



TOWN OF KITTERY AND PORTSMOUTH NAVAL SHIPYARD JOINT LAND USE STUDY

FINAL REPORT APPENDICES - JANUARY 2020

APPENDIX A

Existing Conditions

To: PNSY and Kittery JLUS Team From: Stantec
File: JLUS Date: November 14, 2019

Reference: DRAFT Existing Conditions Report

INTRODUCTION

This technical memorandum comprises a summary of all known and available existing conditions information collected as part of the Joint Land Use Study (JLUS) for the Portsmouth Naval Shipyard (PNSY), the Town of Kittery, and the surrounding region, as summarized in slideshow, fact sheets, website, and handout content prepared to date for various public, Working Group, and Policy Committee meetings over the course of the study.

INSTALLATION SETTING

PNSY is located 50 miles north of Boston, Massachusetts and 50 miles south of Portland, Maine on Seavey Island in southeastern Maine on the Piscataqua River. It is bounded to the north by the Town of Kittery and to the south by the City of Portsmouth, New Hampshire. The installation is accessed via one of two gates/checkpoints accessed through Kittery. The installation comprises 297 acres, including the main island, the two gates, and housing both on (26 units) and off-site (approximately 200 units) located in Kittery.

PNSY is one of only four remaining U.S. Navy repair shipyards in the continental United States. It is responsible for the maintenance, repair and modernization of the Navy's fleet of attack submarines. The island features 50 buildings listed on the National Register of Historic Places. The site includes three dry docks capable of docking active submarines for repair. While submarines are in dock for anywhere from six months to one-year, crews who remain near their submarine are housed mostly in on-island housing and at area hotels.

JLUS STUDY AREA

While the study area includes the region at large (extending to west to Rochester and Newmarket, New Hampshire, north to Sanford, Maine, and south to North Hampton, New Hampshire), the Town of Kittery and neighborhoods immediately surrounding the PNSY are of primary focus. This focused area is generally defined by the Route 1 roundabout to the north of PNSY, the Maine Turnpike (I-95) to the west, the Piscataqua River to the south, and Spruce Creek to the east.

Reference: DRAFT Existing Conditions Report

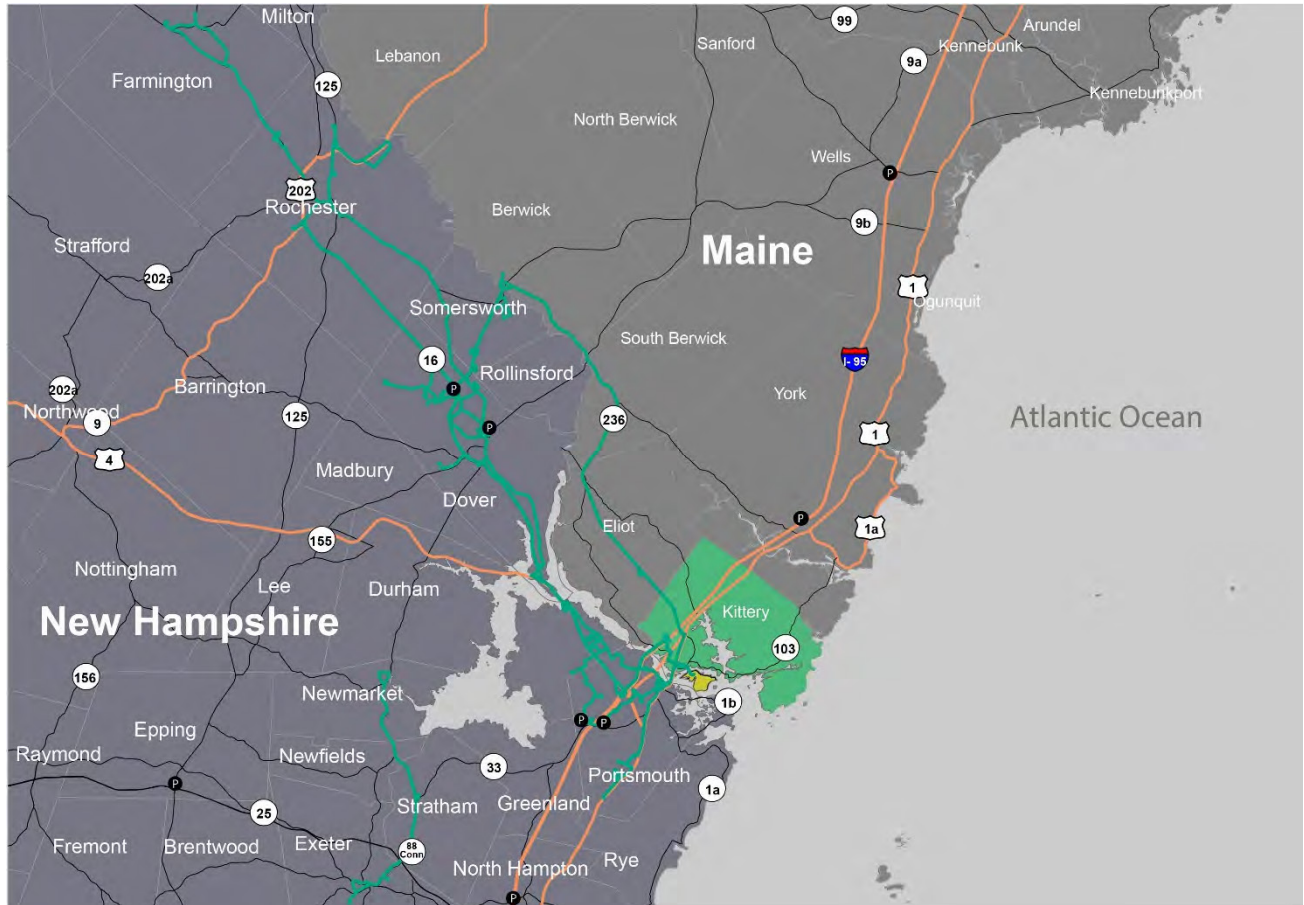


Figure 1. Kittery and PNSY in context of the region, at large

Reference: DRAFT Existing Conditions Report

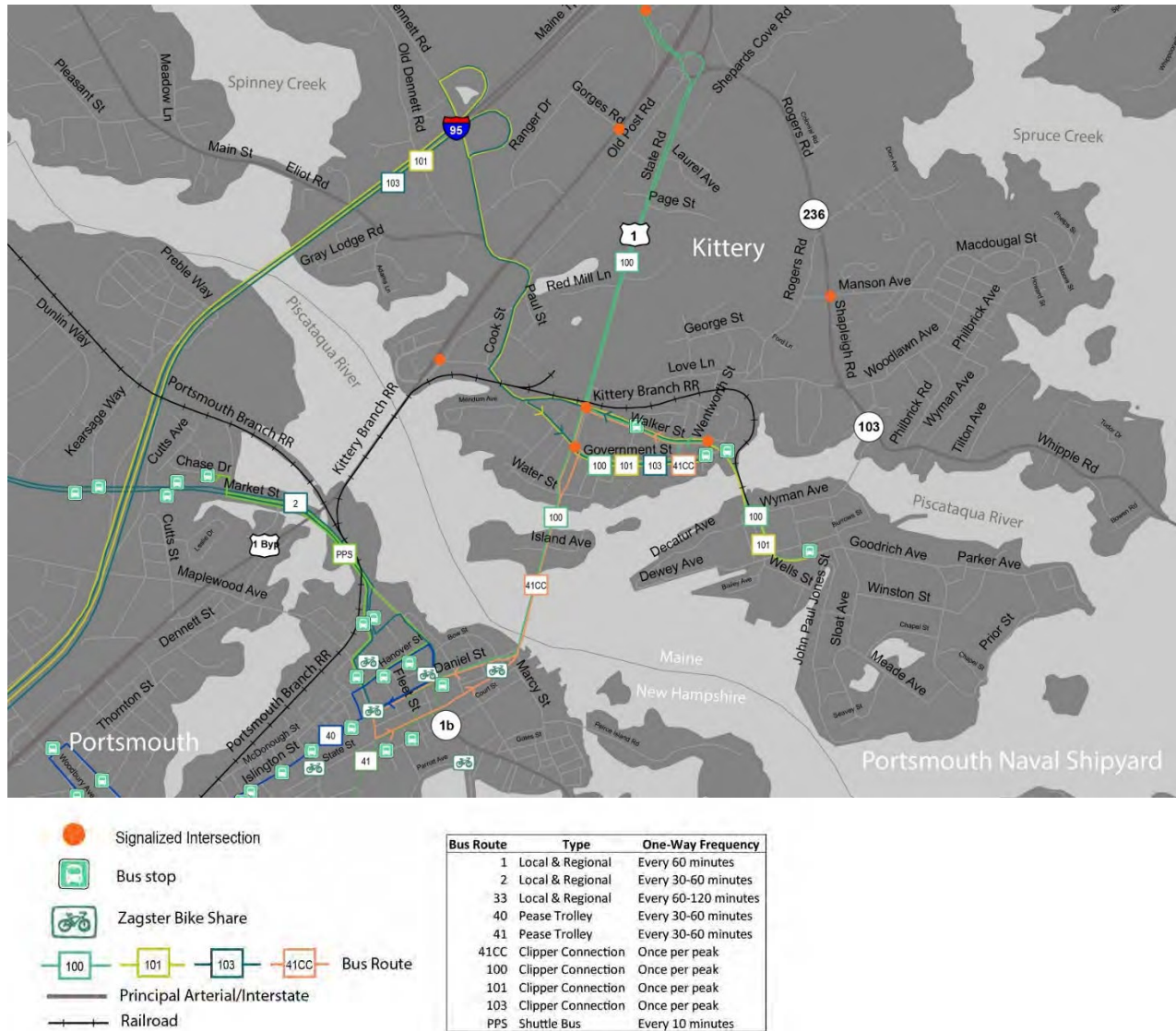


Figure 2. The JLUS focus area incorporates downtown Kitterly, the PNSY installation and immediately adjacent areas

JLUS COMPATIBILITY FACTORS

Throughout the course of this JLUS, 24 “compatibility factors” are to be assessed for possible adverse impacts to military operations and continued community growth and economic development. These are listed below, and each have been investigated for potential issues with project stakeholders, including: PNSY; Town of Kitterly; Southern Maine Planning & Development Commission (SMPDC); multiple surrounding municipalities; the State of Maine; the State of New Hampshire; residents of Kitterly and other area municipalities; and PNSY workers. A full list of

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stakeholders can be found in the public outreach technical memorandum. Dialogue with these stakeholders helped determine where 1) there was either no significant existing incompatibility, 2) where incompatibilities were identified but were being addressed, or 3) where incompatibilities existed which require further study and/or action. Depending on initial level of compatibility, many of these factors were reviewed generally but were not subjected to extensive analysis, as noted below.

Compatible / No significant finding	Incompatible but being addressed	Incompatible and requiring further study/action
Coordination and Communication	Noise and Vibration	Water Quality and Quantity
Public and Military Base Safety	Threatened Species	Natural Features
Legislative Initiatives		Climate Adaption
Cultural Resources		Scarce Natural Resources
Land/Air/Sea Spaces		Road Capacity/Congestion
Air Quality		Local Housing Availability
Marine Environment		Land Use
Infrastructure Extensions/Capacity		
Safety Zones		
Anti-Terrorism/Force Protection		
Dust, Smoke and Steam		
Light and Glare		
Spectrum Impediment		
Energy Development		
Vertical Obstructions		

EXISTING CONDITIONS

LAND USE CONDITIONS

The study team evaluated the use of lands near PNSY and within the communities that PNSY workers live. These included assessments of recent population and employment trends.

EXISTING SURROUNDING LAND USES

PNSY is surrounded entirely by the Town of Kittery to the north and its river border with the City of Portsmouth NH to the south. The primary surface access to PNSY from the south is via two bridges either the Memorial Bridge or Sarah Mildred Long Bridge into Kittery. The town is predominantly residential, with the bulk of properties used for single-family residences. A number of these are on the National Register of Historic Places. A mix of multi-family and commercial properties can be found along the arterials of Route 1 (State Road), the Route 1 bypass, Route 236 (Shapleigh

Reference: DRAFT Existing Conditions Report

Road), and Route 103 (Bridge, Walker, and Wentworth Streets and Whipple Road). A denser cluster of commercial, retail, and restaurant properties exists along Walker and Government Streets in the Foreside neighborhood, immediately west of PNSY western Gate 1.

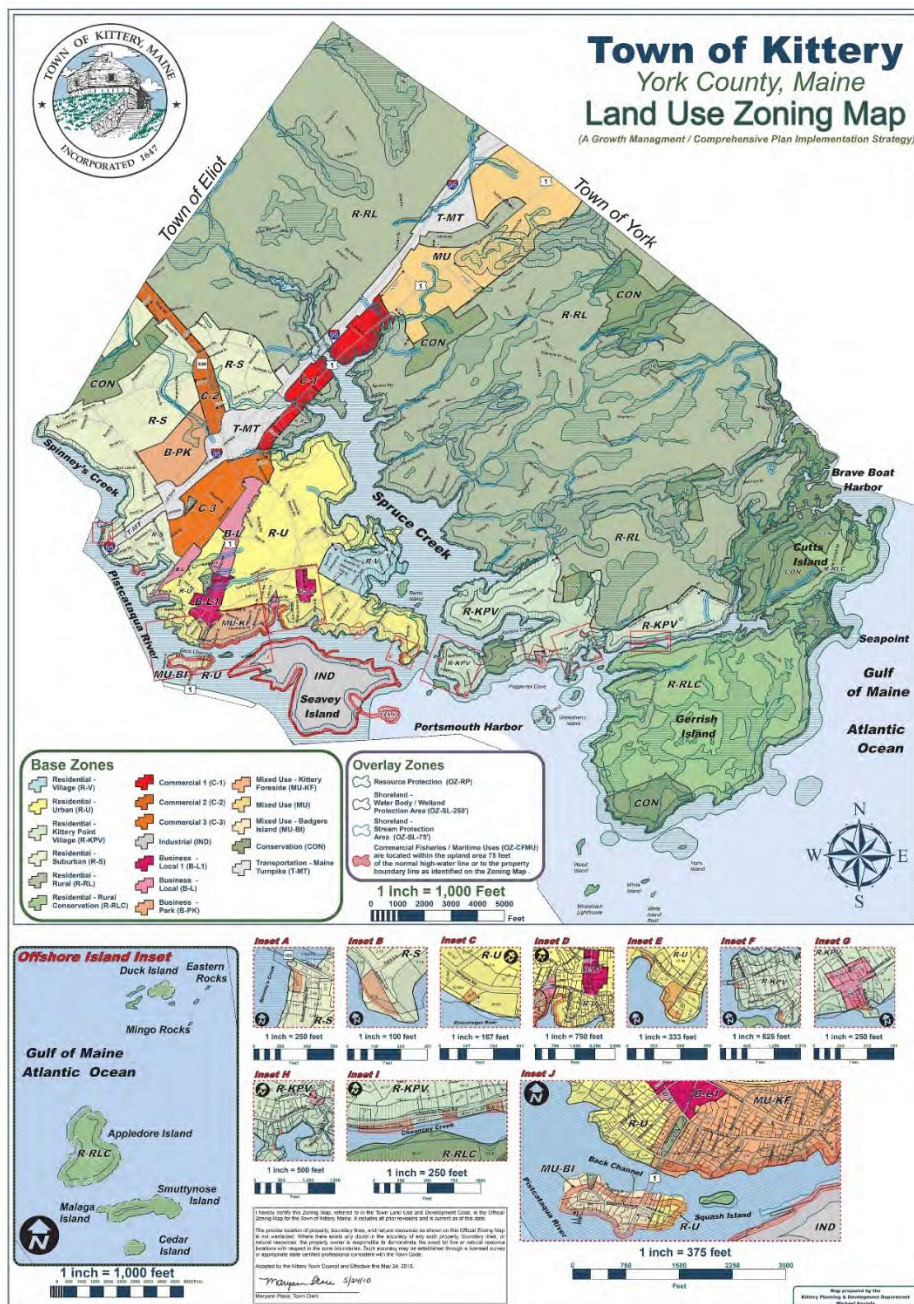


Figure 3. Kittery's current Land Use and Zoning Map

Reference: DRAFT Existing Conditions Report

POPULATION

The population of Kittery in 2018 was approximately 9,500. Populations have increased in almost all towns in the region surrounding PNSY. Based on American Community Survey data, from 2010-2017 populations in Kittery, York, Portsmouth, and other nearby towns grew between 2% and 6% (Figure 4). Towns farther from PNSY, such as Eliot and Wells, Maine and Durham and Fremont, New Hampshire, saw a larger population increase: populations in these towns grew between 6 and 14%. Longer-range projections from DAFS and OEP indicate that county-level populations will continue to increase from 2015-2035. Again, the highest magnitude will be farther from Kittery: while Rockingham and Strafford counties in New Hampshire will see 8.2% and 11.5% population increases, respectively, York's population is forecasted to increase by only 2.5%. This regional population growth is focused mostly in or near downtowns.

