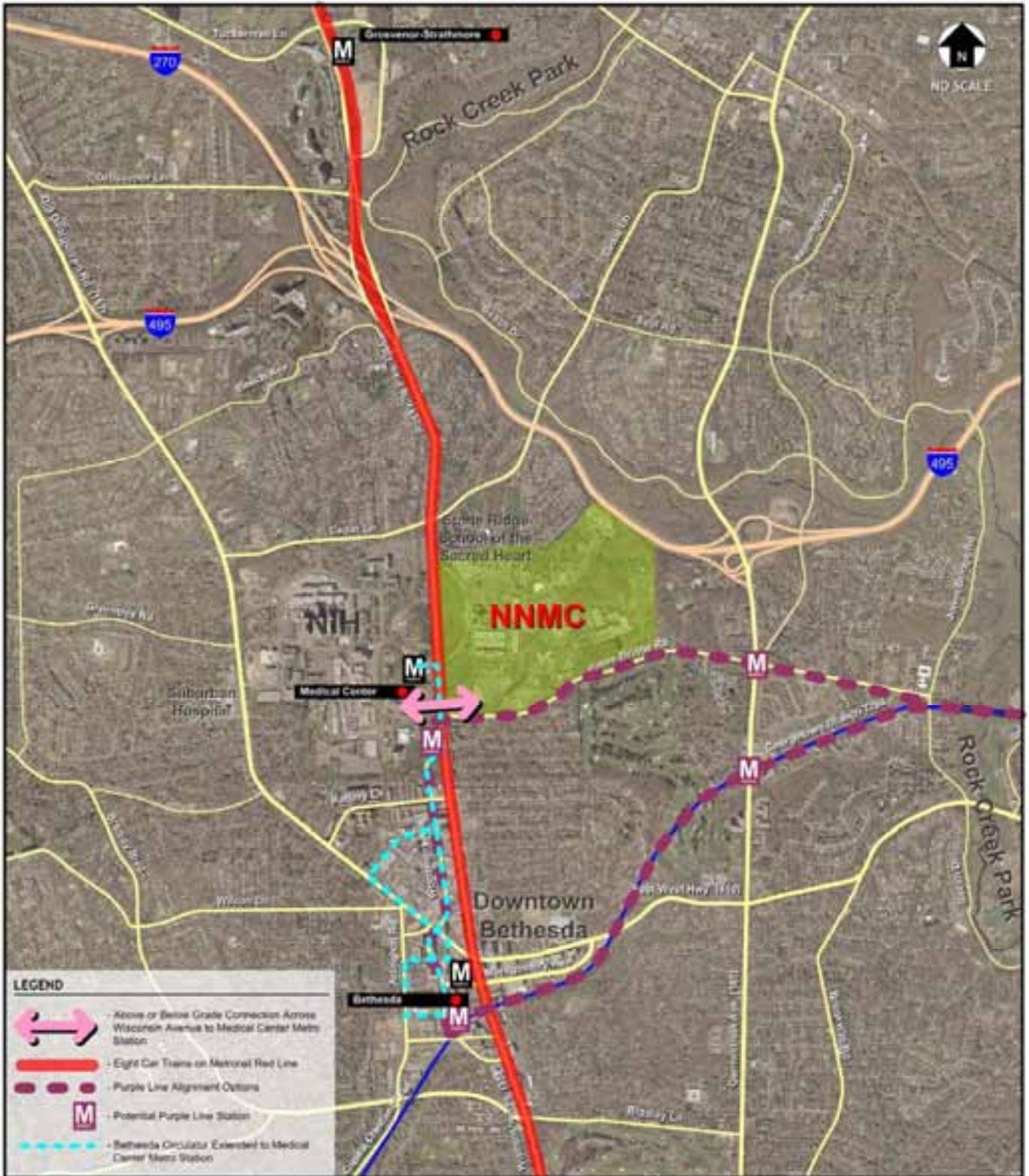


Figure 7 - Greater NNMCC Study Area Transit and Shuttle Improvements



5.2 TMP Monitoring and Evaluation

The General Services Administration (GSA) Transportation Management Plan guidelines state that in order to maintain a successful TMP, implementation alone is not sufficient. The TMP must be monitored, evaluated, and restructured as necessary in order to be effective. Some of the most commonly used methods involve employee surveys, program participation documentation and time sheets/activity logs, vehicular trip generation counts, vehicular occupancy surveys and the monitoring of transit and shuttle bus ridership.

The following basis will be used to measure the effectiveness of the TDM strategies identified:

- Employee Parking Ratio
- Average Vehicle Occupancy (AVO)
- Vehicle Trip Reduction (VT)
- Mode Split

The **Employee Parking Ratio** represents the ratio of vehicle parking space per employees. The Employee Parking Ratio is calculated as follows:

$$\text{Employee Parking Ratio} = \frac{\text{No. of employee parking spaces at the worksite}}{\text{No. of employees at the worksite}}$$

The **AVO** represents the ratio of employees to vehicles. The AVO ratio is calculated as follows:

$$\text{AVO} = \frac{\text{No. of employees at the worksite}}{\text{No. of vehicles at worksite}}$$

Vehicle trip Reduction measures the number of trips into/out of the site. VT reduction can be measured as a daily total or peak hour total. As the TMP strategies are implemented, assessment of VT can help determine the impact of the strategies. Furthermore, this method can be fairly quick, un-intrusive, and cost effective due to the fact that there will only five access points to the NNMC. Sensors can be laid at the entrance points to determine how many vehicles are entering and exiting the site, and this can be repeated on a regular basis.

Mode Split is the percentage of people using each mode of travel.

The NNMC monitoring and evaluation program will be implemented in accordance with those requirements. This will be done every two years, and required adjustments would be made to enhance the effectiveness of the TMP measures.

ATTACHMENT I

Parking at NNMC

Parking Regulations and Guidance

Parking needs are determined primarily by the Military using formulas found in the various design manuals of the UNIFIED FACILITIES CRITERIA (UFC) series. These documents identify the space allowance for most facilities at military installations. This ensures a uniformity of both requirements and amenities. These are the primary sources of information used by the military in preparing construction and renovation plans.

