



MEMORANDUM

TO: Margaret Oliver
DATE: June 26, 2019
FROM: Jennifer J. Ray, AICP
PROJECT: Naval Base Commuter Multi-Modal Mobility Planning Study
JMT JOB NO: 18-03784-001
RE: Interim Deliverable #1: Existing Conditions and Survey Summary

I. Introduction

A. Overview

Located at the mouth of the Patuxent River and the Chesapeake Bay, Naval Air Station Patuxent River (NAS/PAX) occupies approximately 6,400 acres of the St. Mary's County landscape. The host of more than 50 tenant activities, including the Naval Air Systems Command (NAVAIR) and the Naval Air Warfare Center Aircraft Division (NAWCAD) headquarters, NAS/PAX provides employment, housing, and vital resources to military personnel and civilians in Southern Maryland and the nearby greater Washington Metropolitan Area.

NAS/PAX is the largest employer in the county and employs over 9,800 civilian employees, 5,700 contractors, and 2,400 active duty military personnel at the Lexington Park facility. Situated along MD 235 just south of the Governor Thomas Johnson Bridge, the location of the facility and limited transportation options present challenges for those commuting to and around the base. While the area and base continue to grow, the limited transportation network and subsequent vehicle congestion along the MD-235 corridor must be addressed. Keeping the region's transportation vision in mind, strategies are needed to decrease the amount of automobile traffic on the major thoroughfares in Calvert and St. Mary's County, thus improving access to NAS/PAX.

As part of an assessment of current conditions, JMT reviewed previous studies and conducted a field visit to identify existing conditions at the site to determine opportunities for multi-modal mobility solutions.



II. General Analysis and Observations

A. Previous Studies

The transportation needs and challenges of both NAS/PAX and St. Mary's County have been studied in order to build on or formulate transportation goals, assess existing and future needs, and develop an appropriate course of action to address identified outcomes. These plans have been helpful in understanding the condition of the existing transportation network and the connectivity challenges that are faced on base. A brief synopsis of these plans can be found below.

1. St. Mary's County Transit Development Plan (2013):

The Transit Development Plan (TDP) was developed to serve as a guide for public transportation in St. Mary's County for Fiscal Years 2014-2018. It provides a roadmap for implementing service and/or organizational changes, improvements, and/or potential expansions during the five-year period for which it was wrote.

The TDP provided key background information that elaborates on St. Mary's in-county commuting trends (the highest in the state) and offers projections of population and St. Mary's Transit System (STS) growth. Additionally, the plan reviews existing services which was particularly helpful in understanding what public transit looks like in the areas around the base.

The plan acknowledges that although NAS/PAX is the County's largest employer, STS and NAS/PAX do not coordinate transportation. Through stakeholder feedback and a general public survey that was solicited as part of the TDP, it was emphasized that there is a need to establish a STS-NAS/PAX relationship, especially given the transportation needs of the civilian service industry employees. The TDP also reiterates NAS/PAX's Transportation Improvement Plan's desire to reduce employee single occupancy vehicle commuting and uses that to strengthen the need for improved STS connections.

In its recommendation, it is proposed that STS establish a working relationship with the community and transportation planners at NAS/PAX. STS should ensure that NAS/PAX representatives remain members of the Transportation Advisory Committee (TAC) and are updated of STS service and capital improvements. As a short-term improvement, STS and NAS/PAX should consider how to publicize existing connections between the transit system and the base – for example, better publicizing what buses pass by Gates 1 and 2. The original recommendation in the plan was for the base taxi to regularly serve Tulagi Place, providing a connection



between STS and NAS/PAX. The TDP recommends that if the base taxi were to be reinstated that it regularly serves the park and ride on a regular basis.

It is the hope of the established relationship of an increased awareness of STS among NAS/PAX employees and all County residents. In the long-term, coordination between the two could help address issues of congestions and delays on MD 235. The TDP also notes that depending on the funding sources, a STS-NAS/PAX route could provide additional transit service without the need for County-funded operating expenses.

One of the most significant features of the TDP is the recommendation to re-structure STS fixed routes in order to provide more convenient connections for public transit riders and reduce the number of transfers required. This idea could have many beneficial implications to members of the NAS/PAX community who are looking to use public transit in their commute to work.

2. NAS Patuxent River Transportation Improvement Plan

The Transportation Improvement Plan (TIP) was established to provide specific recommendations to improve NAS/PAX's transportation network. To ensure goals and recommendations align with other initiatives in place, the TIP builds on the Naval District Washington Regionally Integrated Master Program, the Naval Shore Vision 2035, and the NAS/PAX Master Plan.

Many of the goals of the TIP coincide to those of the Naval Base Multi-Modal Mobility Planning Study. These goals include:

- Reducing vehicle congestion
- Decreasing the number of single occupancy vehicles (SOVs) entering NAS/PAX on a daily basis
- Establishing a parking plan in accordance with anti-terrorism/force protection (AT/FP) standards and security constraints
- Avoiding environmental impacts
- Considering transportation impacts related to the implementation of the Red-line (separation between mission critical and non-mission critical)

Additionally, the TIP presents an in-depth analysis of existing conditions as it pertains to roadway operations, parking, the pedestrian environment, and transportation habits. It also presents future traffic forecasts of internal vehicular circulation and related parking demands.



The TIP also presents a set of recommendations that would help advance many of the goals of the Multi-Modal Mobility Planning Study. Many of them are roadway recommendations that will ensure that the installation roadway network continues well into the future, such as upgrading existing intersections, adding a lane to existing roadways, restriping existing lanes at intersections, installing new traffic signals, and monitoring intersections. Additionally, a series of bicycle and pedestrian improvements are suggested. These improvements would form an interconnected bicycle and pedestrian network and would make many of the connections between buildings that the base is currently lacking. Recommendations include adding or improving bicycle facilities, pedestrian paths, or bicycle racks at various locations around the base.