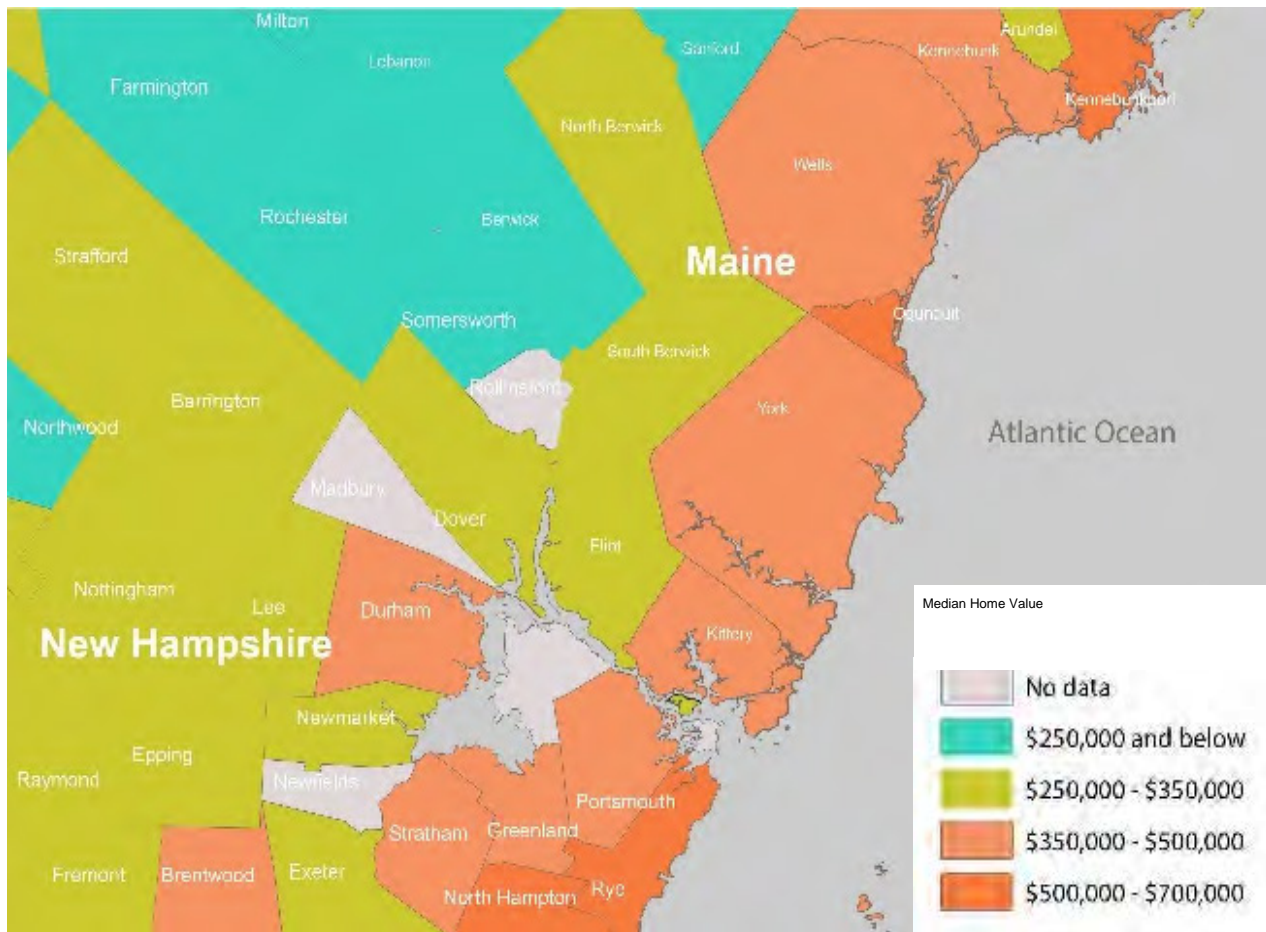


Figure 4. Populations have increased in most towns from 2010-2017. Towns further from PNSY have seen the highest growth.

Reference: DRAFT Existing Conditions Report

PNSY ECONOMIC IMPACT

The PNSY Study Area spans the counties of York, Maine and Rockingham, New Hampshire and includes the City of Portsmouth, the Town of Kittery, and the entirety or parts of several small cities and towns in New Hampshire and Maine, as shown in Table 1. The Portsmouth Naval Shipyard is a crucial economic player in the regional economy. PNSY is one of the leading employers in the Study Area with approximately 6,972 active employees (2018) and an additional 1,000 estimated contractors. PNSY generated over \$882m in economic activity in 2018. Ten-percent of Kittery’s workforce is employed by PNSY. The management, business, science and arts sectors account for almost half of the employment in Kittery (Table 2). This is reflective of the concentration of employees in certain occupations associated with the Shipyard that are not as common within the larger Maine region.

According to the PNSY Installation Commander, the base is in the process of moderization with more than a billion dollars-worth of construction occurring over the next six years.

Table 1. 2018 Portsmouth Naval Shipyard Annual Economic Impact		
CIVILIAN PAYROLL	Number of Employees	\$548,036,970
Portsmouth Naval Shipyard	6,972	\$120,731,514
Maine	3,894	\$314,558,123
Town of Kittery	403	\$29,581,603
Other States	3,078	\$233,478,847
PURCHASED GOODS & SERVICES:		
		\$120,731,514
Shipyard Contracting Office:		\$81,364,419
DLA Contracting Office:		\$18,581,338
Shipyard Purchase Card:		\$20,785,757
CONTRACTED FACILITY SERVICES (PUBLIC WORKS DEPARTMENT)		
		\$169,496,193
Maintenance/Alterations/Support:		\$ 97,652,400
Military Construction:		\$ 55,788,418
Utilities (natural gas/fuel oil/water/ sewer/electricity/communications)		\$ 16,055,375
<i>Source: Seacoast Shipyard Association, February 2019</i>		

Reference: DRAFT Existing Conditions Report

Civilian Employment	Town of Kittery		Maine	
	Number	Percent	Number	Percent
Management, business, science & arts	2,304	47%	241,309	37%
Service	769	16%	120,502	18%
Sales & office	1,092	22%	152,919	23%
Natural resources, construction & maintenance	318	6%	70,206	11%
Production, transportation & material moving	424	9%	73,757	11%
Total	4,907	100%	658,693	100%

Source: American Fact Finder, 2017

RETAIL GAP ANALYSIS

A retail leakage and surplus analysis was performed for Kittery. The report identified leakage and surplus of major store types within the Town of Kittery and the larger York County (Table 3). Much of the town's retail gap is being satisfied by stores within the larger York County area.

TABLE 3. Retail Trade Area Surplus/Gap Analysis

	Town of Kittery		York County	
	Surplus/ Leakage	No. Businesses	Surplus/ Leakage	No. Businesses
2017 Industry Summary				
Total Retail Trade and Food & Drink	-37.2	197	5.5	1,831
Total Retail Trade	-38.0	151	8.5	1,267
Total Food & Drink	-28.2	46	-16.9	564
2017 Industry Group				
Motor Vehicle & Parts Dealers	53.5	3	25.6	138
Furniture & Home Furnishings Stores	8.2	6	4.1	59
Electronics & Appliance Stores	64.3	5	54.0	49
Building Materials, Garden Equipment & Supply Stores	42.9	5	10.6	112
Food & Beverage Stores	10.2	19	-13.1	158
Health & Personal Care Stores	15.2	6	6.4	71
Gasoline Stations	-45.6	6	11.8	59
Clothing & Clothing Accessories Stores	-77.8	45	5.7	130
Sporting Goods, Hobby, Book & Music Stores	-86.9	4	-15.6	95
General Merchandise Stores	95.4	2	38.0	52
Miscellaneous Store Retailers	-82.9	49	-19.6	328
Non-Store Retailers	-7.7	1	42.6	16
Food Services & Drinking Places	-28.2	46	-16.9	564
Restaurants/Other Eating Places	-29.7	43	-15.8	517

Source: Esri and Infogroup, Retail Market Place 2019

Reference: DRAFT Existing Conditions Report

An additional “induced economic impact” of PNSY on Kittery’s economy extends beyond the 10% of Kittery’s civilian workforce employed in jobs that support the Shipyard. This impact comes from the spending at Kittery businesses by the military personnel at the base, and the civilians whose jobs support the base. The spending impact results in an additional positive impact on Kittery’s economy, and supports additional local jobs.

The retail gap analysis conducted for Kittery identified the following sectors in which supportive goods and services are not being satisfied within the town:

- gasoline stations
- clothing & clothing accessories stores
- sporting goods
- hobby, book & music stores
- miscellaneous store retailers
- non-store retailers
- food services & drinking places
- restaurants and other eating places

While employment in sales occupations is projected to grow by three percent, the increasing presence of e-commerce is expected to result in slight decline of cashiers in traditional brick and mortar stores. Given that Kittery is known as a tourist destination and has close proximity to several outlet stores, the gap analysis indicates that opportunities exist to expand the restaurant, hospitality, and service sectors.

The complete economic and housing analyses can be found in the report appendices.

ROAD CAPACITY AND CONGESTION

ROAD NETWORK

PNSY is accessed through several main routes (Figure 5). Drivers enter the vicinity via Route 236, I-95, Route 1, or the Route 1 Bypass, then use local roads to access the Shipyard gates. Gate 1 is most popular: employees reach the gate via Walker St. and Government St. through the Foreside neighborhood.

Reference: DRAFT Existing Conditions Report

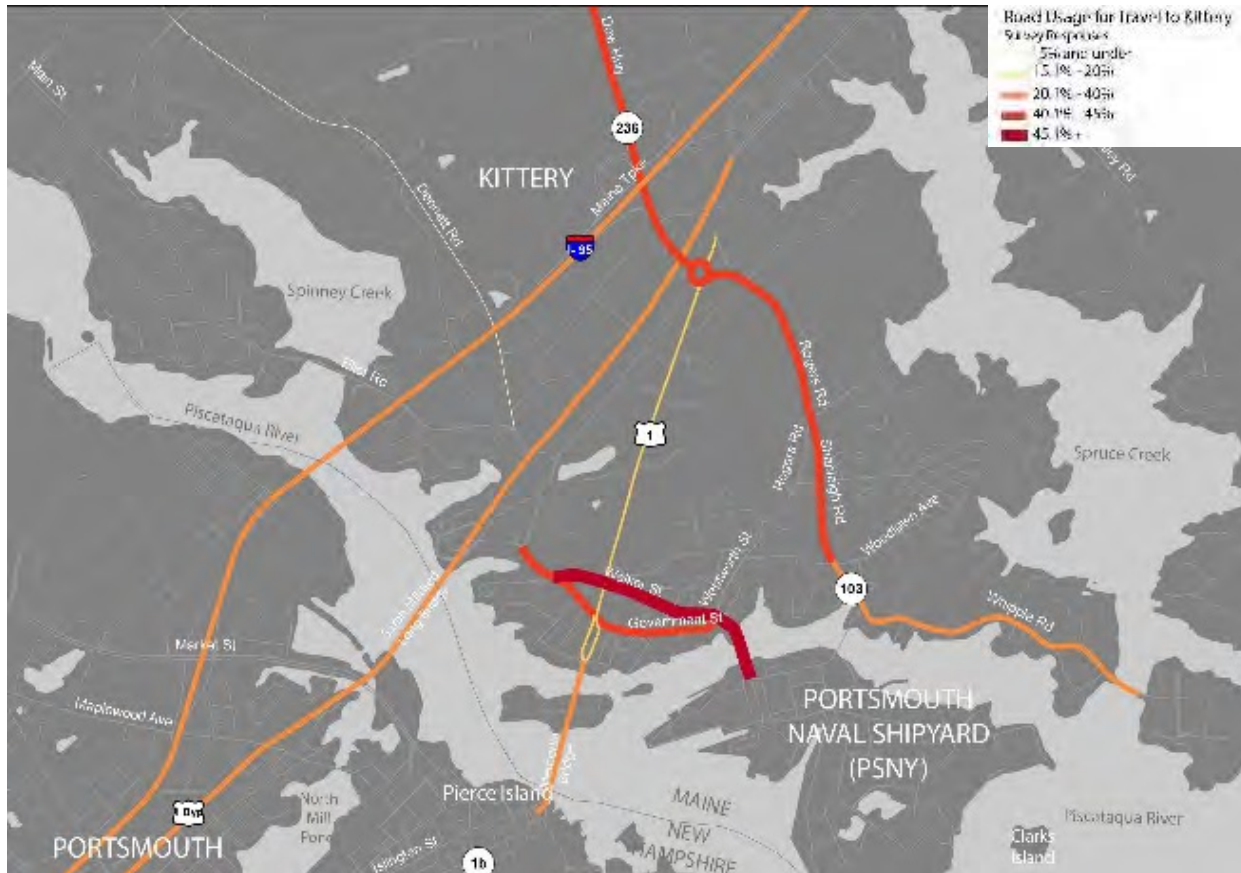


Figure 5. PNSY workers utilize several primary, regional roads that feed into Kittery

TRAFFIC VOLUMES

Hourly transportation counts on Route 236 reveal that the majority of PNSY workers commute before the general traffic peak in both the morning and evening peak periods. However, residual PNSY traffic contributes up to one-third of the volume during the peak hours. PNSY-generated traffic peaks primarily occur at 7 AM and 4 PM while general traffic peaks primarily occur at 8 AM and 5 PM.

Reference: DRAFT Existing Conditions Report

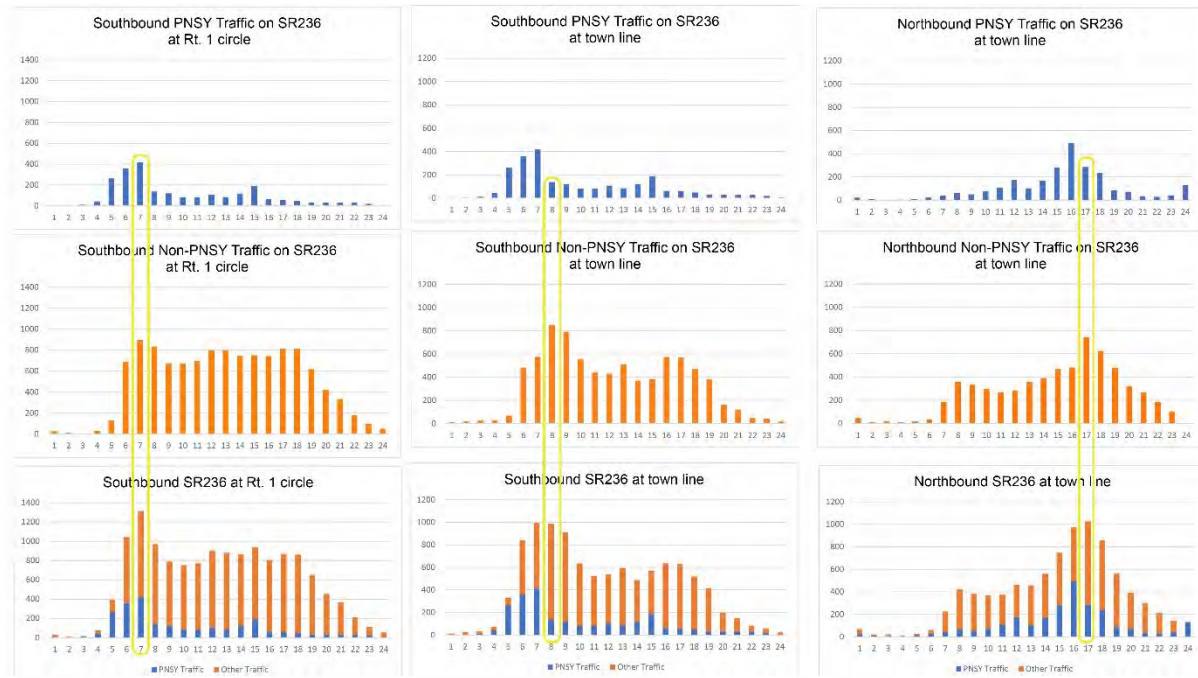


Figure 6. PNSY worker traffic (blue) forms only a smaller portion of overall traffic volumes at key access points into Kittery

ANNUAL AVERAGE DAILY TRAFFIC

As one would expect, the main linkages to PNSY have the highest annual average daily traffic (AADT, Figure 7). This includes Route 236 and Walker St. Despite relatively high AADT values, these local links still have ample capacity (Figure 8).