In accordance with Chapter 949, Public Act No. 592, The National Capital Planning Commission (NCPC) is the central planning agency for the Federal agencies in the National Capital Region (NCR). All development policies, plans and programs are to be reviewed and commented upon or approved by the Commission. The Commission fulfills its mission through three principal functions of comprehensive planning, oversight of the Federal capital improvements, and review of Federal construction projects. The Commission sets long-range policies and goals for future Federal development, historic preservation, environmental protection and economic development of the NCR. Also, it reviews and comments on policies, plans and programs prepared by local, state, sub-regional and regional agencies in the NCR. These procedures foster intergovernmental cooperation in the NCR by identifying the types of plans to be reviewed; the Federal and non-Federal agencies to whom the plans are circulated; and the process the Commission follows to consult with the agencies.

To achieve reductions in traffic congestion, energy use, and air pollution NCPC has established goals in its Comprehensive Plan for the National Capital - Transportation Element. In the document it states "every federal facility should be considered relative to its own unique situation, and parking ratios should be applied and enforced with thoughtful consideration", and "The federal government's ability to get its employees to and from the workplace in an efficient and stress-free manner impacts the general productivity of its workforce and its ability to attract and retain quality personnel." There exists a significant difference between the operations of a standard federal facility and a medical federal facility such as NNMC. The scope and scale of medical services provided by NNMC is unique to military medicine. The ability for the patients, visitors and caregivers to efficiently and successfully coordinate appointments is paramount for the accomplishment of the mission. The mission requires the caregivers' presence thereby limiting options available to other federal facilities. This paper demonstrates the unique nature of NNMC and provides a basis for establishing alternative goals and objectives that are appropriate to the facility.

One of the goals set by NCPC is to discourage the use of single occupancy vehicles (SOVs) for staff commuting to work. The goal is tied to the availability and proximity of mass transportation to the work site. One policy used is to restrict the availability of parking at the work site to discourage SOVs. To help achieve this the policy sets a goal of restricting parking to one space per every 3 workers if the work site is within 2,000 feet of a Metrorail station and one space per 1.5 workers if the site is beyond that distance. NNMC supports the goal, but due to its current geographical distribution of employees and their relative economic status in comparison to the very affluent surrounding neighborhood, it is not perceived as a goal that is easily met. In addition, the influx of personnel from Walter Reed Army Medical Center (WRAMC) is likely to make it even more difficult. Since WRAMC is not located near a Metrorail station personnel did not seek homes close to Metro stations. For many of those that do live near Metrorail the trip is long and expensive due to the need to go to a central station, transfer trains and then continue

the commute to NNMC. In addition, few buses make the east-west trip needed for many of the potential employees.

NNMC is very large, relative to most Washington area federal facilities. The medical core buildings are within the 2,000 foot radius while large tenants, and many other buildings and functions, are outside the 2,000 foot radius. The result is that about half of the personnel are on either side of the 2,000 foot circle. Using the Comprehensive Plan for the National Capital, Transportation Element's definition, "reasonable walking distance from Metro is herein defined as 2,000 feet, which falls between a quarter mile and a half mile, or approximately a 10-minute walk. This definition is based on commonly accepted planning principles and is supported by the zoning ordinances of Washington, D.C. regional jurisdictions. Distance is measured between the closest entrance to a Metrorail station and the closer of either the entrance to a federal building or the closest portion of the perimeter of a federal campus". Figure 1 shows the installation with circles established at 800, 1,600 and 2,000 feet. The circles at 800 and 1,600 feet were provided for comparison purposes with Montgomery County regulations.

The NCPC staff parking ratios by distance would be applied relative to the closest METRO access point (a single small elevator) rather than the more distant escalator. Facilities inside the circle are given the 1:3 ratio as a staff parking goal, this includes the hospital but not USUHS, AFRRRI, and several support and administrative buildings. Facilities outside the circle are given a 1:1.5 staff parking ratio as a goal. This mirrors what we have observed as USUHS and AFRRRI employees have a much lower percentage of transit subsidy use. These tenants are effectively a separate campus; most are not assigned to Navy Medicine but are assigned to the tenants which are largely DoD and not Navy commands. Furthermore, the shuttle service is not sufficient or intended to provide good employee access to the Metro Station but is intended to assist patients to get to their destination on base.