Organizationally, the TIP breaks down the base into Development Centers, which were established as a way to provide a consistent way to geographically break down the evaluation of existing conditions and transportation recommendations. These recommendations are separated by time frame: short, medium, and long-term improvements that prioritize their implementation. Concluding the plan are design standards that identify characteristics of complete streets and complete parking facilities with the intent of transforming NAS/PAX into a more walkable community while being mindful of the environmental consequences of these transformations.

3. Transportation and Traffic Update (Presentation from April 2018)

The Transportation and Traffic Update presentation, delivered by Sabrina Hecht and John Deatruck to NAS/PAX and CSMC, provided an understanding of larger base issues and current transportation initiatives that are being explored.

Key players in the transit system were outlined as well as next steps to operate the taxi and shuttle bus service on base again. Additional progress of other initiatives, such as security procedures for vans and buses and efforts to coordinate light timing with SHA, were explained. The presentation concluded with a discussion of long-term road improvements that would ultimately influence traffic congestion getting to and on base.

4. FHWA Guidebook for Measuring Multimodal Network Connectivity

The FHWA Guidebook for Measuring Multimodal Network Connectivity builds on the USDOT's *Guidebook for Developing Pedestrian and Bicycle Performance Measures* that presented methods for measuring walking and bicycling performance and activities and embedding them into the transportation planning process. This new resource focuses on pedestrian and bicycle network connectivity and provides information on incorporating connectivity measures into state, metropolitan, and local transportation planning processes.

Analyzing various connectivity measures help transportation practitioners identify high priority network gaps, implement cost-effective solutions that address multiple needs, and measure the long-term impacts of strategic pedestrian and bicycle investments on goals such as improving safety, system efficiency, network performance, and access to key destinations. The Guidebook explains in depth what multimodal network connectivity is and then strategically breaks down key components of pedestrian and bicycle network connectivity: network completeness, network density, route directness, access to destinations, and network quality. It also defends that multimodal network connectivity analyses strongly supports transportation decisions by helping decisionmakers weigh potential outcomes of planned multimodal connectivity investments – particularly helpful in analyzing potential roadway improvements at Gates 1 and 2 at NAS/PAX.

B. Visual Observations

On April 9, 2019, JMT participated in a tour of NAS/PAX in order to assess existing conditions pertaining to the transportation network and gain a better understanding of the transportation challenges that are present on base.

1. Activity Nodes

A drive through of the NAS/PAX facility helped identify key locations within the base that have the largest concentrations of employees daily. These employment and activity nodes could become key components in creating a successful base-wide bus route system. These locations include:

- Carpenter Park Housing: 100 townhomes (enlisted and civilian)
- The Drill Hall: the recreation center and base theater; all hands meeting are also held here
- North Engineering Building: food truck observed here
- South Engineering Building
- Enlisted Barracks: some of which have been turned into administration buildings and are to be demolished
- Atlantic Test Range Complex: facilities that can be rented out for events at the northeast corner of NAS/PAX
- The area at the intersection of Ranch Road and Saufley Road: this is near Hangar 111
- Peary Road near Buildings 3134 and 2370: anticipated new development adjacent from existing buildings.
- River's Edge Conference Center: events and dining
- Buildings 446-447: this is a large employment area where there is also a youth center, and before/after care



- Lovell Cove Housing: newer housing for officers
- Town Center: The Commissary, housing welcome center, and community center are located here

2. Pedestrian Environment

Review of the pedestrian and bicycle facilities throughout NAS/PAX revealed gaps in sidewalk connections, and few pedestrian amenities such as lighting, shade trees, and site furniture. Although sidewalks do exist, vital pedestrian connections between Development Centers, parking lots, and buildings are missing or are not within an ADA compliant network. For example, Buse Road lacks a complete sidewalk system, both before and after the intersection at Gate #1, where the only pedestrian crossing of MD 235 exists. Cuddihy Road also lacks a complete sidewalk area, particularly around the Commissary, NEX Gas Station, and Navy Lodge. There are also vital pedestrian connections missing along Cedar Point Road, especially between Buse Road and Mandt Road - where the Navy Gateway Inns and Suites are located. Additionally, there are sidewalks missing along Davis Spur Road, where there are designated parallel parking spots along the road for the adjacent NAVAIR facility, to name a few.

Although a bike lane does exist along the outer loop of the facility, not all main roads have bike facilities (for example, parts of Cedar Point Road). Many people were observed running or biking on base, but lack of proper facilities in key locations has them running or biking in the roadways in various locations.

3. Parking Assessment

Parking is a concern on base. Parking is first come, first serve at all building locations on the installation, with all facilities having ADA-accessible parking spaces. Aside from a designated spot for the CO, ADA-accessible spaces, and those for visitors, other “reserved” spaces are not permitted on base. However, many of these spaces exist creating unusable spots that remain vacant all the time in many situations.

Many vehicles were parked in the grass, on the side of the road, and along medians in parking lots due to insufficient parking. North Engineering, South Engineering, and the Moffett Building are key employment buildings and have the greatest parking concerns.

4. Roadway Condition and Operation

Many of the roads throughout the base need maintenance and repair to address potholes and lane marking/stripping visibility. Crosswalk markings throughout the base and in parking lots also need to be repainted in order to ensure pedestrian safety.



There are no bike lanes on cross streets, and the bike lanes that do exist have faded striping and markings. In efforts to improve roadway condition, the C-SMMPO is coordinating with NAS/PAX to repave the outer loop around the facility.

In terms of roadway operation, significant delays occur at key intersections along MD 235 at Gates #1 and #2. Signal timing and gate operations are the cause of much of the delay.

5. NAS/PAX Gates

Three gates control access to NAS/PAX – Gate #1 along Buse Road, Gate #2 along Cedar Point Road, and Gate #3 along Shaw Road.