Reference: DRAFT Existing Conditions Report

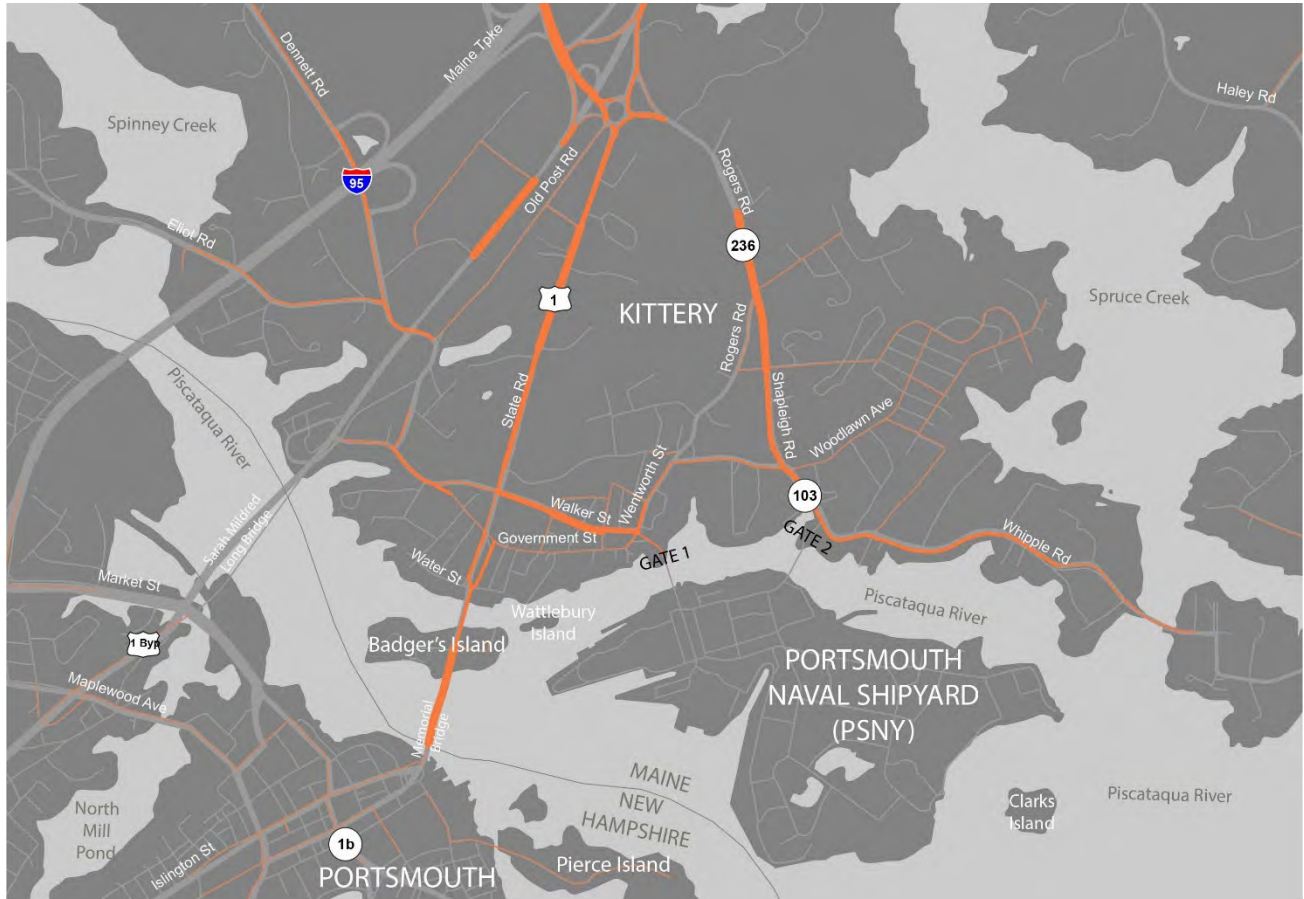


Figure 7. Roads leading to PNSY have high relative AADT but ample capacity

Reference: DRAFT Existing Conditions Report



Figure 8. Walker Street nearest Gate 1 has a higher ratio of Volume to Capacity but still doesn't exceed capacity. The majority of roads in Kittery are operating well under capacity.

CONGESTION POINTS

Worker arrivals have significant (but short-term) impact on a few congestion points in the PNSY vicinity. Intersections experiencing most levels of delay during the morning peak are at Route 1 and Walker St., Route 1 and Government St., and Walker St. and Wentworth St. (Figure 9). Overall evening congestion is impacted more by worker departures. Only two of the 11 analyzed intersections received a delay grade of C or better in the evening, compared to 6 during the morning commute, with delays concentrated at gateways to the arterial roadway system.

Reference: DRAFT Existing Conditions Report



Figure 9. Worker arrivals have minimal impact on AM intersection congestion

CRASHES

Crash patterns surrounding PNSY are generally proportional to traffic volume. From 2017-2019, the approaches to the Route 1 traffic circle were the largest safety concern: over 20 non-injury crashes and approximately 13 injury crashes occurred in this area (Figure 10). South of the traffic circle, Shapleigh Road and Route 1 also experienced a relatively higher number of crashes resulting in injury. No fatal crashes occurred in Kittery during this time period.

There are few crashes involving cyclists or pedestrians. Annual averages in Kittery are below five crashes, with a peak during the summer months. This peak may be attributed to the influx of seasonal tourists that increase bicycle, pedestrian, and vehicle volumes.

Reference: DRAFT Existing Conditions Report

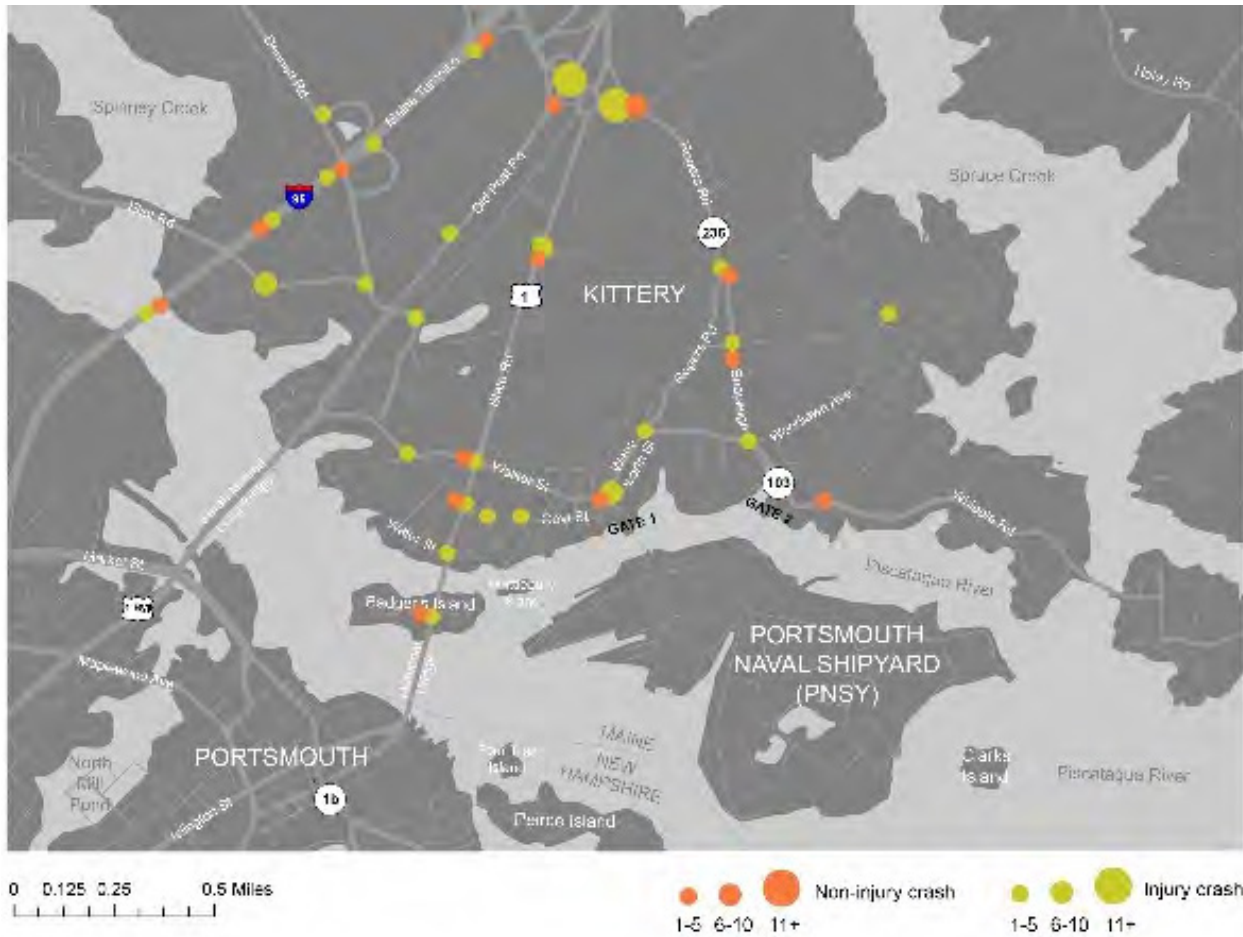


Figure 10. Crashes are generally proportionate to traffic volume

PARKING

PNSY contains over 5,000 on-site parking spaces. Currently, about 250 spaces are dedicated for equipment; 50 are reserved for HOV (3+ people) but are underutilized; and the remainder are regular spaces for employees. The Shipyard faces a parking shortage, with some employees arriving early just to get a spot or parking in illegal areas, resulting in parking tickets issued by the shipyard. It has developed several methods for alleviating this crunch. Two on-base circulators provide employees with afternoon and evening access to remote parking areas of the island. Additionally, some contractors use vans for drop-off near the Shipyard gate to avoid on-site parking. PNSY workers also rent parking spaces in various lots in Kittery, such as on Market Street, at the church, and at the urgent care hospital.

There are approximately 750 spaces in the vicinity of the Shipyard. On-street parking is located along Walker Street and Government Street. These spaces are free but subject to a 2-hour limit

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from 7 AM to 6 PM, except for holidays and Sundays. Off-street parking is generally free, except for two paid lots in Foreside. Some lots, such as several near the intersection of Rogers and Whipple, require permits. Peak utilization of these on- and off-street spaces collectively was just 57% during lunch hour, with individual lots showing higher and lower utilization as shown in Figure 11.

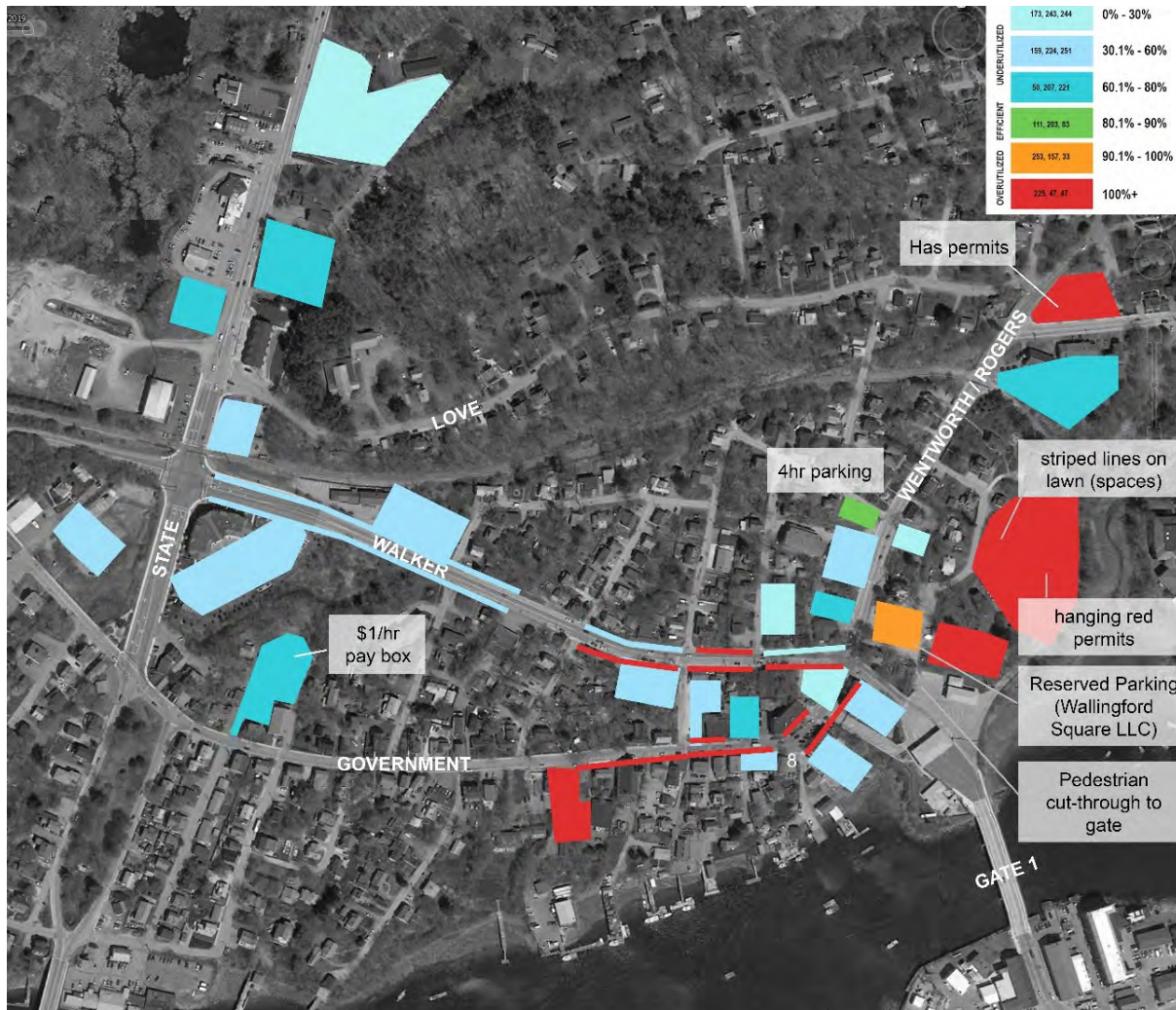


Figure 11. A few lots and on-street spaces nearest PNSY are full, while the majority of those within a walkable distance to PNSY are underutilized

COMMUTING MODESHARE

Driving remains the predominant means of transportation for PNSY employees. In 2011, 68% of employees drove alone to work. Almost one quarter of employees utilized a form of ride sharing for

Reference: DRAFT Existing Conditions Report

their commutes: 10% carpooled and 12% used vanpools. 6% used active transportation, with an even split between walking and cycling.

This compares favorably to mode shares in nearby areas (Figure 12). 84.5% of workers in Rockingham County drove alone to work from 2013-2017, while only 6.2% carpooled. Throughout the state of Maine, 79% of workers drove alone during this period, and 10% carpooled. In both Rockingham County and Maine less than 1% of workers used public transportation to get to work. This reflects the lack of transit options operating between workers' homes and their places of employment.

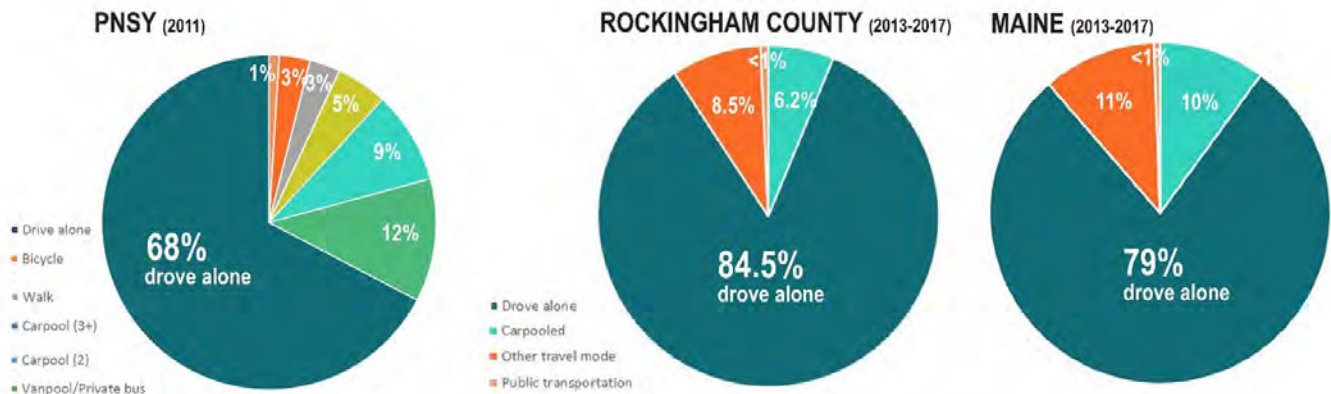


Figure 12. PNSY workers use alternative modes of transportation significantly more than the region and state

PUBLIC TRANSIT

Several COAST bus options exist to bring people to the Kittery/Portsmouth area (Figure 13). However, ridership doesn't align with most worker origins, suggesting that many employees have no choice but to drive to work. The most popular bus routes – routes 100, 101, and 103 – run from Somersworth, Dover, and Rochester, respectively. Morning bus routes drop passengers off near the Shipyard, while afternoon buses come on base to wait, load, and depart on schedule. The 41CC, a more local route, also services PNSY's Gate 1 and passes through downtown Portsmouth. Commuter routes are more popular than shorter-distance routes: Stafford County has higher transit ridership to York County than York County itself.