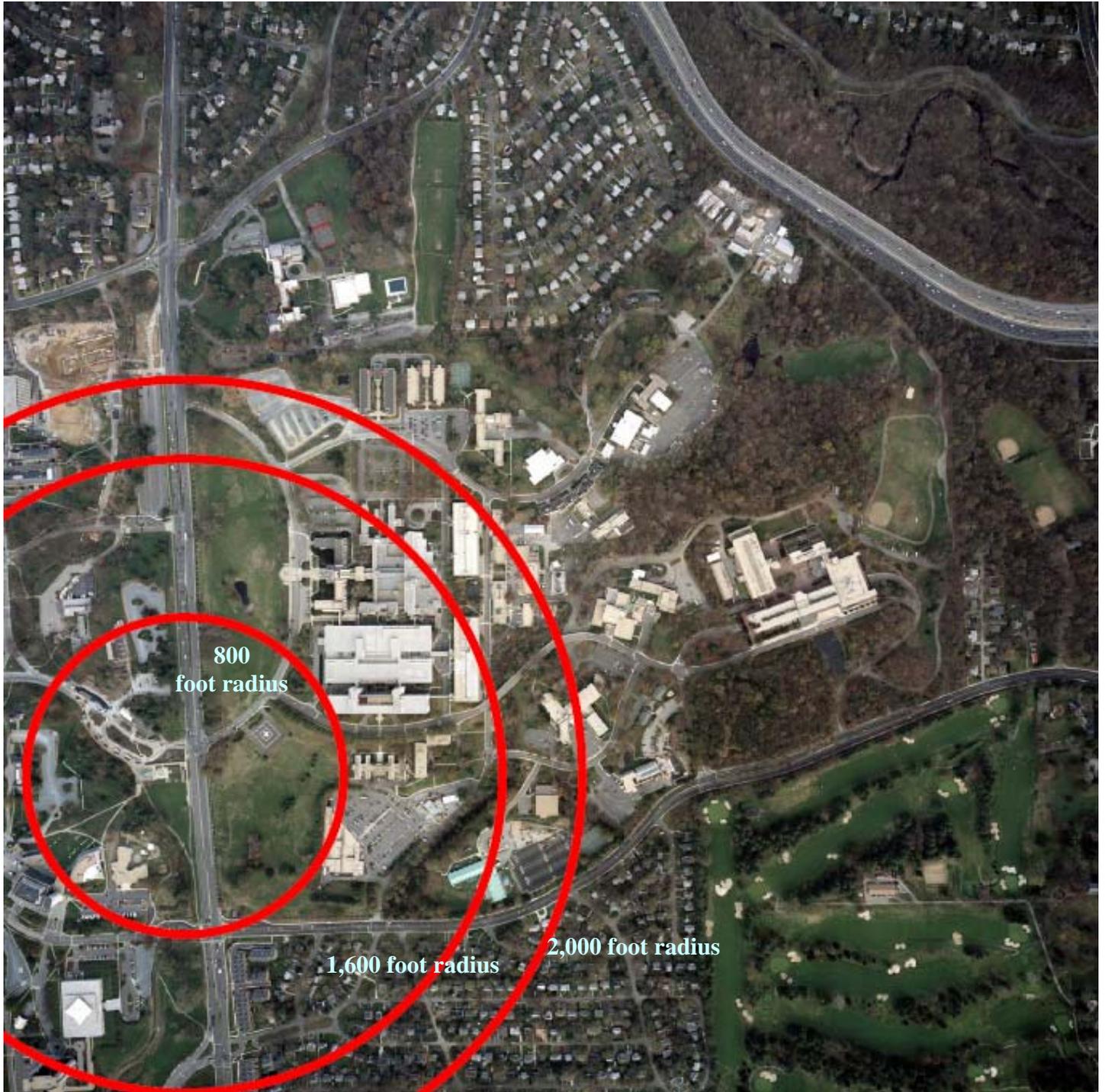


Figure 1 NNMC Aerial Picture Showing Distances from Medical Center Metrorail Station

Montgomery County does not regulate the Medical Center but they do comment on the actions being undertaken at NNMC. NNMC attempts to be a good neighbor by trying to follow the rules and regulations that would apply to similar facilities in Montgomery County and responding to Montgomery County's concerns. Thus, NNMC looks at Montgomery County's building codes, for the southern area, to help establish height and density limits and set "boundaries" on our actions. Comments from Montgomery County and the local neighbors on the subject of parking are often contradictory. Some comments seek to eliminate on base parking to reduce road congestion in the area. Others wish to ensure that we have excessive parking so that the neighbors are not impacted by staff parking in their neighborhoods and walking to NNMC.

The transportation manager is thus responsible for meeting all of the requirements to the best of their ability and ensuring that the primary missions of NNMC are met and not adversely impacted by the transportation management plan. There is no easy solution. The real solution is to be flexible in responding to changing missions and environments, to have a strong and aggressive program that constantly encourages personnel to use alternate modes of transportation, and to encourage new personnel to select housing that is more convenient to alternate modes of transportation.

PARKING CATEGORIES

Parking is needed not just for staff and business visitors (e.g., medical related, repairmen, consultants), but is also required for patients and patient visitors. Furthermore, personnel living at NNMC require different amounts and types of parking accommodations. Moreover, staff and visitors use various commercial and recreational facilities on-base and these facilities need to be able to accommodate the demand. These include permanent and temporary lodging, shopping, food service, fitness center, and a number of other items. In addition, there are a number of special vehicle circumstances that require various accommodations. For example, government vehicles such as ambulances, police, repair vehicles, and motor pool vehicles need to have spaces assigned. Finally, certain types of employees are "entitled" to special accommodation due to special requirements.

1. Patient
2. Staff
3. Permanent Lodgers
4. MWR and NEX Visitors
 - Navy Lodge and Fisher Houses
 - Navy Exchange, NEX Gas Station, McDonalds, Package Store
 - Fitness Center/Pool, Bowling Center, and Ball Fields, Tennis Courts, and Pavilions
5. Special Accommodations
6. Shift Workers

Parking Needs by Category

Patient Parking

As patient care is our primary mission, provision of adequate parking in proximity of their clinical areas for patients and visitors is a major concern. Patients must be able to quickly and efficiently find available parking then navigate their way through the hospital, with as direct a route as to their clinic destination. This section of the trip is considered part of the patient or visitors experience and impacts their perception of the facility. Timely or inefficient routes or lack of available parking can cause delays in appointments, rescheduled appointments and undue stress resulting in a negative customer experience. Studies have shown that a patient's health outcome is influenced by stress during arrival and while attempting to find parking, stress caused when visitors have difficulty accomplishing these objectives quickly and efficiently.

NNMC currently has a patient parking garage, but patients can park essentially anywhere per the current Parking Instruction. However, staff cannot park in designated patient parking areas. Designated patient parking is included in staff available parking counts. The UFCs and Montgomery County give guidance to this issue while NCPC does not. This section is broken down into the various categories and subcategories of parking demand and determination of those allowances.

The DoD standard for determining parking to support a military medical center or hospital is UFC 4-510-01 (MIL HNDBK 1191) of May 2007. The UFC formula provides:

$$\text{Number of Spaces} = (.75 * X_1) + (.4 * X_2) + (X_3) + (X_4)$$

X_1 = # of all personnel working at the medical treatment facility on a full-time basis

X_2 = Average daily outpatient workload

X_3 = One space for every in-patient bed

Another term can be added to account for the Dental Treatment that occurs at NNMC.

X_4 = Dental Clinic (both free-standing and as a part of another facility (CMFT)). Three (3) spaces provided per dental treatment room.