Gate #1 is located just east of the MD 235 and Buse Road/Pegg Road intersection. It provides access to the Town Center, the Moffett Building, and the West Basin. There are four lanes at this gate, and all commercial truck traffic must use this gate to enter NAS/PAX. Outbound traffic is not allowed through Gate #1 during the AM period because these lanes are all used for inbound traffic only. Middle of the day operations into the evening hours (9:01 AM – 6:30 PM) have two lanes open in either direction, while all lanes are closed to vehicle traffic overnight into the early morning hours (6:31 PM – 5:29 AM).

Gate #2 is the main gate, located on Cedar Point Road near the intersection of MD 235 and 246 (Great Mills Road). This gate provides access to the North Engineering Center, base support area, Town Center, Rotary Wing, and West Basin. During the AM rush hours (5:30 AM – 9:00 AM) there are three inbound lanes and one outbound lane. Middle of the day operations (9:01 AM – 4:30 PM) have two inbound lanes and two outbound lanes, while during the evening rush/overnight hours (4:31 PM – 5:29 AM) there is only one inbound lane, two outbound lanes, and one lane closed. The visitor center is also located at this gate, where all visitors are required to obtain visitor passes before entering NAS/PAX.

Gate #3 is located on Shaw Road, less than 1.5 miles from MD 235 and the Forest Park/Shaw/Hermanville Roads intersection. This gate provides access to the east side of the facility. During the AM rush hours there are two inbound lanes and one outbound lane operating, while the rest of the workday (9:01 AM – 5:59 PM) there is only one inbound lane, one outbound lane, and one lane closed. During the evening and overnight hours, all lanes are closed to vehicle traffic.

The gates are constraints to the volume of inbound and outbound traffic associated with NAS/PAX. Delays queue at the gate due to the security process during the morning rush hour, while evening rush hour delays queue at the at the three main

intersections along MD 235. The timing of signals and intersections at Buse Road/MD 235 (Gate #1) and Cedar Point Road/MD 235 (Gate #2) restrict the outbound flow of traffic significantly during the PM rush. There are no delays at Gate #3 in regard to the evening rush hour, as the gate is located far enough from the intersection of Shaw Road/MD 235 to prevent this from happening. Gate #1 processes the highest volume of traffic and sees the most significant delays throughout the day.

6. Intersections of MD 235 and NAS/PAX

There are two main intersections where NAS/PAX and MD 235 meet. The first one is where Buse Road/Pegg Road meet MD235 at Gate #1, and the other is where Cedar Point Road/Great Mills Road meet MD 235 at Gate #2.

The intersection of MD 235 at Gate #1 is the only intersection where pedestrian facilities exist. There is a crossing adjacent to the Shell Gas Station; however, after crossing MD 235, the sidewalk network ends once crossing into NAS/PAX property. The two dedicated left turn lanes into NAS/PAX experience consistent delays due to signal timing and gate activities, particularly during the AM and PM rush hours. Exiting the facility there are three dedicated right turn lanes, one lane that continues straight onto Pegg Road, and one dedicated left turn only lane onto MD 235.

The intersection of MD 235 at Gate #2 has no pedestrian facilities. Although adjacent to the Tulagi Place Park and Ride and the food/retail services along Great Mills Road, there is no safe way for pedestrians to make the crossing. There are two left turn only lanes off of MD 235 to NAS/PAX, as well as two dedicated left turn only lanes from NAS/PAX back onto MD 235. Two lanes continue straight onto Great Mills Road and one lane is a dedicated merge back onto MD 235. This intersection experiences similar AM and PM rush hour delays as Gate #1.

Together, these two intersections create a lot of traffic congestion throughout the MD 235 corridor along the NAS/PAX facility. Timing of signals at each gate create backups into base and along both directions of MD 235, depending on the time of day.

7. Tulagi Place Park and Ride

The Tulagi Place Park and Ride is approximately a quarter of a mile south from Gate #2 off MD 235. This surface lot is adjacent to the Three Notch Theatre and located across Tulagi Place from Linda's Café and other small shops and services. The Park and Ride has 89 parking spots, 5 of them being ADA accessible.



Although just a short distance away from Gate #2, the Park and Ride sits empty. The lack of pedestrian crossings at the intersection of MD 235 and Cedar Point Road makes it impossible and unsafe for employees or visitors to park at the park and ride or utilize the STS stop located at the park and ride and walk safely to the NAS/PAX facility.

III. Public Workshop

A public workshop was held on Wednesday, May 15, 2019 at the Patuxent River Naval Air Museum from 4:00 pm – 6:00 pm. There was a total of 56 participants in attendance, 34 of which identified themselves as being associated with the base.

At the workshop, participants were able to view presentation boards that summarized the study's purpose, context, and goals, as well as imagery that provided an explanation of what multi-modal mobility is and looks like. Additionally, participants were able to take a paper copy of the Transportation Preference Survey or electronically through tablets that were provided. At the conclusion of the workshop, 13 paper copies of the survey had been collected as well as 18 collected via the tablets (this does not include those who may have scanned the QR code and accessed the survey during the meeting on a personal device.)

Comment cards were also utilized at the workshop to allow for additional feedback to be given about the study. There was a total of six comment cards collected, with participants offering feedback and suggestions regarding a pedestrian crossing at Gate #2 along with improved bike infrastructure, sidewalks, and shoulders along routes to get to that point. Participants who left comment cards also expressed support of a base shuttle or other van pool that might make stops at various locations around St. Mary's and Calvert counties.

As a result of the public workshop, there were also additional suggestions and input gathered from emails to base representatives. This input was forwarded to JMT and has been included in the complete dataset.

Representatives from the C-SMMPO (Margaret Oliver, Kwasi Bosompem), NAS/PAX (Sabrina Hecht, Vanessa Price), and JMT (Jennifer Ray, Sarah Diehl) were on hand to answer any questions that participants might have had regarding the study.