Within Kittery, bus stops for the express routes are limited to PNSY's Gate 1 and within the base itself (Figure 14). The local bus from Portsmouth makes more frequent stops.

Bus frequency varies. The express routes that service PNSY run once per peak period during weekdays. Other local and regional COAST routes run once or more per hour.

Reference: DRAFT Existing Conditions Report

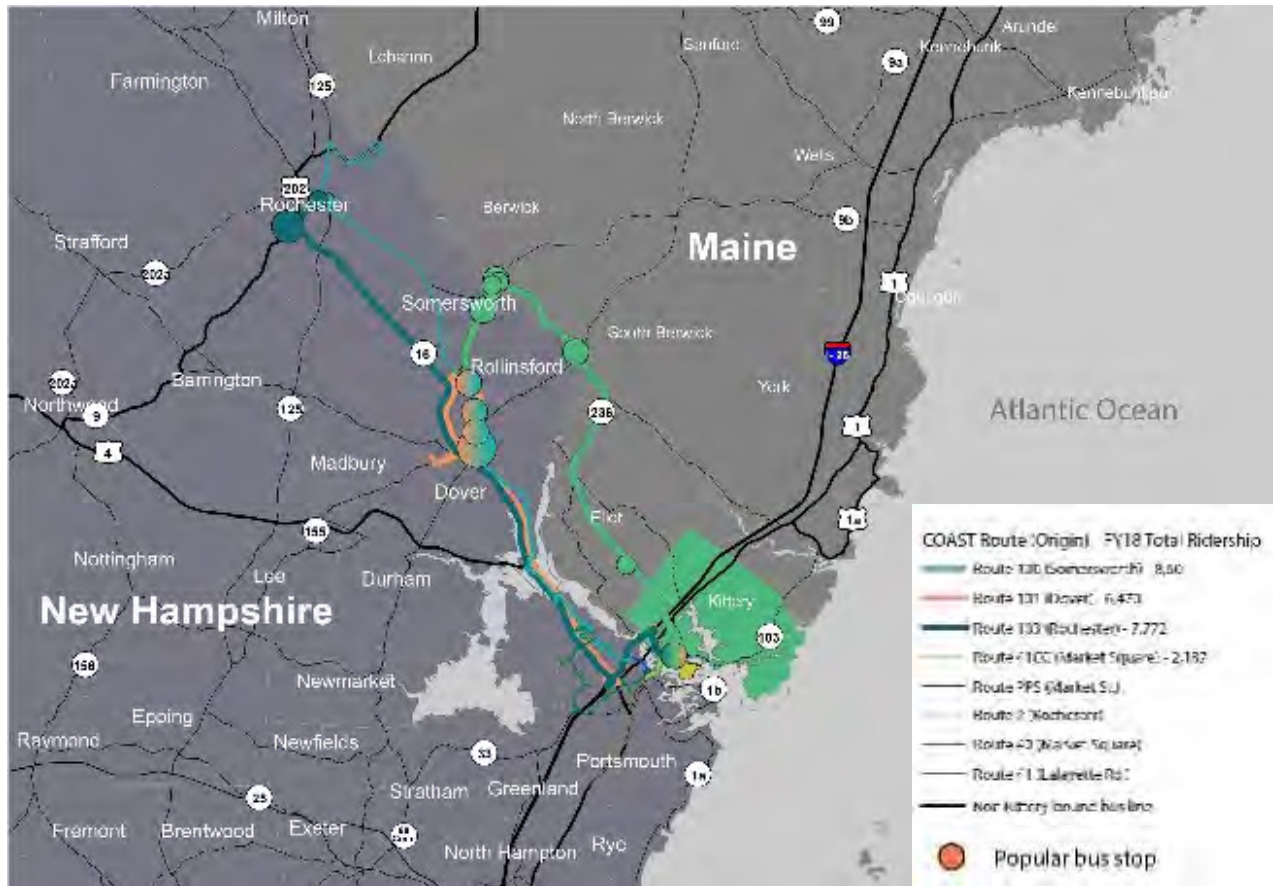


Figure 13. COAST bus routes bring commuters to PNSY but do not directly service employee residential hubs or provide express services

Reference: DRAFT Existing Conditions Report

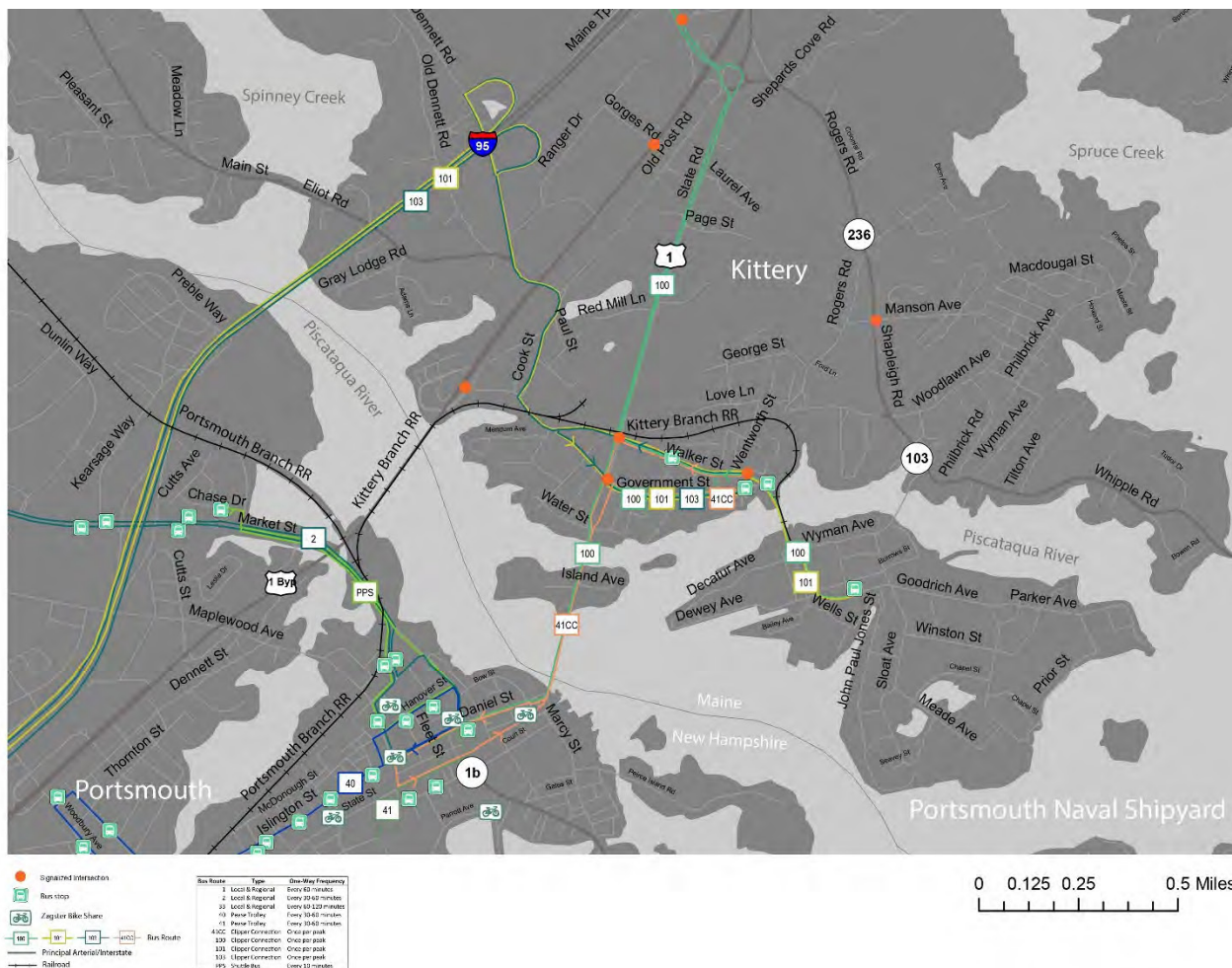


Figure 14. Four COAST bus routes serve downtown Kittery while two of them access the Shipyard

PARK & RIDES

Park and Ride lots supply 2,418 parking spaces within a 17-mile radius of PNSY. Park and Ride lots that service the express bus routes are the most popular, with some lots having an average usage near or above capacity in 2018. Almost half of the Park and Rides have an average usage of 35% or less. This includes two Park and Ride lots that are serviced by bus routes.

Reference: DRAFT Existing Conditions Report

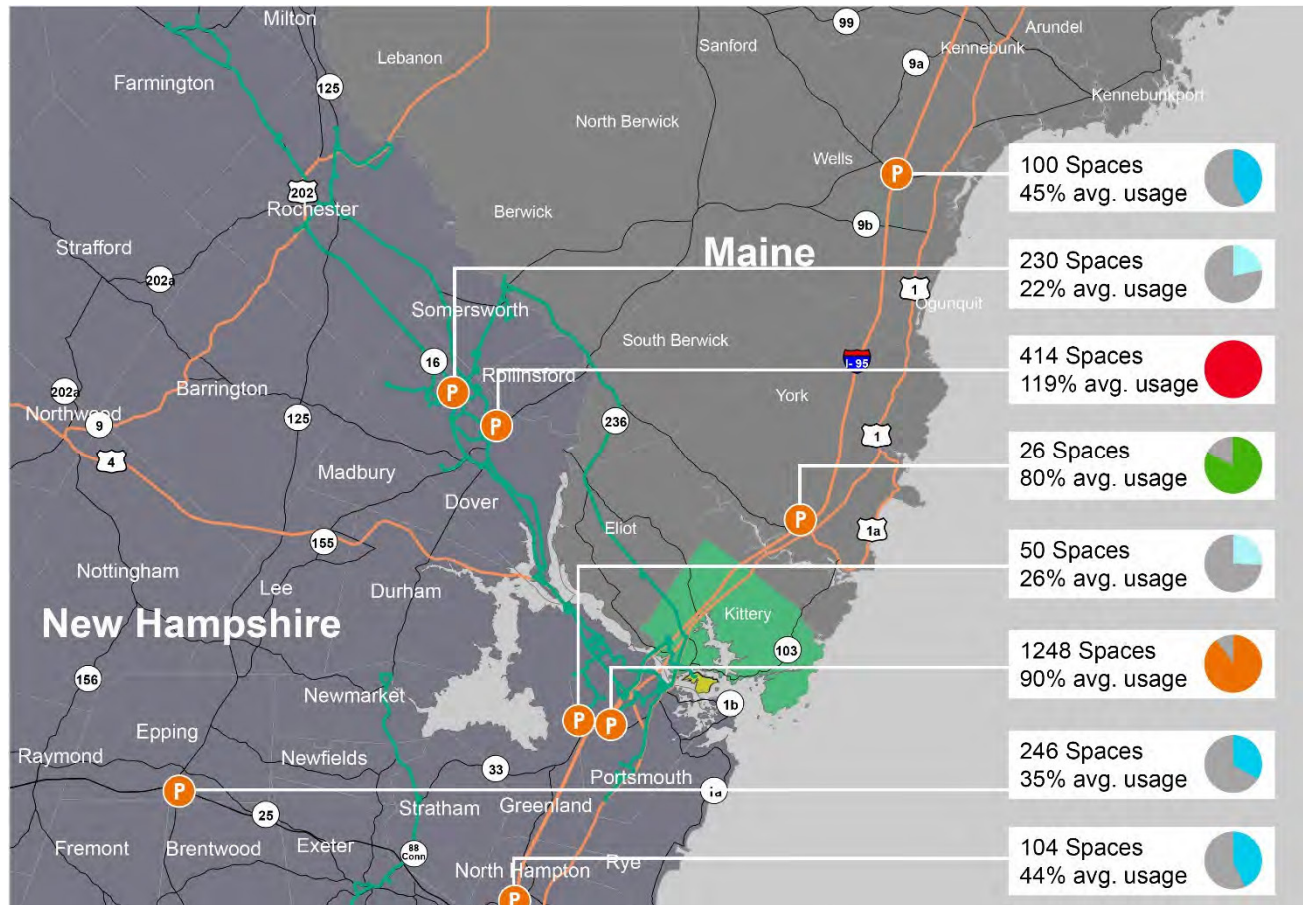


Figure 15. Only two of the eight identified regional Park and Rides are near or at full capacity

ALTERNATIVE TRANSPORTATION

Many regional alternative transportation resources exist for commuters. CommuteSMART Seacoast has a database of over 400 carpools and offers alternative transportation matching, while GoMaine’s vanpool database includes over 1,000 people. Other alternative transportation programs assist seniors and the disabled with shared transportation and door-to-door services.

PNSY also offers alternative transportation resources. The Transportation Incentive Program (TIP) for employees includes a pre-loaded card (up to \$240/month) for mass transit expenses, including both COAST service and employee-operated vanpools. This program has approximately 800 participants. The Shipyard operated 63 vanpools and is currently working with V Ride, a Maine program, so more people can be reimbursed for using their personal vehicles for vanpools. PNSY offers 50 HOV parking spaces, although these are currently underutilized. It is also considering partnerships to support a bikeshare program. This could work synergistically with the Zagster bikeshare currently operating in Portsmouth.

Reference: DRAFT Existing Conditions Report

CYCLING

Kittery features very little bicycle infrastructure. The Eastern Trail, which runs from Florida to Calais, Maine, passes through the town via the Memorial Bridge before heading west on Government Street towards Dennett Road. Memorial Bridge has on-street bicycle lanes, but the remainder of the route lacks cycling infrastructure, markings, and often shoulders.

While Kittery itself does not have a bikeshare system, the Zagster docked bikeshare program is underway in neighboring Portsmouth (Figure 16). Zagster currently operates seven stations in the downtown Portsmouth area. Each station contains five bicycles, with a capacity for ten. The station closest to Kittery and PNSY has the highest utilization rate, indicating a demand for bikeshares across the river in Kittery.

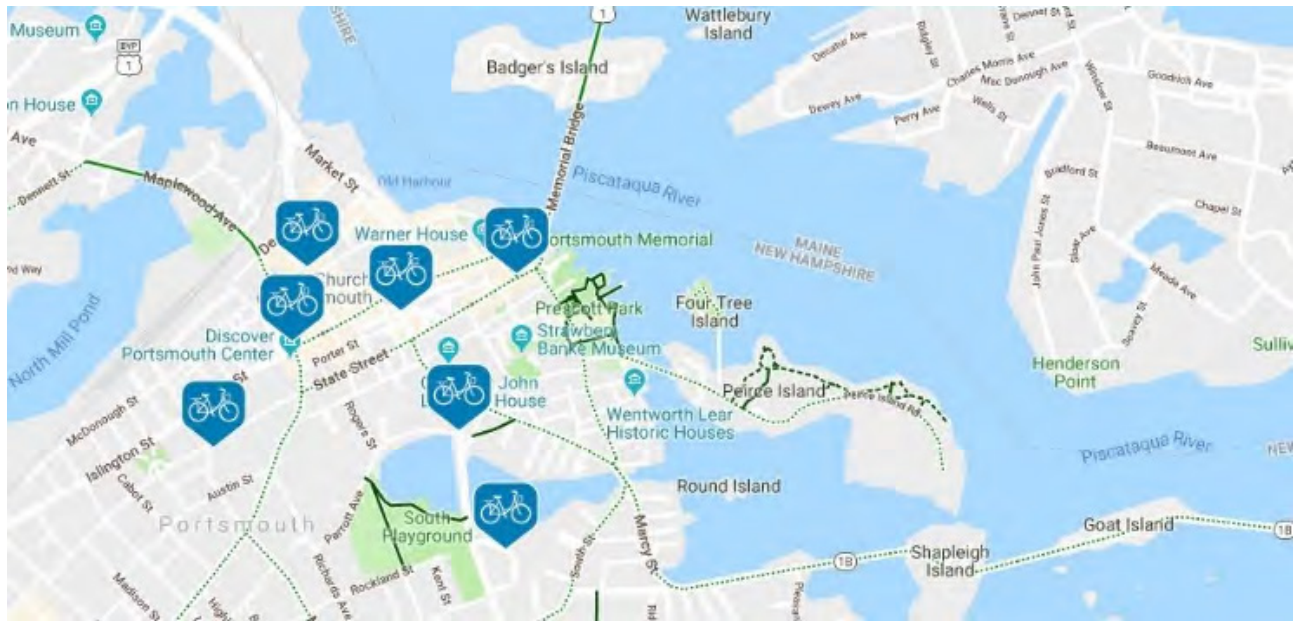


Figure 16. Zagster offers bikeshare stations around downtown Portsmouth but there are no current arrangements with Kittery for the same services

Reference: DRAFT Existing Conditions Report

HOUSING

As PNSY anticipates growth in its workforce, the availability of local housing availability (and affordability) for workers of PNSY is a significant concern. As of 2018, only 457 (6.5%) of PNSY’s employees live in Kittery (including 26 houses located on the base). Aside from Kittery, Rochester, Berwick, and Sanford are home to over 350 employees each. It is important to note that PNSY employees are generally not living in the region’s higher population growth areas. A handful of PNSY workers travel in excess of 150 miles to commute to the base. A significant amount are concentrated in the Lebanon, South Berwick, Wells, York, Eliot and Barrington (Figure 17).