It is possible to estimate the number of spaces for patients using just the terms X_2 and X_3 . Staff parking would be based on the term X_1 . It is not possible to separate the staff and patient component for the dental rooms. As this is relatively small compared to the total this has been ignored for now. The number of dental rooms in the final facility is expected to be considerably larger and may need to be revisited when manning documents are completed.

Montgomery County has the following calculation:

Hospital. One parking space for each 1,000 square feet of total floor area, plus one space for each resident doctor, plus adequate reserved space for visiting staff doctors, plus one space for each 3 employees on the major shift.

Thus, Montgomery County uses a 1:3 ratio as the minimum amount of parking for the Hospital staff, while staff resident doctors are each given a space and so are visiting doctors. Resident doctors are addressed later in the Special Accommodations section. In addition, staff and visitors are able to use the parking based on the size of the hospital. The area for the hospital, buildings 1 through 10, is approximately 2,474,428 square feet. Future additions are Building A at 533,000 sq. ft., building B at 157,000 sq. ft. and the NICoE facility at 80,000 sq. ft.

The following table shows the UFC and Montgomery County calculations for the hospital portion of the installation. Note that the staff numbers reflect the removal of the personnel in the barracks and the resident doctors.

Table 1 - Parking Demand for the Hospital

Factor	X ₁ (staff spaces)	X ₂ (patient spaces)	X ₃ (patient spaces)	Total UFC	Total Montgomery County
Current Operations					
Beds 224			224		0
Patient visits 1,912		765			0
Staff 4024	3,018				1,341
Area (sq. ft.) 2,474,428					2,474
Subtotal	3,018	765	224	4,007	3,816
Future Operations					
Beds 345			345		0
Patient visits 3,773		1,509			0
Staff 6127	4,595				2,042
Area (sq. ft.) 3,244,428					3,244
Subtotal	4,595	1,509	345	6,449	5,287

OFFICE SPACE

NNMC has several tenants that occupy administrative spaces in the area of the hospital. In addition, some NNMC missions are beyond what would be normal for a typical hospital resulting in far larger numbers of administrative staff in some departments than would be normal as they are managing for many clinics as well as maintaining military health records world-wide. The Transportation Manager should investigate what was used to determine the UFC and apply the office space criteria to those functions that fall outside of the norm. No attempt was made to conduct this analysis at this time. As virtually all functions of the tenants are inherently medical related it was not felt that this would make much difference at this time.

USUHS and AFRRRI are large tenants heavily engaged in education and research. There is not a UFC document that describes research and education facilities. For these complexes the

UFC and zoning used is for administrative office space. The NCPC derived numbers shown are for staff over 2,000 feet from a Metro Station as USUHS and AFRRRI are essentially a separate campus over 2,000 feet from a Metro Station.

For calculation purposes UFC 3-610-01N ADMINISTRATIVE FACILITIES provides 0.7 spaces per employee.

Montgomery County uses the following: Office, general office, and professional buildings or similar uses. Parking shall be provided in accordance with the parking requirements for office developments contained in Section 59-E-3.2. (2.4 spaces per 1,000 gross sq. ft. for businesses more than 1,600 feet from Metrorail in the southern area).The base requirements may be reduced in accordance with the credit provision of Section 59-E-3.3. The calculation of building square footage is based on the sum of the gross areas of the several floors of the building, measured from the exterior faces to the exterior walls or from the center line of party walls, which area shall include cellars or basements but shall not include floor area used for off-street parking.

These buildings have an area of 1,159, 680 sq. ft.

Table 2 - Parking Demand for USUHS & AFRRRI

UFC parking spaces	Montgomery Co. parking spaces	NCPC parking spaces
2,450	2,782	1,167

LODGING

There are five single family houses intended for Flag officers and three single family town homes for senior non-commissioned officers. The master plan talks about the possible building of a sixth Flag House and recent changes in ownership of all housing calls for the demolition of the three town homes. Parking for the single family homes has not been included in the discussion of parking.

Lodging is also provided for military personnel (permanent basis and visiting) in the three barracks. A fourth barracks is being planned. The Bethesda community commented that it desired to have additional on-base housing to help eliminate some of the traffic congestion.

BACHELOR ENLISTED QUARTERS

Buildings 60, 61 are barracks primarily occupied by staff. A percentage of the rooms are set aside for visitors and recovering patients. Building 50 is intended for recovering patients, some of which will be assigned to NNMC and given light duties. A three hundred (307) unit new bachelor enlisted quarters (BEQ) is to be constructed adjacent to the existing bachelor enlisted quarters. UFC 4-721-10 31 July 2002 provides that parking shall be provided for 70% of the personnel in the barracks plus an additional 2% for visitors. This is appropriate for the staff personnel. However, visitors and patients should have one space per bed as this is not their duty station.

Table 3 - Bachelor Enlisted Quarters

BARRACKS	ROOMS	# OF PATIENTS OR VISITORS	# OF STAFF	PARKING SPACE REQUIREMENT
Building 60	176	88	88	151
Building 61	224	56	168	177
Building 50	99	99	0	99
New Barracks	307	80	227	243
Total Current	499	243	256	427
Total Future	806	323	483	671

Some portion of the personnel that will occupy the new BEQ will be staff and are included in the medical center calculation above. In addition, these staff members count as walkers to work and will be counted as part of the staff not commuting by SOV. However, they will be subtracted from the staff parking requirements number when calculating that value as they already have parking accounted for. Medical Hold occupants are not staff but are instead in some stage of outpatient treatment or medical evaluation. Note that there are currently more personnel in these quarters than is shown due to double occupancy of most rooms. The numbers shown are a goal that is desired. Double occupancy of staff rooms may occur during surge periods.

There are no NCPC guidelines for living quarters of this type. Montgomery County requires one space per room which is more generous than the UFC guidance. The military's numbers for this category are lower than Montgomery Counties zoning code.