IV. Transportation Preference Survey: Summary

A. Summary of Results

The Naval Base Commuter Multi-Modal Planning Study: Transportation Preference Survey's purpose was to gain a better understanding of the transportation patterns and characteristics of the NAS/PAX community. The survey was open from May 10 through June 10, 2019 with 2,516 respondents, of which 2,254 were fully completed. 31 of those responses were collected at the Public Workshop hosted on May 15, 2019 at the Patuxent Naval Air Museum.

In order to ensure all the data came from individuals who interact with the base, a disqualifying question was included such that if a respondent stated that they did not interact with the base they were thanked for their interest and the survey was concluded.

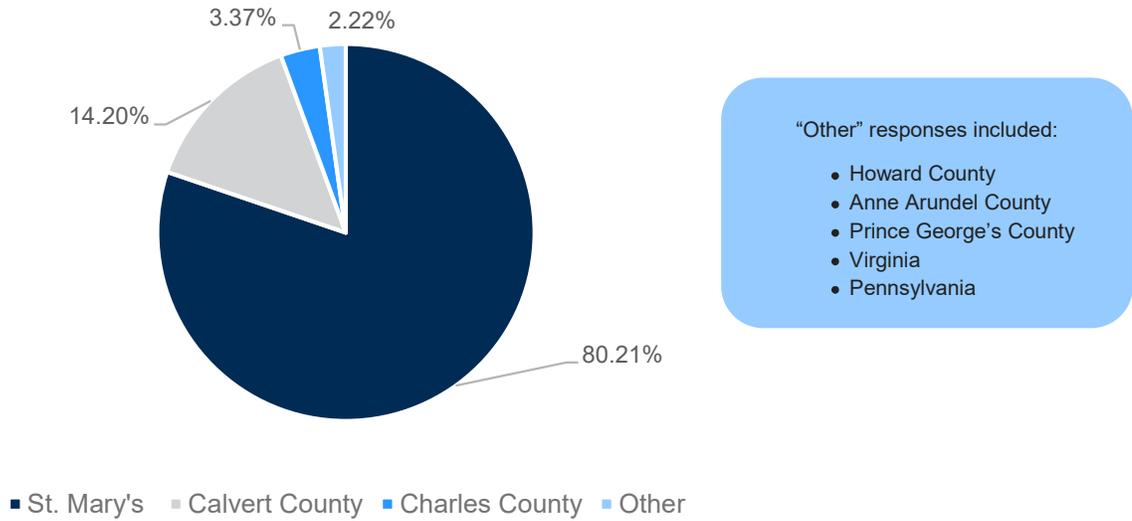
Approximately 80% of respondents are from St. Mary's County and nearly 95% work for NAS/PAX or an associated facility. Most respondents travel to the base daily and use a single occupancy vehicle to do so. Once on the base, most respondents use their personal vehicle to travel around base and about 4% walk/bike. Some identified using their government issued vehicle to travel between buildings while others noted that they try to avoid leaving their building as much as possible due to parking challenges. Challenges facing the walkers and cyclists include the distance between buildings, faded bike lane markings, general upkeep of existing lanes, lack of connected bike lanes, and a lack of bicycle parking.

When asked about carpool options, 54% stated that they would not use carpool even with a monetary incentive. In addition, 62% stated that even if a HOV lane were provided, they would still not carpool. The Drill Hall, Moffett Building, Building 2272, and the NEX were among the most common locations within the base respondents travel to, besides their main place of work. Additional popular locations include lunch spots, South Engineering, and the Post Office. About 30% of respondents leave the base either once a week or once a month and only 12% never leave to use services off base during the workday or lunch hour. However, almost 84% said they would stay on base if more lunch options were available.

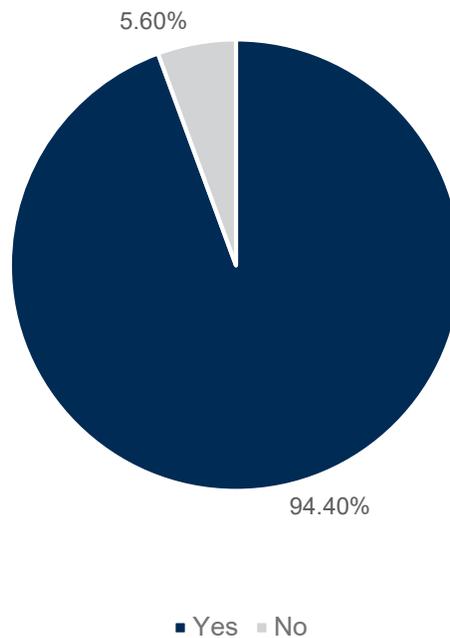
About 65% of respondents said they would use a taxi service for on or off base travel for official business if it were available, but a circulator bus service was not as popular. Only 28% said they would use it once a week and 24% said they would use once a month. Finally, about 83% of respondents did not know that there is a public transportation stipend of up to \$265 for federal workers. The following is a detailed report of the results of the survey. See Appendix A for a complete report of all response received and data collected.