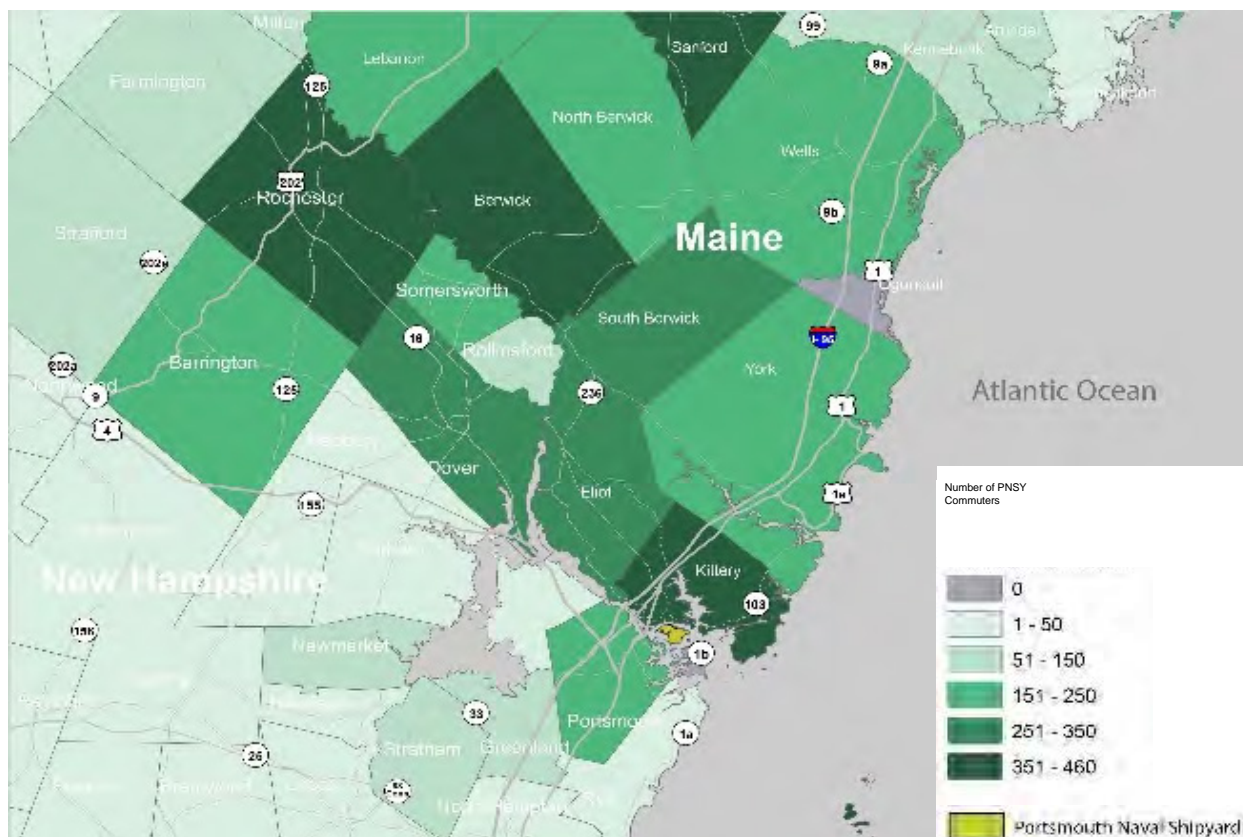


Figure 17. The majority of PNSY workers no longer live close to the shipyard

NSY Portsmouth Homes serves active duty Navy families assigned to Portsmouth Naval Shipyard as well as qualified military retirees, DoD civilian employees and general public applicants. NSY Portsmouth Homes leases 212 single family attached housing units within two distinct neighborhoods, an on-base neighborhood and The Admiralty, an off-base neighborhood. The on-base neighborhood consists of 26 single family homes and is located near the Exchange, Commissary and base gym, is open to qualified Active Military only and It offers a variety of two– to six-bedroom homes. The Admiralty Village neighborhood is located off-base in Kittery. The

Reference: DRAFT Existing Conditions Report

Admiralty Village neighborhood consists of 186 two to four-bedroom single family homes and is open to Active Duty military personnel stationed at Portsmouth Naval Shipyard, military retirees, DoD employees and the general public. Both rental communities have waiting lists.

For those seeking their own housing, the discrepancy between income and home prices affects PNSY workers: as of 2018, only 457 (6.5%) of PNSY's employees live in Kittery. This includes 26 houses located on the base. Many PNSY employees and others who work in the area choose to purchase homes farther from their places of work in order to avoid paying high prices for homes.

Space constraints prevent the ability of pursuing new housing development on base. The Navy is also unable to purchase land for housing development but may participate in public-private-partnerships (PPPs).

AFFORDABILITY

The slow population growth in towns closest to PNSY may be a function of high home values in the Kittery and Portsmouth area. In 2018, median home values in coastal towns exceeded \$500,000 (Figure 18). Inland homes, meanwhile, had a median value below \$250,000. **In Kittery and Portsmouth, 85-90% of homes sold in 2017 were unattainable.** In 2018, Kittery had a total of 5,198 housing units, of which 56.4 percent were owner-occupied. The percent of renter-occupied homes in the Town of Kittery is higher (28.9 percent) than York County (20 percent). The average household size of an owner-occupied unit in Kittery was higher (2.29) than renter-occupied units (2.12) (ESRI, 2019).

Reference: DRAFT Existing Conditions Report

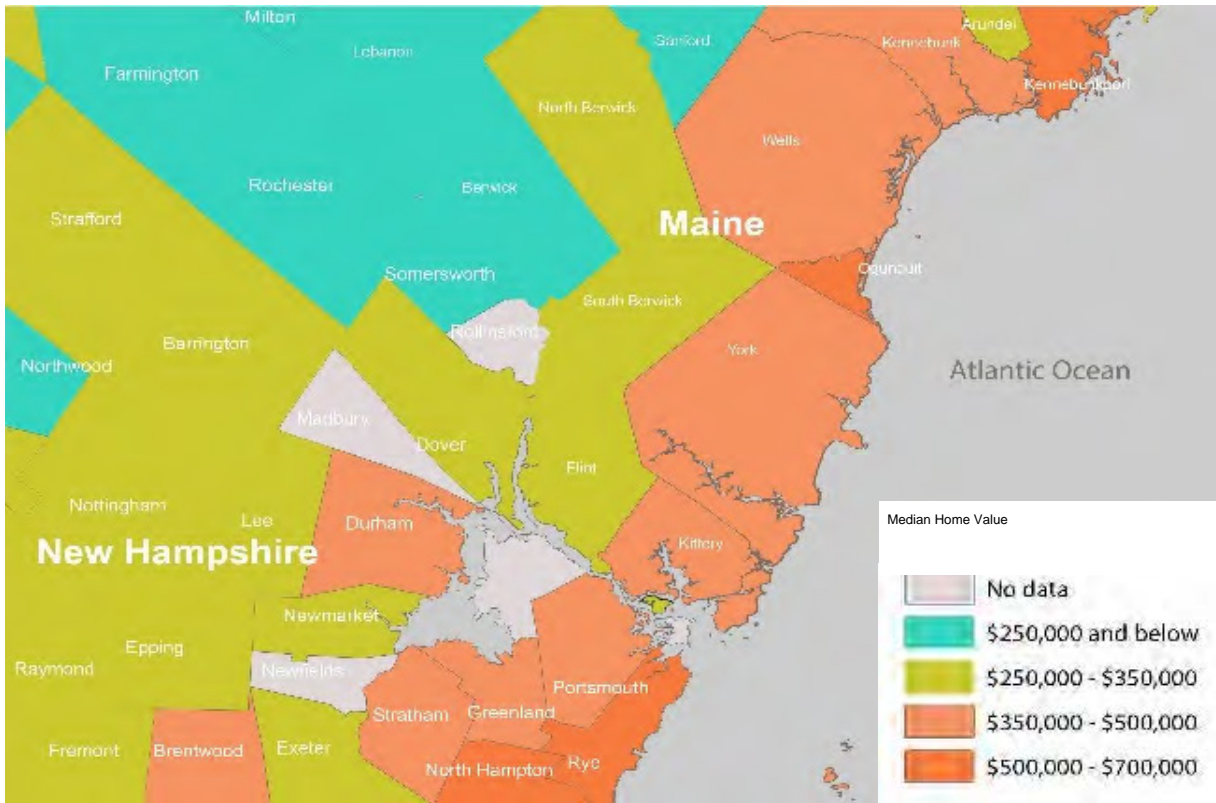


Figure 18. There is a large discrepancy between home values along the coast and inland

Housing concerns in Kittery are reflection of national trends, as well. According to the US Housing and Urban Development (HUD), households that spend more than 30 percent of their income on housing costs are “cost burdened,” and households that spend more than 50 percent of their income on housing are “severely cost burdened” and may have difficulty affording necessities such as food, clothing, transportation and medical care.

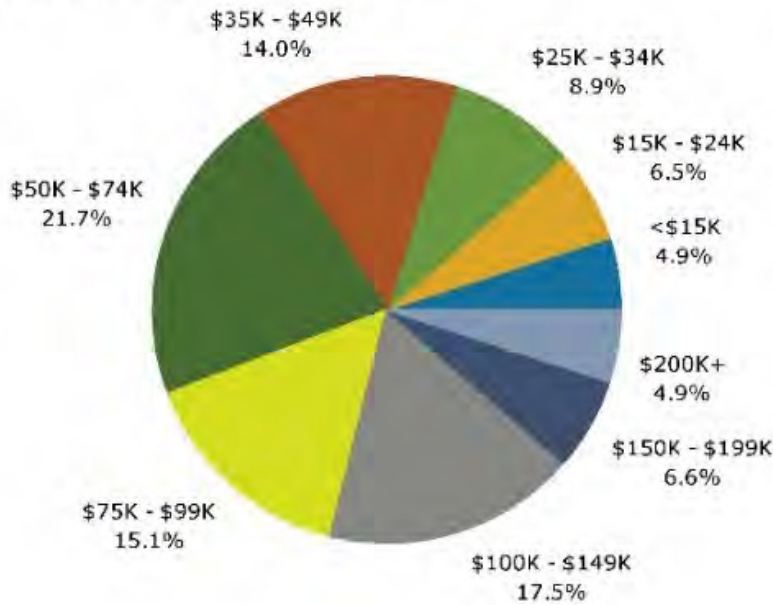
In 2017, the annual median income needed to afford purchasing a home in Kittery was \$101,515 (Maine State Housing Authority, 2017). In a September 2018 report to the Kittery Town Council, the Kittery Housing Working Group noted that the median home price was \$350,000 in 2017. Thus, approximately 72 percent of households in Kittery were unable to afford to buy/own a home.

Housing affordability appears to be more acute for rental households. The average rent for a 2-bedroom unit was \$1,093 (Maine State Housing Authority, 2017). Approximately 40 percent of rental households pay 35 percent or greater of their household income as opposed to 10 percent of owner-occupied households (American Fact Finder, US Census 2017).

Reference: DRAFT Existing Conditions Report

In 2019, the Town of Kittery added 27 additional housing units. At the same time, 61 homes were listed for sale, with a median listing price of \$420,000. Average rental rates averaged between \$1,750 and \$1,900 (Kittery Budget Proposal Fiscal Year 2020, Presentation).

2018 Household Income



ESRI Demographic and Income Profile. Kittery Maine. 2019

Figure 19. Approximately 45% of household incomes in Kittery are below the national median household income of \$56,000

KITTERY HOUSING WORKING GROUP

Within the Town of Kittery, affordable workforce housing options currently are and will continue to be critical concern in the coming years. The town established the Kittery Housing Workgroup in 2018. The Workgroup is tasked with understanding Kittery’s housing needs, educating the community on the affordable housing challenges, and to identify short-term and long-term implementing solutions that would remove barriers to providing affordable housing options. This workgroup identified proposed text amendments, including the Accessory Dwelling Unit ordinance. Kittery has processed a zoning text amendment to ease restrictions on the creation of accessory dwelling units (ADU) on residential parcels. Allowing the development of ADUs on residential would provide a mechanism for existing residents to remain in their homes and neighborhoods while increasing the supply of housing options in a manner that is compatible with the existing housing stock.

In 2018, the Town of Kittery replaced the Business – Park (BP) zone district with a new Mixed Use - Neighborhood (MU-N) district. This new MU-N district is intended to encourage higher density, mixed-use development at appropriate locations, to provide increased housing opportunities and a

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Reference: DRAFT Existing Conditions Report

desirable setting for business while balancing such increased development with environmentally-conscious and ecologically-sensitive use of land.

MAINE HOUSING BONDS

The Maine State Housing Authority is accepting eligible proposals for new housing for older adults. A \$15,000,000 Housing Bond will be used to leverage private and other funds to provide affordable housing for low-income households headed by a person 55 years of age or older. Funds can be used for the construction of new energy-efficient affordable housing and the adaptive reuse of existing structures. Funding will be awarded to eligible projects on a first-come, first-served basis.

The complete housing analysis can be found in the report appendices.

ENVIRONMENTAL ANALYSIS

The complete environmental analysis can be found in the report appendices.

APPENDIX B

Public Survey Results

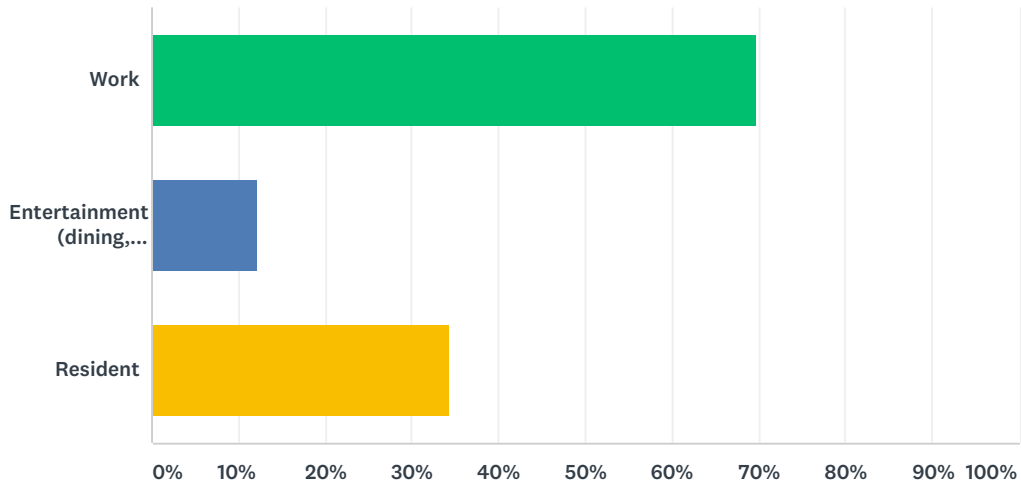
Town of Kittery and Portsmouth Naval Shipyard Joint Land Use Study
December 2019

Q1 What is your home zip code?

Answered: 573 Skipped: 0

Q2 What is your primary reason for traveling to or through downtown Kittery?