MWR and NEX visitors

1. Navy Lodge – One space per room. Not included in staff available parking.
2. Fisher Houses – One space per room. Not included in staff available parking.
3. Quik-Mart/NEX GAS STATION - Three spaces, 10 minute limit. Not included in staff available parking.
4. Navy Exchange lot – Lot is provided for NEX or McDonald's parking, Visitor parking, and Barracks parking. Parking required for lodging is not included in staff available parking. The parking instruction does not allow staff parking in this lot, other than very limited NEX staff parking.
 - Some staff (limited by permit, is for primarily NEX staff).
 - Visitors. Lot roped off prior to opening to keep out staff. Some patrolling is done.
 - Dedicated permit parking for barracks (building 50 which has none close by).
5. Package Store – This store location and its parking is being eliminated under BRAC, location of store to be determined. If it is not co-located with the NEX this will need to be addressed.
6. Fitness Center/Gym – There is currently adequate parking in this area. The current Fitness Center is scheduled for demolition and replacement. UFC criteria will be used for this facility. UFC assumes a significant number of personnel are able to get to the Fitness Center without needing to drive and parking is set at 1 percent of military strength.
7. Bowling Center- Small lot for patrons only. Well enforced. Not included in staff available parking.

8. Ball Fields and Pavilions –
 - Spaces along Perimeter Road are not counted as staff lots. These are small remote lots intended for users of the recreational facilities.
 - Graveled parking by “home plate” on Stone Lake Road is counted as parking for staff.
9. Tennis courts – No parking is identified for the tennis courts.
10. Uniform store – In hospital, not a destination location.
11. MWR tickets and travel - In hospital, not a destination location.
12. Barber shop - In hospital, not a destination location
13. Subway/ice cream/Dunkin Donuts - In hospital, not a destination location.
14. William the V - In hospital, not a destination location.
15. Starbucks - In hospital, not a destination location.
16. Main Street food court - In hospital, not a destination location

Navy Lodge

The Navy Lodge is an on-base 106 room hotel that is fully occupied year around. Parking is provided in the lot in front of the facility which it shares with the Fisher Houses and the Senior Non-Commissioned Officers quarters. In addition, there is a large parking lot that wraps around south and west side of the facility. The Master Plan has allowed for up to a 200 room expansion of the facility. No additional parking is provided for in the Master Plan but any parking lost by the expansion would be replaced by a westward expansion of the parking lot.

NNMC's calculation is that parking is required based on 1 space per room.

Montgomery County provides the following zoning requirement.

If located within a central business district or a transit station development area, one-half space for each guest room, plus 10 spaces for each 1,000 square feet of gross floor area used for ballrooms, private meeting rooms, dining areas, and similar places of assembly. For other locations seven-tenths of a space for each guest room, plus 10 spaces for each 1,000 gross square feet of area used for ballrooms, private meeting rooms, dining rooms and similar places of assembly. (The Navy Lodge is not located in a central business district nor is it in a transit station development area.)

Table 4 - Navy Lodge

	No. of rooms	Navy (UFC) requirement	Montgomery County requirement
Current rooms	106	106 spaces	74
Future rooms	306	306 spaces	214

Fisher Houses

Fisher houses are set up similarly to a single family house or a group home. There are bedrooms some of which interconnect to accommodate multiple family members. They share a common living, dining, and kitchen area. These homes provide lodging for family members that are visiting an inpatient for an extended period of time. NNMC currently has two homes with a total of 15 guest rooms. While there is no UFC standard since these are not military buildings, parking is provided at 1 space per room. Future expansion calls for the addition of 3-21 room homes. This would create a need for 78 parking spaces.

Montgomery County zoning would call this an individual living unit within a personal living quarters (PLQ). With a requirement of one space for each individual living unit, provided that parking for any complete dwelling unit in a personal living quarters building must comply with the standards for a dwelling, multiple-family, as required in this section.

Table 5 - Fisher Houses

	No. of rooms	Navy requirement	Montgomery County requirement
Current rooms	15	15 spaces	15
Future rooms	78	78 spaces	78

RETAIL AND COMMERCIAL

RETAIL, GENERAL.

The military provides retail activities to the military, their families, and retired military families. These facilities provide goods and services and "profits" are used to help enhance the morale, welfare, and recreational opportunities of the service members. NNMC has a Navy Exchange which is like a department store, a Package Store (liquor store), a Quik Mart/NEX Gas station, and a McDonalds that are outside the hospital buildings. There are numerous eating, shopping, and other activities inside the hospital but they are considered normal hospital functions and are evaluated as if they are part of the hospital.

Montgomery County's zoning ordinance states, "Commercial establishments devoted to retail sales, merchandising or other similar use, except furniture stores, 5 parking spaces for each 1,000 gross leasable square feet. In accordance with the exception provision of Section 59-E-5.8 all storage space that exceeds 35 percent of the total gross leasable area shall be excluded in calculating the number of required parking spaces." There is no comparable UFC; however, the standard that is used by the NEX is the same as Montgomery County's. The NEX has indicated that because their sales per square foot are higher than comparable retail facilities in the County, the parking need is well demonstrated.

The Navy Exchange's lot – "C" Lot is provided for NEX and McDonald's parking. The lot is 286 spaces, but 6 are set aside for government vehicles parking and for 58 for Building 50 residents parking leaving 222 spaces, an additional 36 spaces will be lost to accommodate the BRAC changes for the NICOE building. This lot should not be included in staff available parking as the lot is roped off until opening of the NEX to keep out staff. Future plans call for the demolition of the building and building a 150,000 square foot store. Parking would be provided by a parking garage of 550 spaces that replaces the existing 286 space surface parking lot.

Quik-Mart/NEX GAS STATION – Three spaces with a 10 minute time limit are provided for the Quik-Mart. The McDonalds parking is included with the Navy Exchanges lot. These spaces should not be included in staff available parking. No changes are anticipated, however, if the garage is built about 12 surface spaces would likely remain associated with the drive up window and short term parking at the Quik-Mart

Package Store – Current parking is limited to 6 dedicated parking spots for the store. The package store location is being eliminated under BRAC. The future location of the store has not been determined. This function will not be lost and the same sized store is assumed for planning purposes. This issue needs to be addressed in detail in the future if the Package Store is not co-located with the Navy Exchange.