B. Results

1. Which county do you live in?



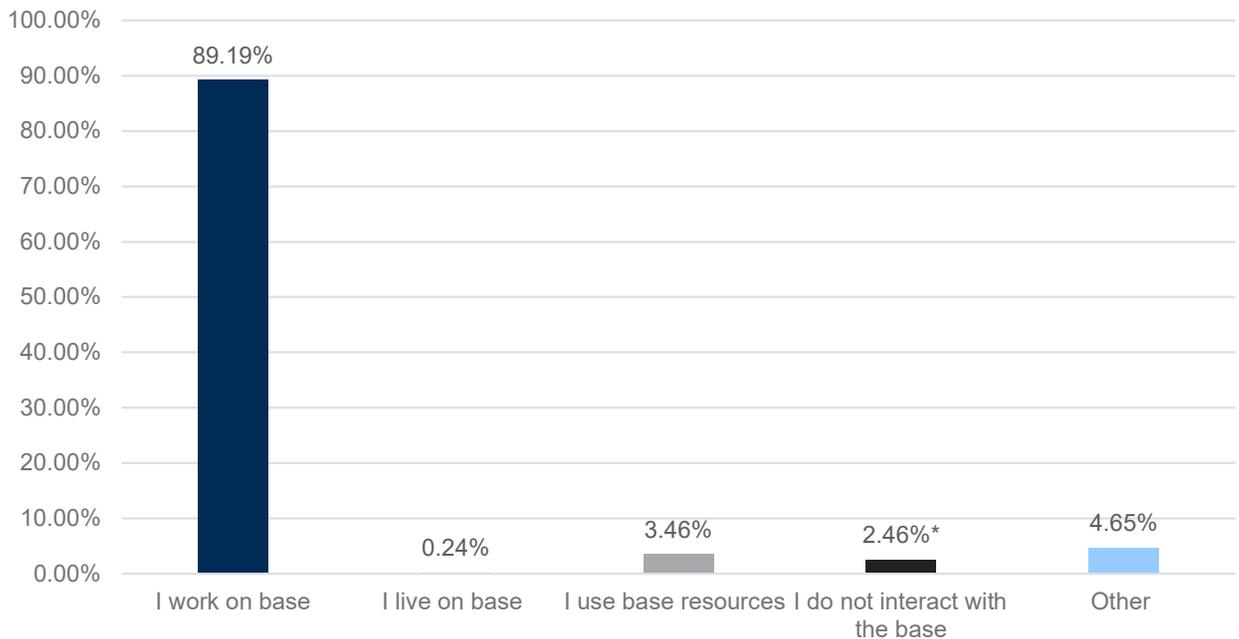
2. Do you work at NAS/PAX or an associated facility?



3. What do you see as your greatest challenge for commuting to work?



4. How do you use the base?

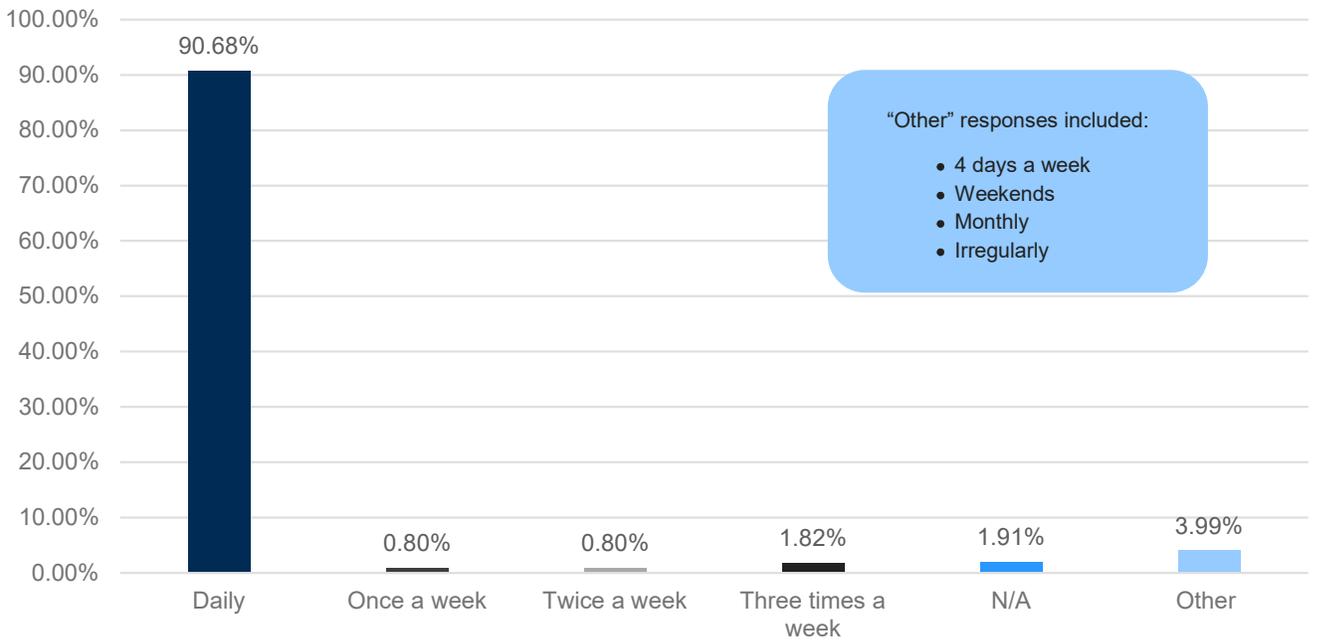


**Respondents who chose this answer were disqualified and unable to complete the survey. Only responses from those who interact with the base were collected.*

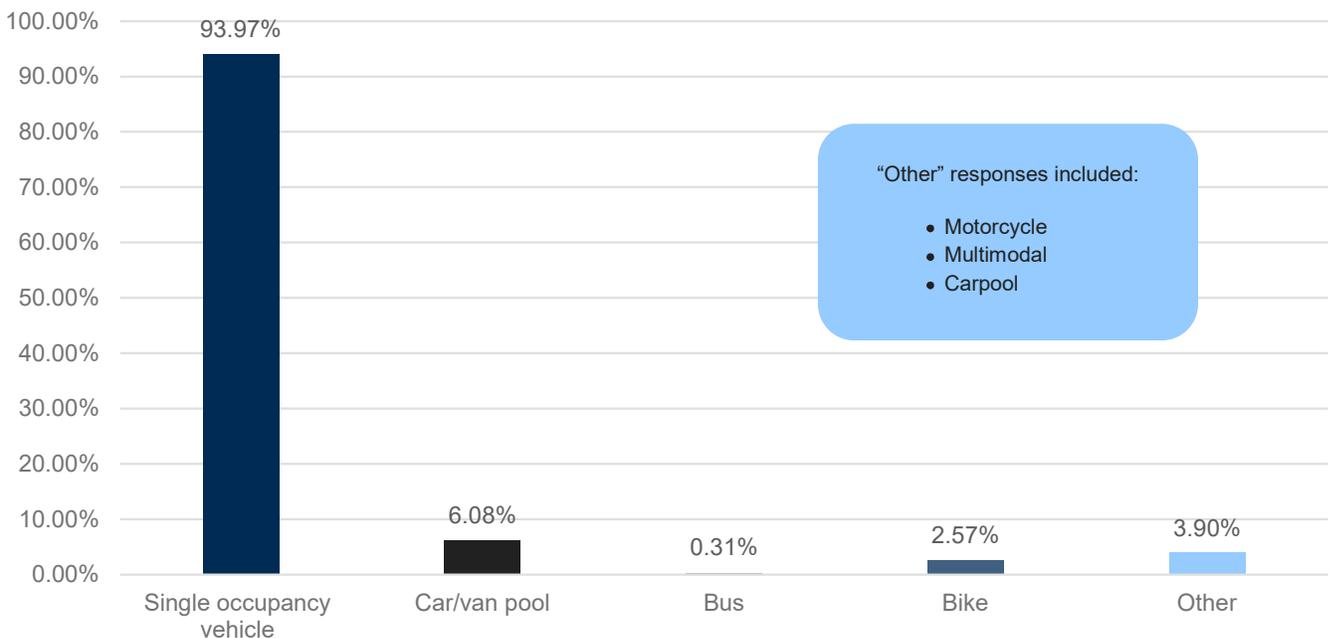
“Other” responses included:

- I support the base from another facility
- I work at the base AND use base resources
- I live on base AND work on base
- Family member works on/uses base
- Retired

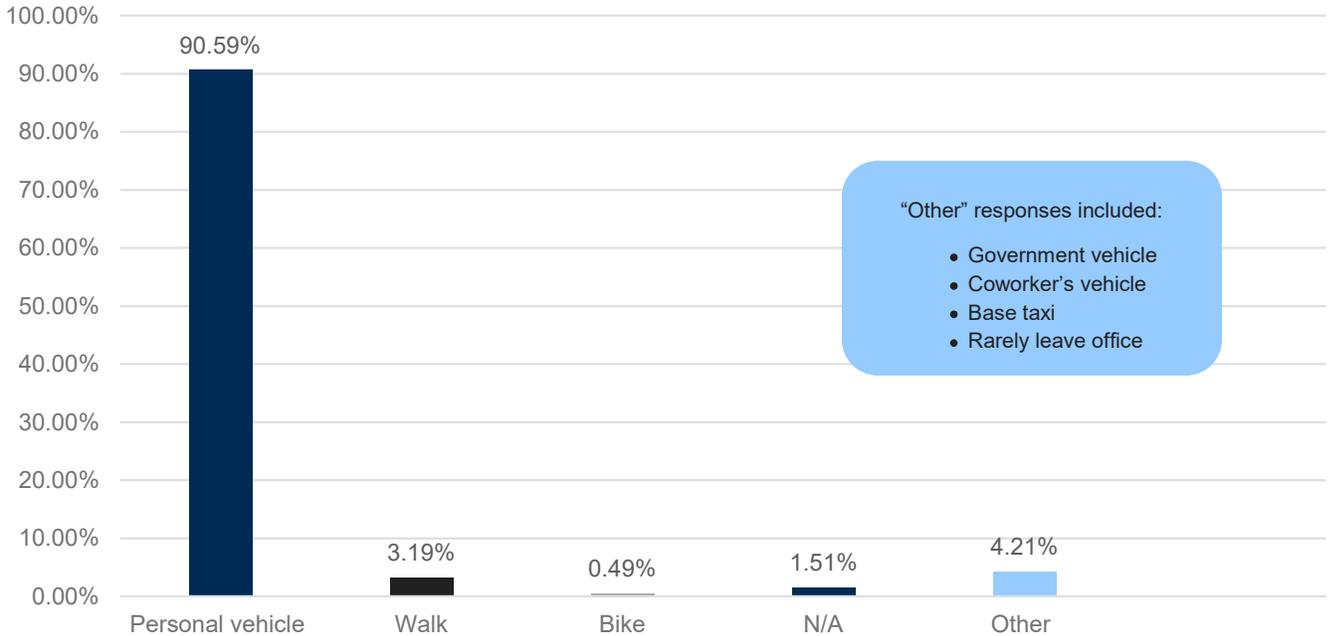
5. If you travel to the base for work, how often do you go to the base?



**6. If you travel to the base for work, how do you get there?
 (Check all that apply)**



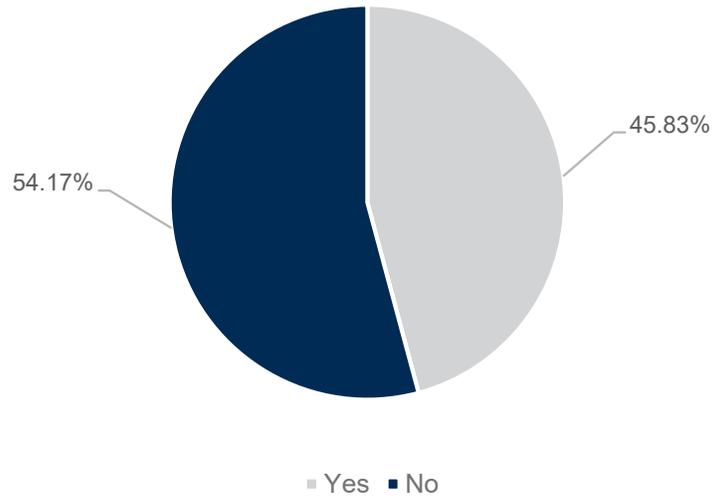
7. Once on base, what is your main mode of transportation to get around (i.e. lunch trips, meetings, etc.)?