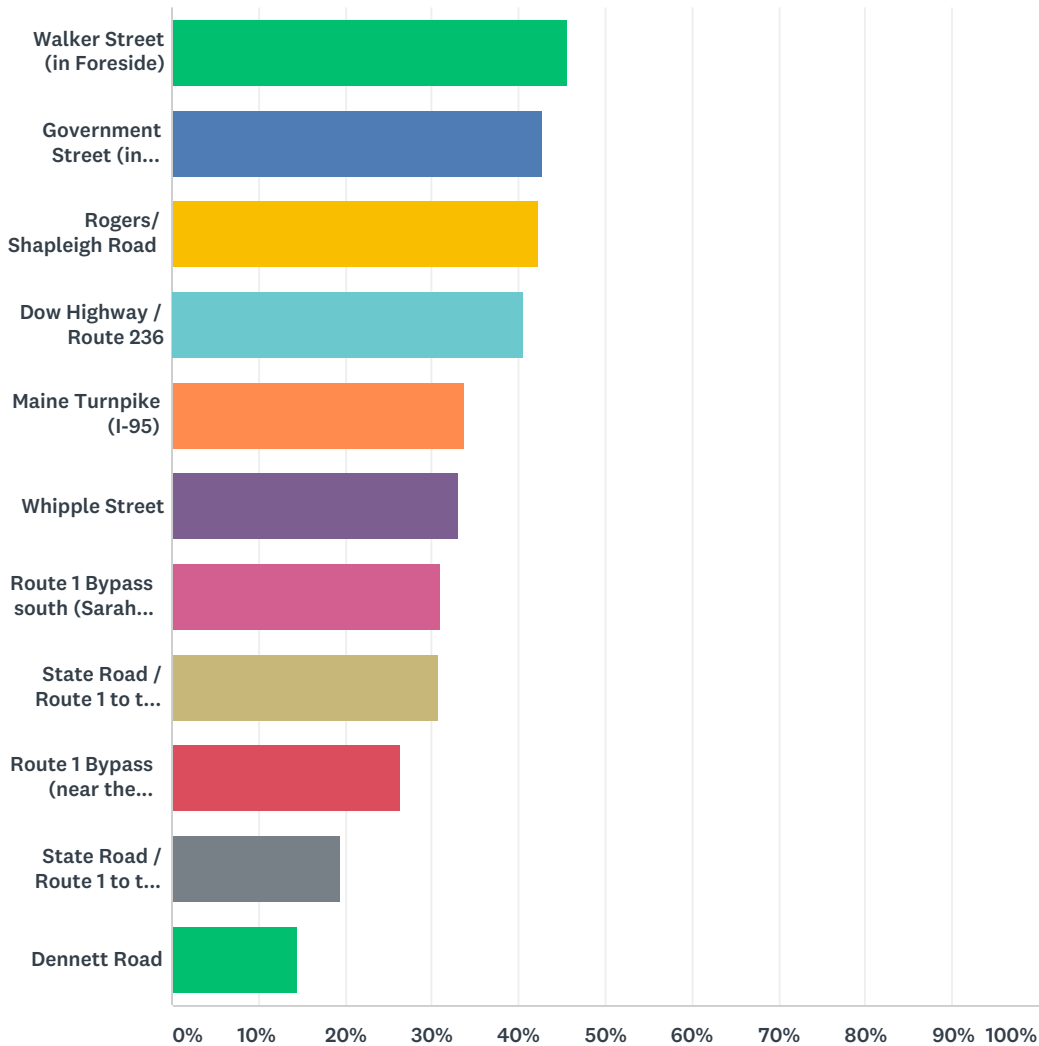
Answered: 573 Skipped: 0



ANSWER CHOICES	RESPONSES	
Work	69.63%	399
Entertainment (dining, tourism, shopping)	12.04%	69
Resident	34.38%	197
Total Respondents: 573		

Q3 Which road(s) do you typically utilize to access downtown Kittery/Foreside (select all that apply)

Answered: 573 Skipped: 0



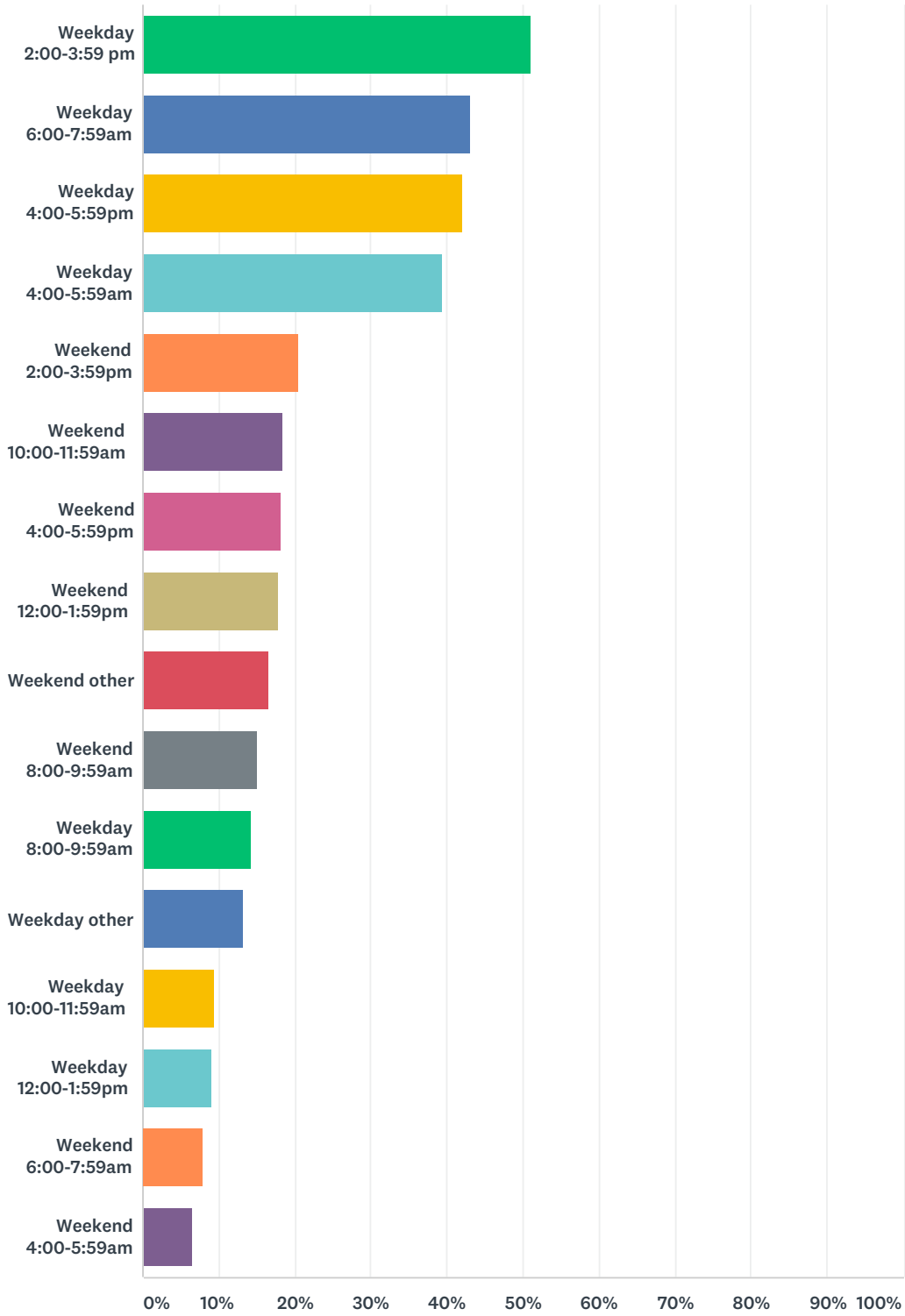
ANSWER CHOICES	RESPONSES	
Walker Street (in Foreside)	45.55%	261
Government Street (in Foreside)	42.58%	244
Rogers/ Shapleigh Road	42.23%	242
Dow Highway / Route 236	40.66%	233
Maine Turnpike (I-95)	33.68%	193
Whipple Street	32.98%	189
Route 1 Bypass south (Sarah Long Bridge)	30.89%	177
State Road / Route 1 to the south (Memorial Bridge)	30.72%	176
Route 1 Bypass (near the roundabout)	26.35%	151

JLUS Public Survey

State Road / Route 1 to the north (outlets)	19.55%	112
Dennett Road	14.49%	83
Total Respondents: 573		

Q4 Which day(s) of the week do you typically travel to/through Kittery (Foreside)? (select all that apply)

Answered: 573 Skipped: 0



ANSWER CHOICES

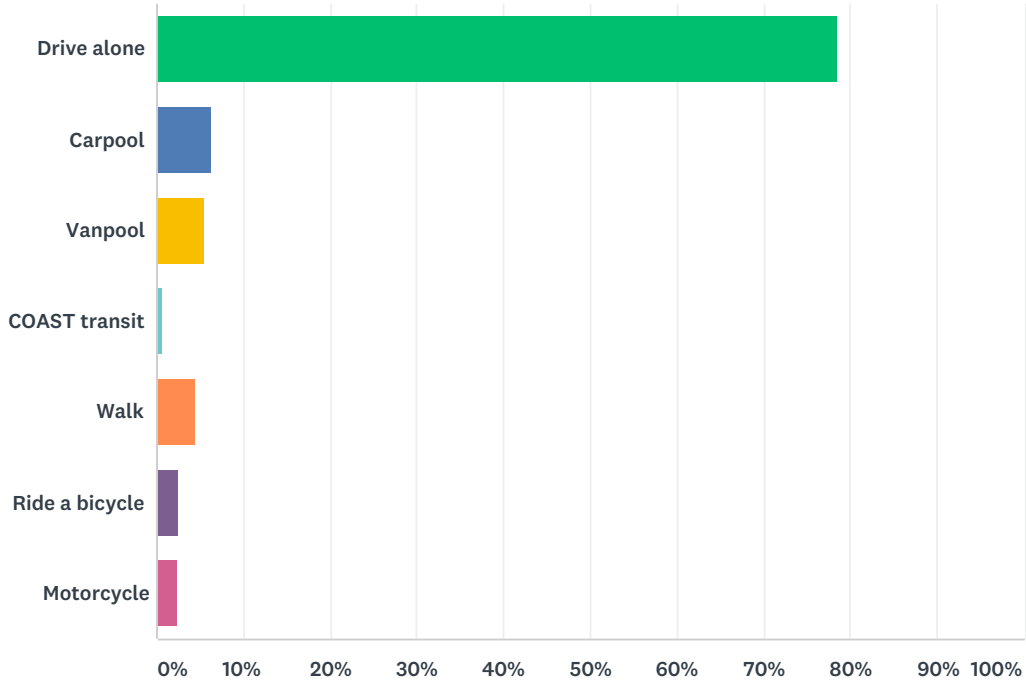
RESPONSES

JLUS Public Survey

Weekday 2:00-3:59 pm	51.13%	293
Weekday 6:00-7:59am	43.11%	247
Weekday 4:00-5:59pm	42.06%	241
Weekday 4:00-5:59am	39.27%	225
Weekend 2:00-3:59pm	20.59%	118
Weekend 10:00-11:59am	18.50%	106
Weekend 4:00-5:59pm	18.15%	104
Weekend 12:00-1:59pm	17.80%	102
Weekend other	16.58%	95
Weekend 8:00-9:59am	15.01%	86
Weekday 8:00-9:59am	14.31%	82
Weekday other	13.09%	75
Weekday 10:00-11:59am	9.42%	54
Weekday 12:00-1:59pm	9.08%	52
Weekend 6:00-7:59am	7.85%	45
Weekend 4:00-5:59am	6.46%	37
Total Respondents: 573		

Q5 What is the primary mode of travel you typically use on a weekday?

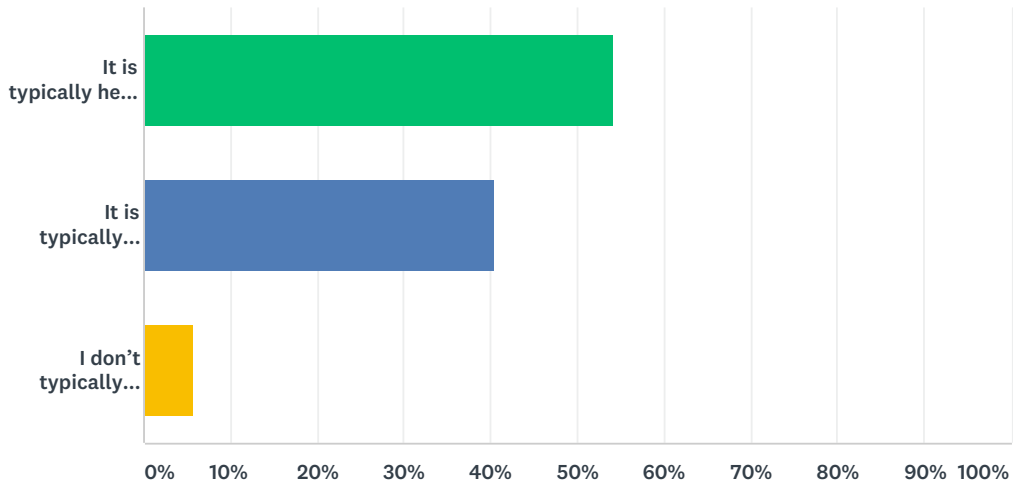
Answered: 573 Skipped: 0



ANSWER CHOICES	RESPONSES	
Drive alone	78.53%	450
Carpool	6.28%	36
Vanpool	5.41%	31
COAST transit	0.70%	4
Walk	4.36%	25
Ride a bicycle	2.44%	14
Motorcycle	2.27%	13
TOTAL		573

Q6 When you travel to/through Kittery, what is your general perception about traffic?

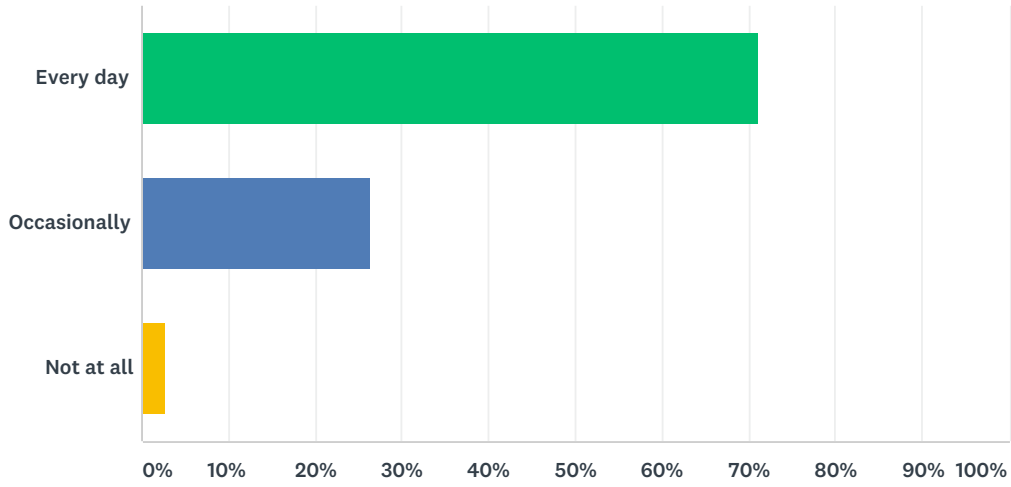
Answered: 573 Skipped: 0



ANSWER CHOICES	RESPONSES	
It is typically heavy and causes major disruptions	54.10%	310
It is typically manageable and causes minor delays	40.31%	231
I don't typically encounter traffic	5.58%	32
TOTAL		573

Q7 How often does shipyard traffic affect your travel to/through Kittery?

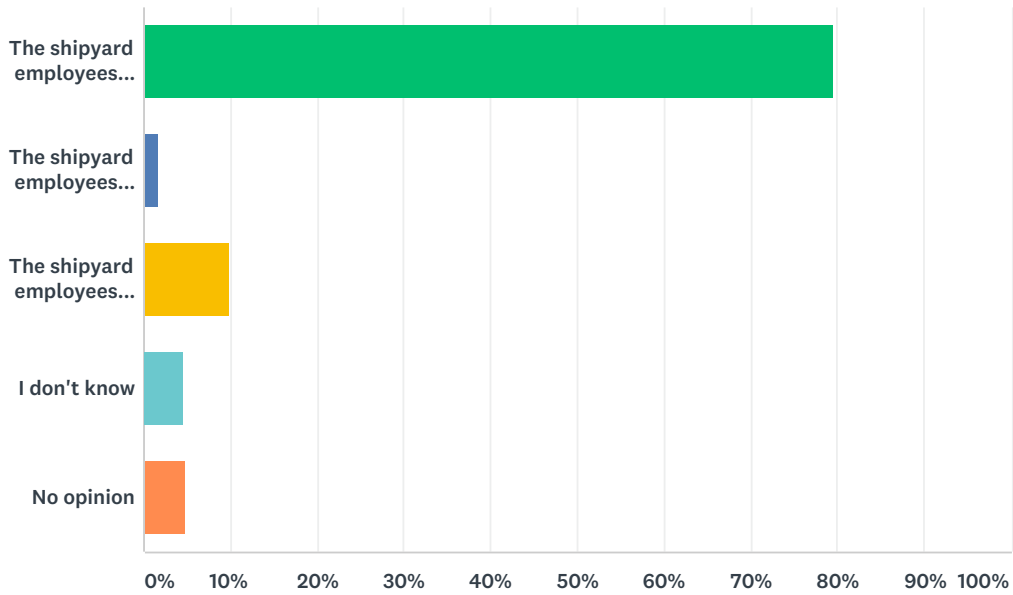
Answered: 573 Skipped: 0



ANSWER CHOICES	RESPONSES	
Every day	71.03%	407
Occasionally	26.35%	151
Not at all	2.62%	15
TOTAL		573

Q8 What is your general perception about the impact of the Portsmouth Naval Shipyard in the region?