Table 6 - Retail Facilities

Location	Area (sq. ft.)	Navy requirement (spaces)	Montgomery County Requirement (spaces)	Existing and assumed parking conditions
Existing Conditions				
Navy Exchange	59,570	298	298	238
Quik-Mart/NEX GAS STATION	10,450	52	52	In above
Package Store	3,296	17	17	7
Total	73,316	367	367	245
Future Conditions				
Navy Exchange	150,000	750	750	550
Quik-Mart/NEX GAS STATION	10,450	52	52	In above
Package Store	3,296	17	17	Probably in garage above
Total	163,746	819	819	550

FITNESS CENTER

A major concern for the military is the physical readiness of the military personnel and to a lesser extent the physical well being of the military families and staff. Having a Fitness Center is considered to be mission critical. The Fitness Center at NNMC is an old structure dating to the 1940s. The facility was not built to meet modern codes and it is inadequate in size and amenities for the current demands. As part of the BRAC action a replacement Fitness Center is being planned. Parking at the current Fitness Center is not dedicated to the Fitness Center except for some delivery spaces. Parking at the future Fitness Center will be on surface parking near the building or at the location of the third parking garage, if it is constructed.

UFC 2-000-05N, Table 85210-1 indicates that parking for a gymnasium shall be equal to 1% of the military strength on-base. As previously stated, the manning document for WRNMMC has yet to be developed but base population in post-BRAC is estimated to be approximately 10,500 personnel. Assuming that the existing ratio of military to civilian is maintained, approximately 50 spaces would be required for users. In addition, staff would receive spaces at the 1:1.5 ratio. Current demand would be 40 spaces.

Montgomery County provides the following parking requirement for a recreational establishment, commercial, other than a theater, auditorium or stadium. Twelve and five-tenths parking spaces for each 1,000 square feet of floor area, except as to racquetball, squash, and handball courts. As to racquetball, squash, and handball courts there shall be 3 ½ parking spaces per racquetball, squash, or handball court. This would be exclusive of the pool. The pool gets 2 spaces per lane.

The existing fitness center is approximately 42,000 sq. ft. with about one half being the pool. The pool has 5 lanes.

The new fitness center has not been fully laid out. However, the total area is 64,000 sq. ft. Assuming 1/2 is pool and 2 racquetball courts leaves 32,000 sq. ft. This would be 400 spaces plus 7 for the racquet ball courts and 12 for the pool (assumed 6 lanes in 50 meter pool) for a total of 419 spaces.

Table 7 - Fitness Center Parking Demand

Facility	UFC	Montgomery Co.	
		Sq. ft, # lanes, #courts	Parking space demand
Existing	40	21000,5,0	273
Future	50	32000, 6, 2	419

In addition, the Fitness Center will see considerable use by patients in various stages of rehabilitation. The majority of the rehabilitation will be for outpatients that will come primarily for access to the Fitness Center. This need has been projected to require of 150 patient parking spaces. As this number could not be properly estimated at this time no provision for patient parking shows up in the tables or the estimates. This will be changed when operational information is collected.

BOWLING CENTER

Per UFC 4-740-01NF 2-2 Parking requirements will vary with the local conditions at each specific installation, including the prevalence of privately owned vehicles, convenience of the Center to pedestrian access, and proximity to other parking areas. Commercial Bowling Centers typically allow a minimum of four parking spaces per lane. No specific guidance was found in Montgomery County zoning ordinances.

NNMC's bowling center has 20 lanes; UFC guidance shows commercial facility would have 80 spaces. NNMC has 16 spaces.

UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

The School of Medicine has a year-round, four-year curriculum. This curriculum is nearly 700 hours longer than found at other U.S. medical schools. These extra hours focus on epidemiology, health promotion, disease prevention, tropical medicine, leadership and field exercises, and other subjects that relate to the unique requirements of career-oriented military physicians. Doctoral and masters degrees in the biomedical sciences and public health are awarded by interdisciplinary and department-based graduate programs within the School of Medicine. Program strengths include infectious disease, neuroscience, psychology and preventive medicine research. A large number of graduates are military officers and/or serve the federal biomedical research enterprise.

NNMC intends to treat this tenant as "staff" for business purposes. NNMC believes that parking at the University is appropriate. The 1,188 spaces in the garage are always full and many personnel park in more remote lots. Stone Lake Road (east) has 28 spaces, the nursing building has 33 spaces, and there are 32 by building 74. These total 1,281 parking spaces. The distance to Metro is unappealing for many, close to a mile, and increasing ridership may be

difficult. Carpools and vanpools may prove to be the most effective alternative mode of transportation.

Under Montgomery County zoning guidelines this would be:

Educational institution, private. One parking space for each employee, including teachers and administrators, plus sufficient off-street parking space for the safe and convenient loading and unloading of students, plus additional facilities for all students parking.

This would be approximately 3,500 parking spots.

CHILD DAY CARE FACILITY

NNMC currently has a child development center (day care) that is capable of handling up to 280 children. It is currently operating below capacity. Future growth is funded for additional child care services. This will include both hourly drop off so parents can see the doctor without taking all children into the examination room and an overnight stay quarters. As details are still in development it is assumed the numbers will double. In addition, the CDC is expected to expand to 280 children and 80 employees. The CDC has 22 reserved spaces divided equally between employees and visitors.

Child Development Center - UFC 4-740-14 provides the following guidance:

- 3-5.4.3 Visitor Parking. Provide a minimum number of parking spaces for visitors at the rate of one parking space for each 12 children cared for by the facility.
- 3-5.4.4 Staff Parking. Separate long-term staff parking from parent/visitor parking. However, locate both parent/visitor and staff parking near the building with a view to the entry. Provide parking spaces for the maximum number of staff on duty at one time.

Montgomery County's requirements are: For a family day care home or group day care home, one space for every non-resident staff member in addition to the residential parking requirement. The required number of spaces may be allowed on the street abutting the site. For a child day care center, one space for every non-resident staff member in addition to the residential parking requirement if applicable and adequate parking for discharge and pick up of children. In this instance, the average drop off and pick up space required is one space for every six children.