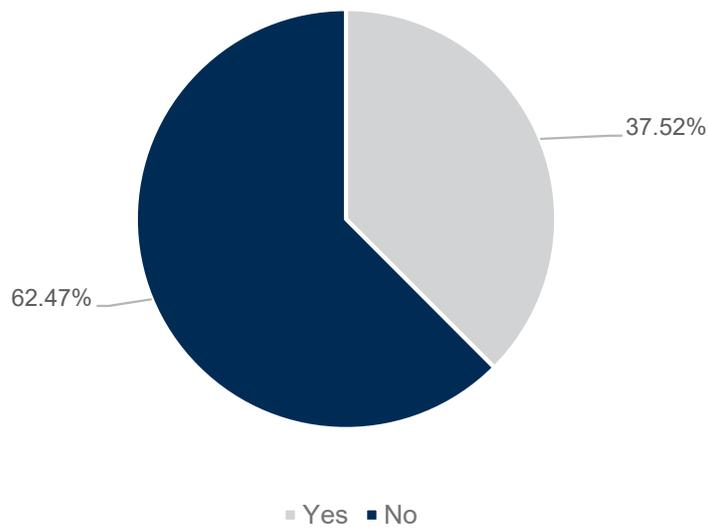
8. If you walk or bike around the base, what do you see as the greatest challenge?



9. If there was a monetary incentive provided to you for carpooling to NAS/PAX, would you consider using a car/van pool?



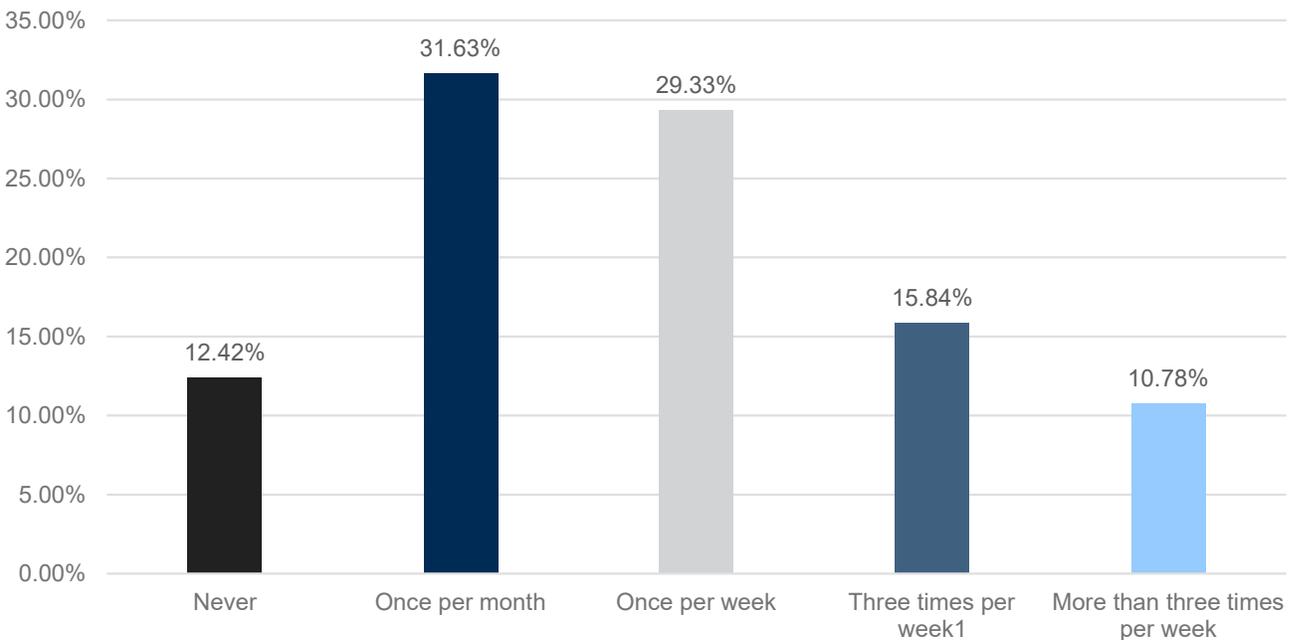
10. If there was a HOV (two or more persons per vehicle) lane into the gates of NAS/PAX, would you be more likely to carpool?



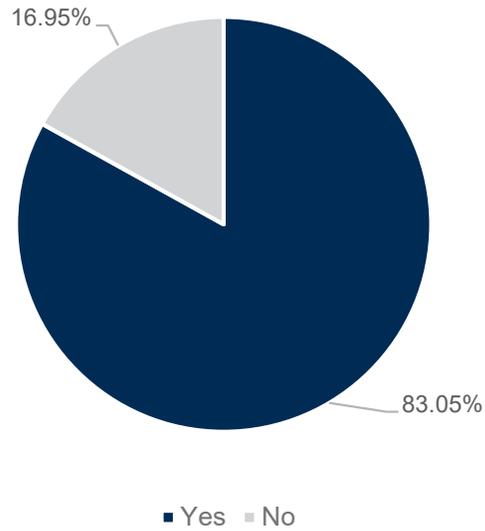
11. Are there particular locations within the base that you travel more frequently, requiring you to leave your main place of work? Please list:

IPT South Engineering **Lunch Gym**
Bldg. 2272 **Drill hall** **Hanger**
NEX **Bldg. 2185** **Commissary** **Rivers Edge**
Subway **Webster** **Bldg. 2187** **Moffett**
Post Office

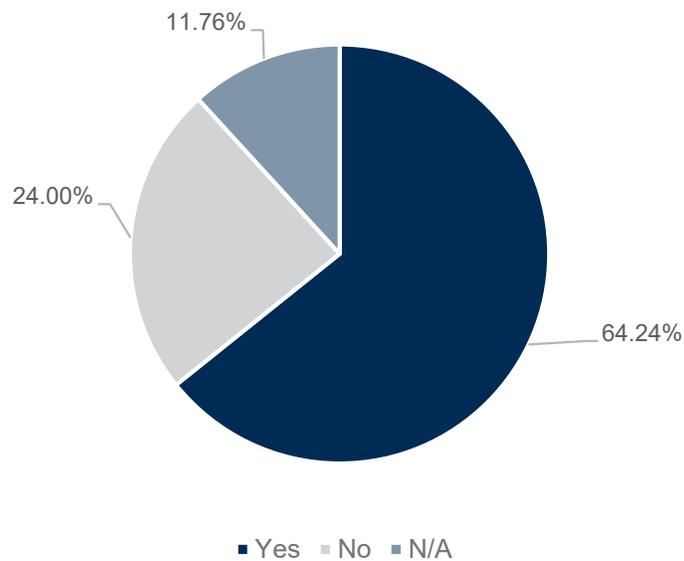
12. How often, if ever, do you use services (restaurants, shops, etc.) off base during the workday or lunch hour?