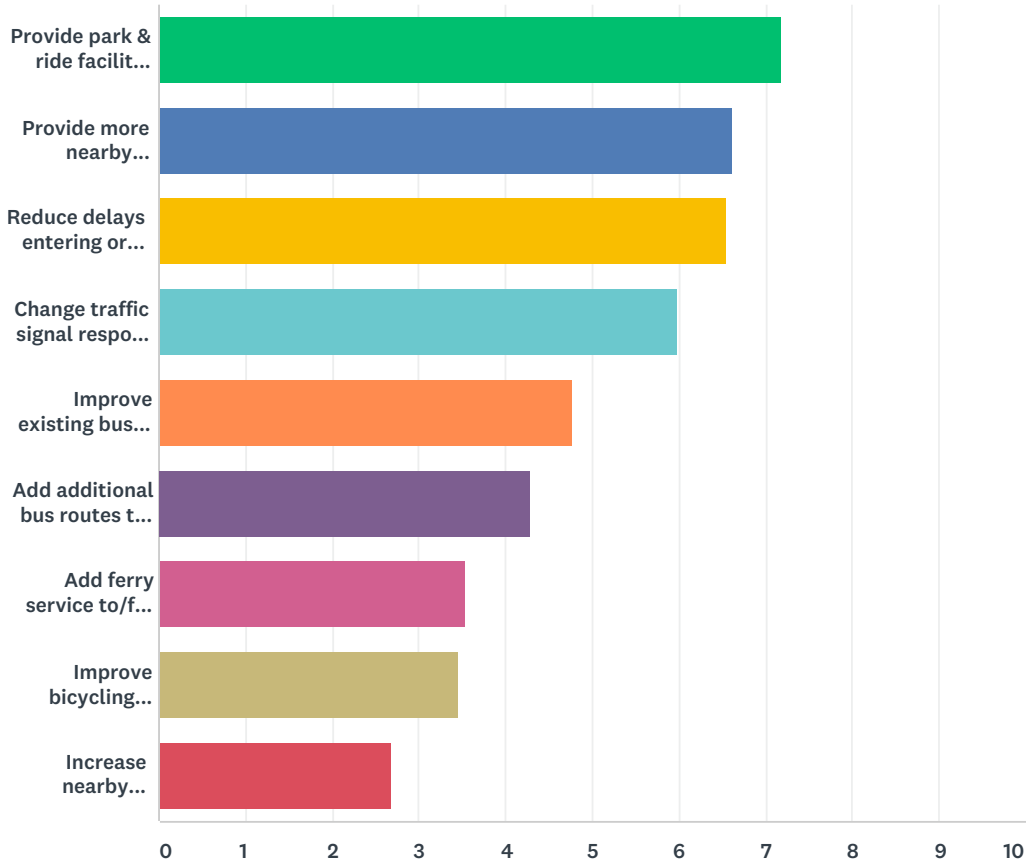
Answered: 573 Skipped: 0



ANSWER CHOICES	RESPONSES	
The shipyard employees and/or operations generally have a positive impact on the region	79.41%	455
The shipyard employees and/or operations generally don't have an impact on the region	1.57%	9
The shipyard employees and/or operations generally have a negative impact on the region	9.77%	56
I don't know	4.54%	26
No opinion	4.71%	27
TOTAL		573

Q9 Various stakeholders have suggested a number of ideas for addressing the PNSY impacts, which helps focus the study team’s investigation. Please rank the following suggestions for further exploration by this JLUS, with ‘1’ being the most preferred:

Answered: 573 Skipped: 0



	1	2	3	4	5	6	7	8	9	TOTAL	SCORE
Provide park & ride facilities connected by frequent shuttle	23.56% 135	24.61% 141	20.42% 117	18.32% 105	6.81% 39	3.32% 19	1.75% 10	1.05% 6	0.17% 1	573	7.17
Provide more nearby off-shipyard parking to walk to/from	20.24% 116	20.24% 116	20.59% 118	13.79% 79	8.73% 50	5.76% 33	4.19% 24	3.84% 22	2.62% 15	573	6.61
Reduce delays entering or exiting the shipyard	29.84% 171	13.61% 78	14.83% 85	12.57% 72	6.63% 38	8.55% 49	5.41% 31	5.06% 29	3.49% 20	573	6.54
Change traffic signal response to reduce delays	13.61% 78	20.59% 118	13.44% 77	15.53% 89	9.77% 56	8.73% 50	7.85% 45	5.76% 33	4.71% 27	573	5.98

JLUS Public Survey

Improve existing bus service/frequency	1.75% 10	5.93% 34	9.25% 53	11.52% 66	28.80% 165	20.24% 116	12.57% 72	7.50% 43	2.44% 14	573	4.77
Add additional bus routes to other places	1.57% 9	3.84% 22	7.16% 41	9.60% 55	14.49% 83	30.02% 172	19.72% 113	10.65% 61	2.97% 17	573	4.28
Add ferry service to/from New Hampshire	4.01% 23	5.24% 30	6.11% 35	6.98% 40	10.99% 63	6.81% 39	13.44% 77	21.99% 126	24.43% 140	573	3.54
Improve bicycling facilities (e.g. bike racks, bike lanes)	1.75% 10	3.32% 19	4.71% 27	6.81% 39	8.20% 47	11.17% 64	25.48% 146	28.27% 162	10.30% 59	573	3.45
Increase nearby affordable housing options	3.66% 21	2.62% 15	3.49% 20	4.89% 28	5.58% 32	5.41% 31	9.60% 55	15.88% 91	48.87% 280	573	2.67

Q10 Is there a specific idea or improvement to improve either your commute or general mobility through the neighborhood that you would like to share?

Answered: 441 Skipped: 132

Q11 Are there non-traffic related concerns about shipyard operations that we should be aware of?

Answered: 368 Skipped: 205

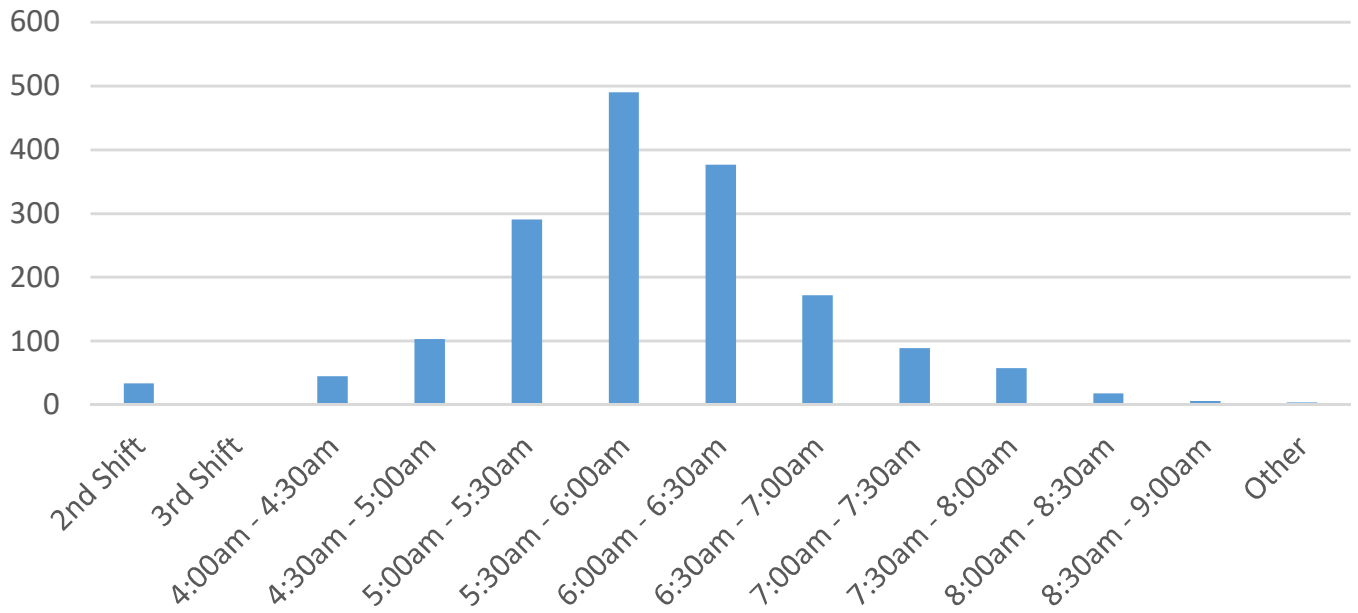
Q12 Do you have a specific idea or improvement for this concern?

Answered: 357 Skipped: 216

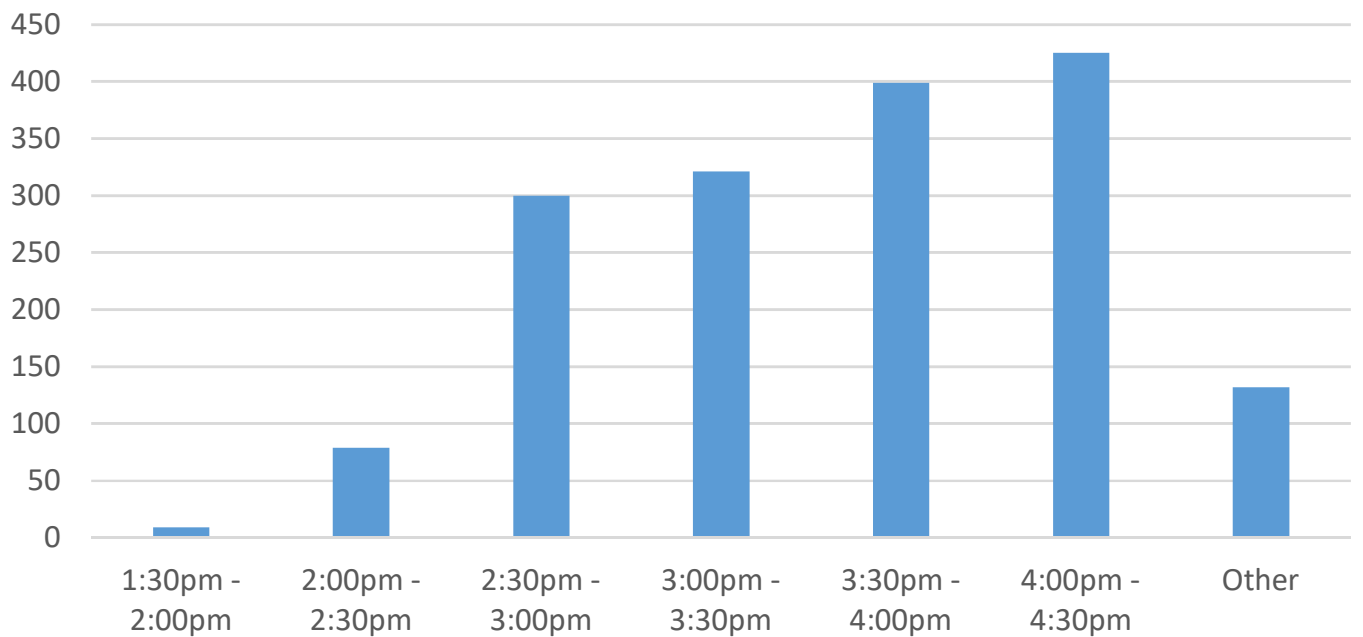
APPENDIX C

PNSY Survey Results

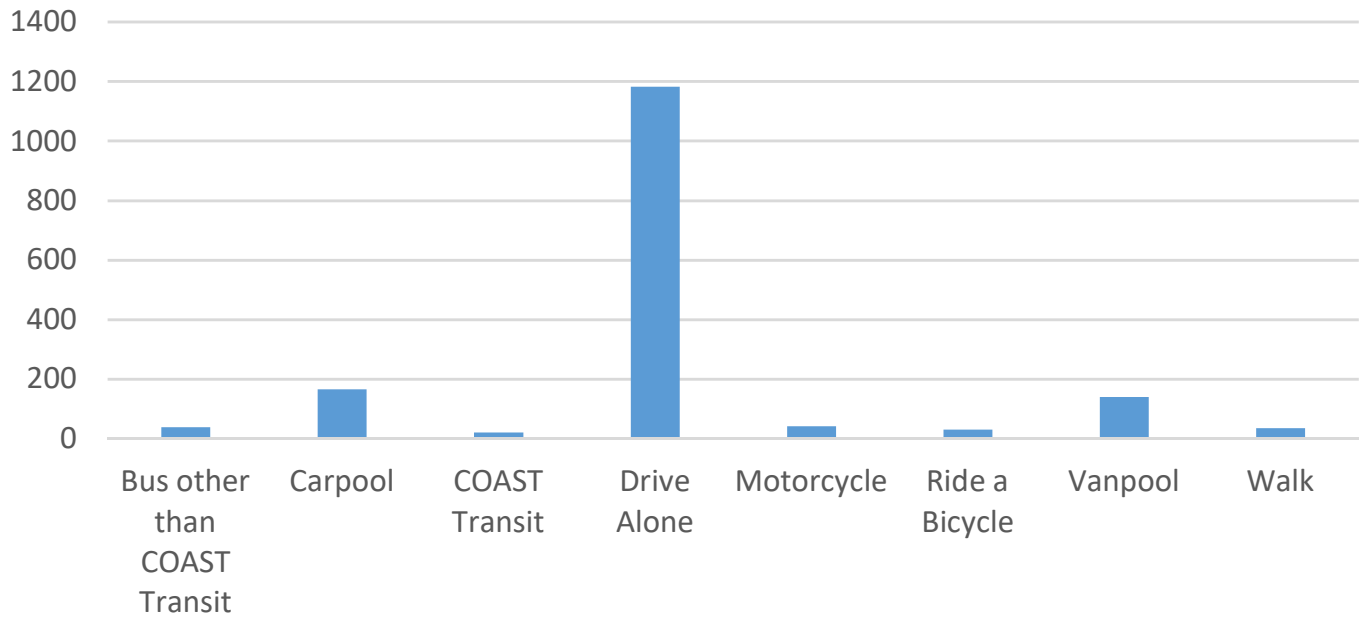
What time do you typically arrive at PNSY?



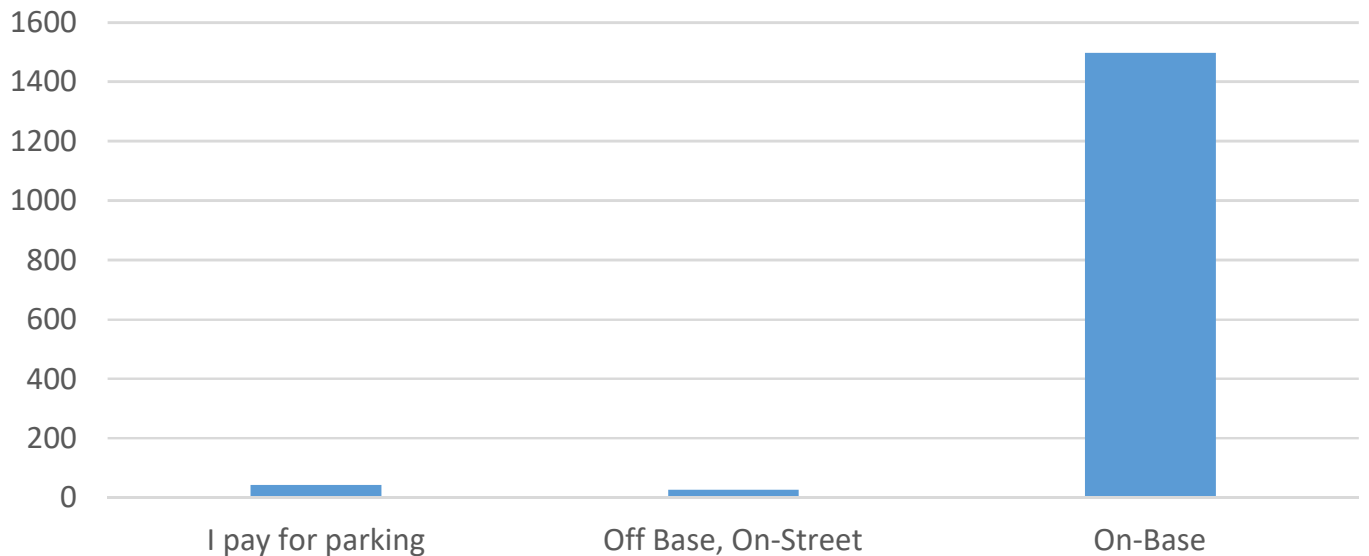
What time do you typically depart PNSY?