Table 8 - Child Development Center

		UFC spaces	Montgomery County - spaces
# of children	200	17	33
# of employees	50	50	50
Current requirement		67	88
# of children	468	39	78
# of employees	130	130	130
Future requirement		169	208

The eleven visitor parking spaces will be subtracted from the staff available parking. The eleven reserved employee spaces will be treated as staff spaces.

SPECIAL ACCOMMODATIONS:

1. Senior leadership
 - a. NNMC (hospital) CO, XO, SNCO, Directors =15 spaces
 - b. JTF - CO, XO = 2 spaces
 - c. AFRRI - CO, XO = 2 spaces
 - d. USUHS - CO, XO = 2 spaces
 - e. Bloodbank - CO, XO = 2 spaces
2. Residents – Hospital accreditation, a mission critical item, requires adequate parking for residents.
3. Carpools – Treated as staff parking spots.
4. Handicap – Any handicapped person can park in any handicapped spot of their choosing. Assume that visitors park in Visitor parking and Staff park in staff parking.
5. Government vehicles and EMCOR (maintenance contractor on-site vehicles). All such vehicles get one spot and government spaces are not counted as staff available parking.
6. Volunteers – For now we are treating them as staff members. If we notice a drop off in volunteers we will reexamine this policy. The cost savings and benefits for the patients and service members are substantial.
7. Lay down area and event parking
8. Warehouses – Limited parking, area is not authorized for general staff.

Senior Leadership

The Senior leaders at NNMC and the major tenant organizations are given reserved spaces. These total 23 spaces. The Transportation Manager shall ensure that additional reserved spaces for VIPs do not appear without being authorized as they remove spaces from being available to the general population. These spaces are not in addition to spaces provided in any formula.

Resident Doctors

Graduate Medical Education accreditation, a mission critical item, requires adequate parking for residents. We have 70 residents and 49 reserved spaces for the residents or 0.7 spaces per resident now. NNMC has received two warnings that the hospital can lose accreditation if residents are not provided "adequate" parking by the time of the next inspection. NNMC proposes to change this to 0.75 spaces per resident to meet the goal. This would be subject to change depending on the inspector's view of "adequate". Note that Montgomery County's zoning requires one space per resident.

NNMC proposes to change to 0.75 spaces per resident or 53 spaces in the immediate future. The Transportation Manager will monitor the lot to determine if the lot remains full and at what times. Adjustments will be made accordingly.

The BRAC action will bring the total number of residents to 240. This would require 180 spaces.

Due to the Resident Doctor parking being a mission critical need it has been determined that this parking is not operationally staff parking and will be managed like patient parking. No other staff members will be allowed use of the spots and the parking for resident doctors will be in patient garages. The TMP manager will monitor usage of the lot to determine if it is under or over utilized and that information will be provided for review by the accrediting team.

Carpools

Carpools are treated as staff parking spots, and are provided choice parking in the staff parking garage. With future growth the spots will become even more attractive for those working in the hospital. The Transportation Manager should evaluate the number of spaces available and the demand to adjust accordingly. In addition, carpool spaces in other lots should be considered as that garage is not a choice spot for all employees.

Handicapped parking

Any handicapped person can park in any handicapped spot of their choosing. The Transportation Manager should assume that visitors park in Visitor parking and Staff park in staff parking. The Transportation Manager shall monitor the number of handicapped spots in each lot and adjust them if the demand is greater than capacity. The ADA standards for numbers of handicapped spots must be adhered to as a minimum. In addition, whenever any existing lot is to be restriped the location, accessibility, number and size of the handicapped spots must be verified prior to the restriping. Many current "handicapped" spots do not meet ADA requirements because the lot is too steep, the curb cuts are not adequate, or the spaces are standard width for a regular space. It is anticipated that many existing spaces will be lost to accommodate all ADA compliant spaces.

Government vehicles and EMCOR (maintenance contractor on-site vehicles).

All such vehicles get one spot and government spaces are not counted as staff available parking. Vehicles that are not used on a regular basis (e.g., extra ambulances, bucket trucks, motor pool vehicles beyond the typical daily draw) should be located at remote sites. The increase in vehicles due to the BRAC action is being debated with Army personnel expecting much larger increases in the motor pool than is the Navy. The current vehicle count is 65 vehicles with an estimated increase of 40 vehicles.

Volunteers

At this time volunteers are being treated as staff members. If we notice a drop off in volunteers, and surveys indicate that volunteers were lost due to inadequate parking, then we will reexamine this policy. The cost savings and benefits from the approximately 200 volunteers for the patients and service members are substantial.

Shift workers

Shift workers arrive and depart so that there is a demand for the leaving shift and the next shift to both have spaces at the same time. We receive many complaints about lack of parking by the afternoon shift. Ideally we would subtract the smallest shift from the employee total. However, shift workers have one or both ends of their shift in hours that are generally not well served by public transportation and getting a carpool organized in off hours is very difficult. Shift workers were accounted for in the UFC calculation and it is assumed they were included in the Montgomery County zoning requirement. No adjustment of employee numbers will be done due to shift operations.

Lay down areas and Event Parking

NNMC and its tenants always have several construction or renovation jobs open at any given time. Each of these jobs requires areas set aside to stage equipment and to operate the site. Due to issues with storm water and the desire to avoid impacting the natural environment these sites are usually on parking lots and green areas around buildings. Often it is necessary to completely block roads, thereby cutting off access to some parking areas. Ultimately, this displaces staff parking to other lots.

NNMC and its tenants frequently have large events that bring in significant numbers of visitors. Examples of this are graduations, change of command ceremonies, kickoffs for new projects or commands, groundbreaking ceremonies, emergency drills, training events and VIP visits. Events range from 50 to 500+ people. Invitations should include information on available mass transportation. Reducing outpatient visits or rescheduling must occasionally be employed for some events but it is something the Command is very reluctant to do.