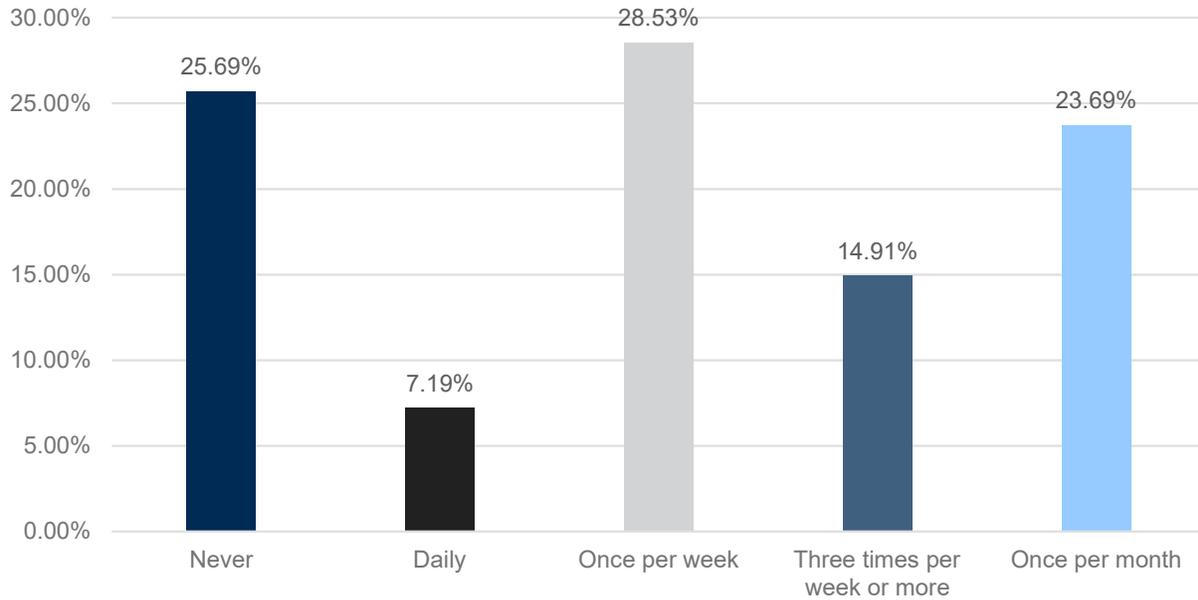
13. If additional and accessible lunch options were provided on base, would you stay on base and frequent them?



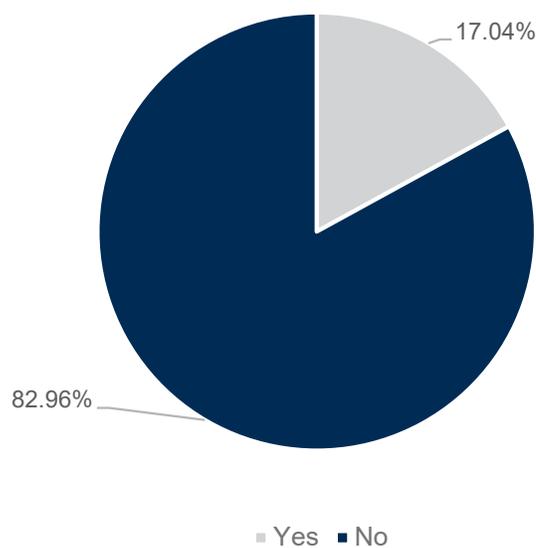
14. If there was a no cost taxi service for on/off base travel for official business, would you use it?



15. If there was a circulator bus route that ran throughout NAS/PAX, would you use it for travel between buildings for meetings, lunch, etc.?



16. Did you know there is a stipend of up to \$265.00 for federal workers for use with approved public transportation?



17. Additional comments and suggestions:

Biking	<ul style="list-style-type: none">• Complete Three Notch Trail• County-wide connectivity• Clear lane markings throughout base• Bike path parallel to Rt. 235• Provide shower facilities on base
Base Improvements	<ul style="list-style-type: none">• More food options• More parking for both vehicles and bicycles• Bike/scooter share program• Publish stipend information• Centralized conference room facility
Congestion	<ul style="list-style-type: none">• Traffic signals need re-sequencing, especially at Gate 2• Reevaluate turn lanes at base entrance• More guards at gates during peak hours• Traffic on base is not the issue, traffic on Rt. 235 is the issue
Modified Work Schedules	<ul style="list-style-type: none">• Telework• Staggering start times• Flexible CWS• Call-in service for meetings
Public Transportation	<ul style="list-style-type: none">• Regular bus service on base• Commuter bus: Leonardtown, Wildewood, Lusby, California, etc.• Bus service could slow base operations, would have to be timely• Bring taxi service back, allow ride sharing services• Ferry service

V. Next Steps

Interim Deliverable #2 will provide recommendations regarding multi-modal mobility for the NAS/PAX community. Analyzing survey data and feedback has been helpful in recognizing that there are differences in recommendations that NAS/PAX must address (i.e. showers) and recommendations that the MPO can influence. Prioritizing these recommendations will be key in order to ensure that the appropriate user groups and communities are targeted.



APPENDIX A UNDER SEPARATE COVER