Security at certain times requires the closure of certain roads and parking lots, redirecting commuters to other available lots. These circumstances occur due to repair or installation of a road, lot, or utilities underneath them, or for special training events.

Roofs of the parking garages often become very hazardous during inclement winter weather and for safety reasons the roofs are often closed to parking.

Existing parking structures are fairly old and are subject to the concrete spalling and dropping onto people and cars. Parts of floors or several floors are often shut down to allow repairs to be made.

These events and conditions are frequent and often unpredictable creating a need for contingency parking areas. Work in patient care areas is very demanding and utility outages must be minimized. This creates the need to have a very rapid provision of such space. Lay down areas are required which are used for extended periods of time. Our estimate is that during normal operations there are 5 individual projects taking place using at least 20 spaces each as a laydown or work area for a demand of at least 100 spaces. Due to anticipated growth the need will be for 7 or 8 laydown areas.

NNMC can easily segregate the “excess space” and open it up on an as needed basis. The Transportation Manager can log the use of these areas and the reason to ensure that the available lots are not used on a daily basis to provide extra staff parking.

WAREHOUSES

Warehouses are normally not occupied full time and space is needed for employees to take vehicles to the warehouse and inspect, inventory, retrieve, or store products or equipment. NNMC has many warehouses and they function in the described manner. While NNMC has many warehouses those in the northeast section of the facility have a central parking area and loading dock areas with no parking spaces. The current parking in this area is used primarily by the blood bank which receives, tests, and ships large quantities of blood products (located in building 241). The remainder of the parking is used by the grounds keeping crew, who uses one warehouse, and by the NEX vending personnel. This entire area is limited to authorized personnel due to the danger from the heavy vehicles, limited space, and potential exposure to hazardous materials being moved or stored.

The military guidance is from DESIGN: COVERED STORAGE UFC 4-442-01N section 2.4.4 Parking. Provide parking space for all facility employees within walking distance of the facility entrance. Parking areas shall be separated from truck docks and other activity areas by fences. Site security shall be enforced by separating the storage facility from the remainder of the activity and further isolating parking from receiving and shipping functions. Refer to DOD.4270.1-M for parking requirements.

This guidance is rather vague but indicates that every employee in the area should be provided a space. Available parking is tight and forces many people to park in loading areas.

Montgomery County provides the following zoning guidance - Industrial, manufacturing establishment or warehouse. One and one-half parking space for each 1,000 square feet of total floor area and sufficient area to provide for loading and unloading of trucks. NNMC has the following warehouses.

Table 9 - Warehouses

Building Number	Area (Sq. Ft.)
13	9,077
143	1,848
152	4,000
203	4,000
149	4,040
80	1,064
256	1,575
242	1,681
225	4,040
148	4,040
147	4,000
239	4,000
153	4,000
Total	47,365
Calculated Spaces	71

OFFICE SPACE

NNMC has several tenants that occupy administrative spaces. In addition, some NNMC missions are beyond what would be normal for a typical hospital. These departments are managing multiple clinics as well as world-wide military records resulting in far larger numbers of administrative staff in some departments than would be normal. The Transportation Manager should investigate what was used to determine the UFC and apply the office space criteria to those functions that fall outside of the norm. No attempt was made to conduct this analysis at this time. As virtually all functions of the tenants are inherently medical related it was not felt that this would make much difference at this time. Depending on the ultimate relative sizes of these functions the Transportation Manager should try to track this information.

For calculation purposes UFC 3-610-01N ADMINISTRATIVE FACILITIES provides 0.7 spaces per employee.

Montgomery County uses the following for: Office, general office, and professional buildings or similar uses. Parking shall be provided in accordance with the parking requirements for office developments contained in Section 59-E-3.2. The base requirements may be reduced in accordance with the credit provision of Section 59-E-3.3. The calculation of building square footage is based on the sum of the gross areas of the several floors of the building, measured from the exterior faces to the exterior walls or from the center line of party walls, which area shall include cellars or basements but shall not include floor area used for off-street parking.

Table 10 - Calculation of NCPC Desired Parking Allowance

	Factor	Inside 2000'	Outside 2000'
USUHS & AFRRRI staff	3,500	0	3,500
NNMC HOSP & other			
Tenants staff	4,500	3,601	500
total staff	8,000	3,601	4,000
spaces per NCPC	3,867	1,200	2,667
gross ratio	0.48	0.33	0.67
USUHS & AFRRRI staff	3,500	0	3,500
NNMC HOSP & other			
Tenants staff	7,000	4,880	2,120
total staff	10,500	4,880	5,620
Spaces per NCPC ⁴	5,373	1,627	3,747
gross ratio	0.51	0.33	0.67

Table 11 – Present and Future Parking Needs

	Present Situation			Future Situation		
	Navy's need	Montgomery Co.	NCPC	Navy's need	Montgomery Co.	NCPC
Staff Parking						
Hospital staff	3,018	NA	1,534	4,595	NA	3,040
Resident Doctors ¹	53	70	180	180	240	180
Staff Housing ¹	292	406	292	456	633	292
USUHS & AFRRI Staff	2,450	2,782	2,333	2,450	2,782	2,333
Demand/allowance	5,813	3,258	4,339	7,681	3,655	5,845
Staff Parking total spaces ⁴	4,343			4,584		
Other Parking						
Patient	989		NA	1854		NA
Patient & Staff	-	3,816	NA	-	5,287	NA
Medical Hold, etc.	228	NA	NA	377	NA	NA
Navy Lodge	106	74	NA	306	214	NA
Fisher Houses	15	15	NA	78	78	NA
Retail Facilities	367	367	NA	819	819	NA
Fitness Center	40	273	NA	50	419	NA
Bowling Center ²	16	80	NA	16	80	NA
Child Day Care ³	17	33	NA	39	78	NA
Government Vehicles	65	NA	NA	65	NA	NA
Laydown, event, emergency	400	NA	NA	400	NA	NA
Warehouses		71	NA		71	NA
Total						
Demand/allowance	18,213	11,174	8,678	23,950	14,285	11,691
Parking total spaces ⁴	6,026			7,999		