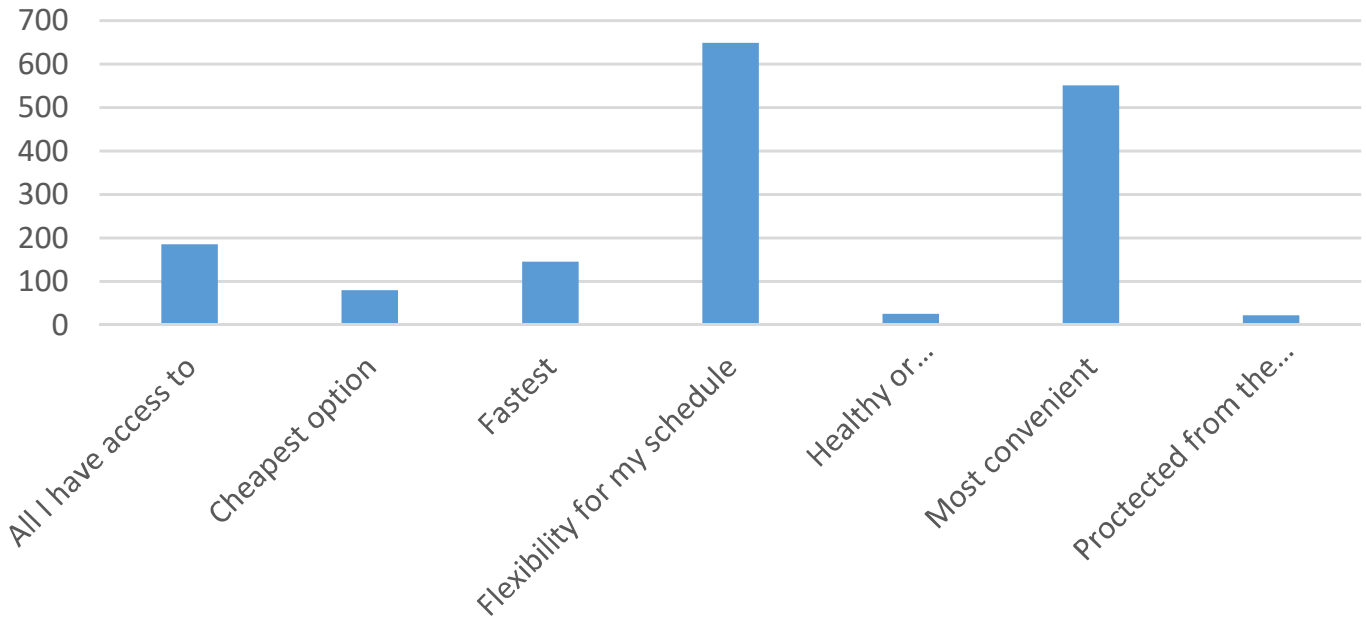
What mode of travel do you typically take?



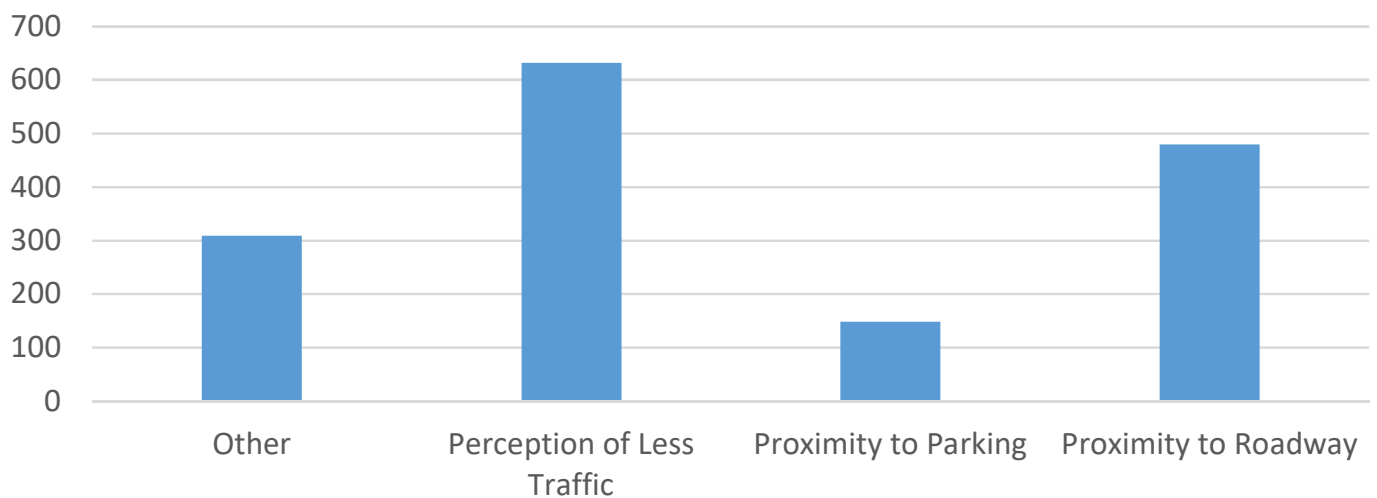
If you drive alone and do not pay for parking, where do you typically park?



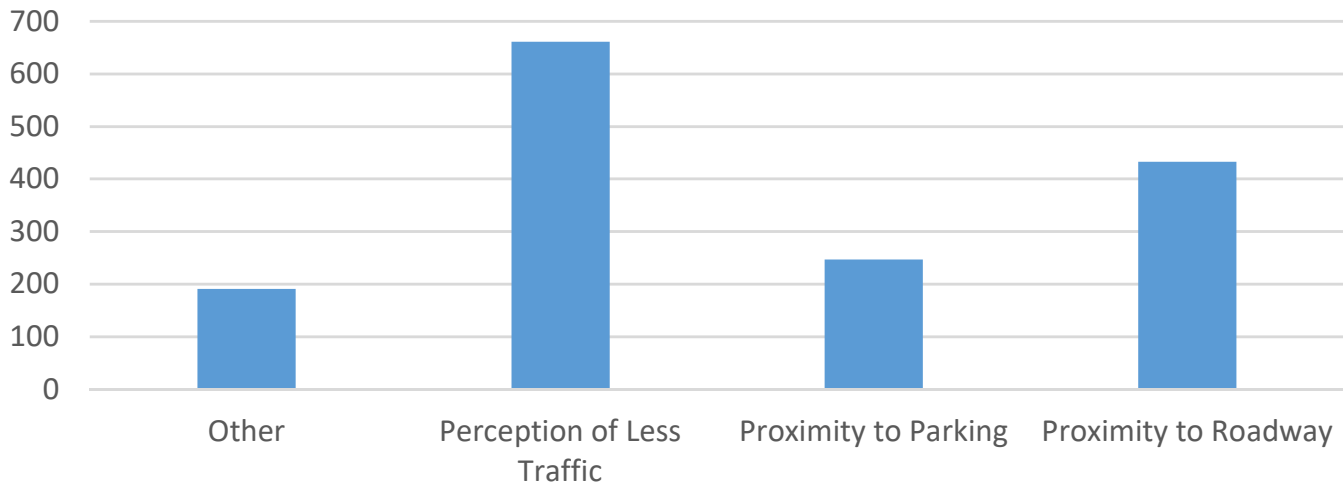
What most influences your choice of transportation?



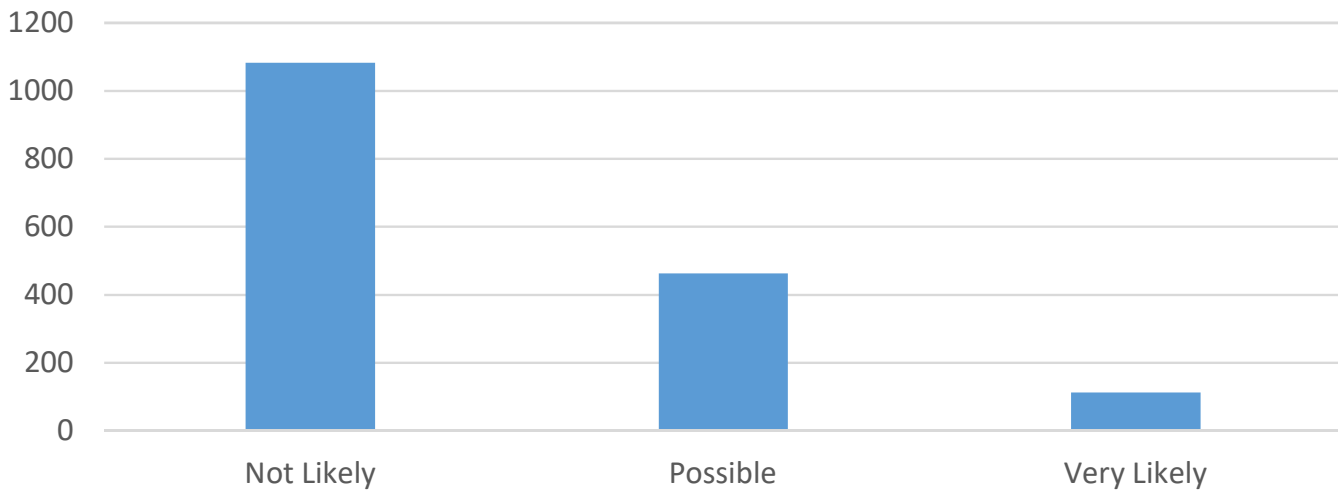
If you park On-base, what factors do you consider when choosing to use Gate 1 when arriving or departing?



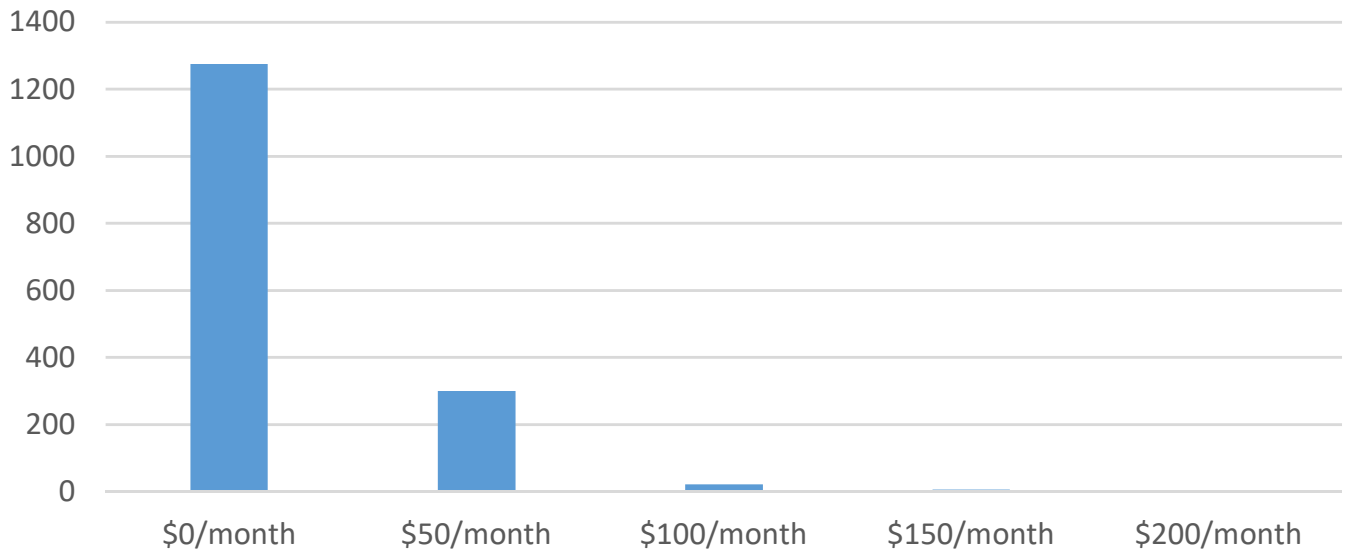
If you park On-base, what factors do you consider when choosing to use Gate 2 when arriving or departing?



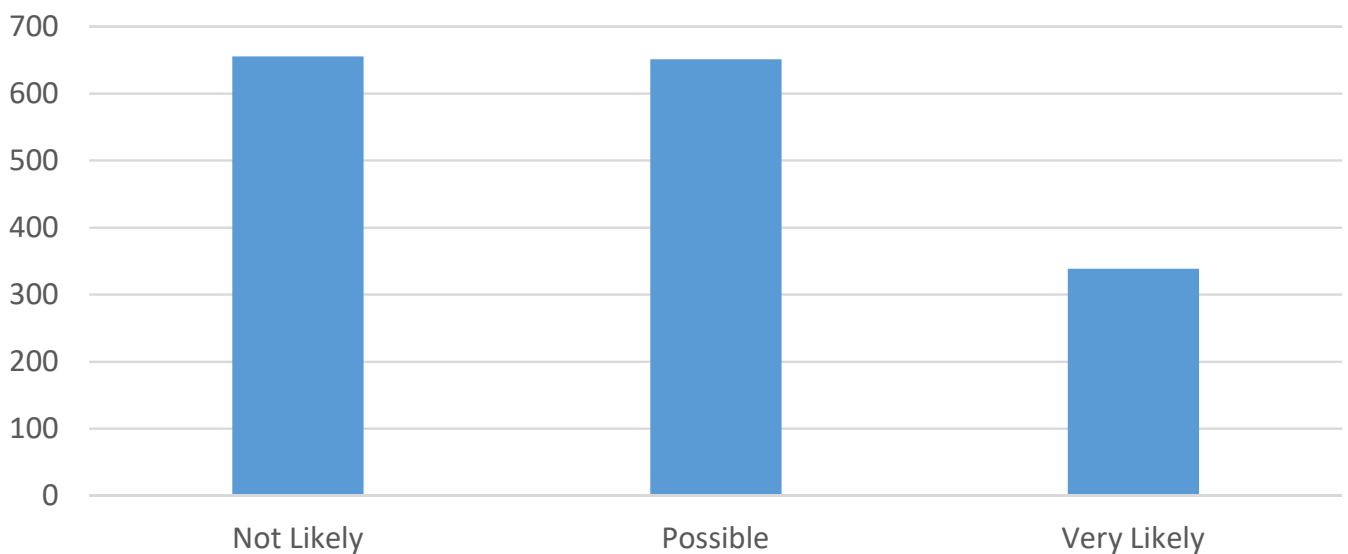
What is the likelihood you would utilize fee-based off-site parking located within 2 to 3 miles from PNSY?



What fee would you be willing to pay for off-site parking within 2 to 3 miles from PNSY?



If parking/traffic does not improve, how likely would it be that you would seek employment elsewhere?



JLUS PNSY EMPLOYEE SURVEY RESPONSES - OPEN-ENDED

ISSUE/IDEA CATEGORY	Is there a specific idea or improvement to improve your commute that you'd like to share?	Please add any explanations to the answers marked "other".
BIKES AND RELATED		
BIKES	Allow the use of "electric scooters" like the ones used by Lime and Bird to commute to a designated lock-up area near the shipyard CIA access gates. If that were an option I would park off yard and ride in to a CIA gate to park a scooter.	I live in Dover, and never use gate 2 unless traffic is restricted from using gate 1.
BIKES	Add bicycle commuting lanes on local commuting routes such as route 103 and 236. Add closer offyard parking commuters could use to shorten longer bicycle commutes.	
BIKES	Add two guards at each lane, this is done at other DOD locations. Hold guards accountable for being slow at opening gates and cycling cars through. Install oversized turnstyle at each gate for bicycles. Add parking spaces to account for the giant parking lot that was closed for an unneeded hospit	
BIKES	Better bike infrastructure, including secure, covered bike parking, mitigation of train tracks and dedicated bike lanes both on-yard and in Kittery	
BIKES	Better biking lanes near the bridges and gates. This is a safety issue.	
BIKES	Bicycling to work should be TIPS-eligible.	n/a
BIKES	Bike path North and South along 236 Dow Highway, protected from traffic. Similar to the bike paths at HQ in DC	
BIKES	bike rentals similar to what is available in major cities might prove a large benefit from parking areas. Park & bike options seem not to have been explored.	
BIKES	I would like a facility within walking/biking distance to support my day to day schedule changes (three different shifts in a typical week).	I utilize Gate 1 when it is the only gate that is open. Gate 2 is my preferred choice if it is open.
BIKES	Provide off yard parking where people can store bicycles/scooters to finish the trip to work	I had to answer 0\$ for a parking lot with a shuttle. Currently pay 40 and walk. This extends my home life by 2 hours a day. I should not have to pay for this.
BIKES	Require contractors to park off site. Have Traip Academy turned into parking for the yard. Build a road/ bike path next to the rail road tracks that come to the yard for buses from remote parking or for bicycle access.	NA
BIKES	Safer routes for bicycles to travel around the shipyard. (Bike lane, track crossing points, fix big potholes)	
BIKES	Turnstile that can accommodate bicycles so that they don't have to go through the gate and have their CAC checked by security,	I park near H-1 in that small lot.
BIKES		I ride my motorcycle when I can, there is sufficient parking for motorcycles... could there be a dedicated gate for bicycles & motorcycles
BRIDGE-RELATED		
BRIDGE EFFICIENCY	get the bridges not to open anywhere near 6:30AM and 3:30 PM	
BRIDGE IMPROVEMENTS	A bridge from Kittery to Jamaica Island, more parking garages, a ferry from Portsmouth, buses from the park and ride near Pease, widen the current bridges to two lanes, put in a light at Gate 2, invest in parking/land off yard in Kittery for Employee parking	
CAR AND VANPOOL-RELATED		
CARPPOOL INCENTIVES	Cash incentives to carpool, just like vans and buses	N/A
RIDESHARE/CAR SERVICE	Provide the same worker/driver system that Puget Sound Naval Shipyard currently utilizes. One of the keys to their success is that they also offer a car service to come pick you up at your building if you need to leave work early (medical, emergency, etc.).	
CAR/VANPOOL SERVICE	1) Telework with one day on yard. 2) Transportation for parents and children using the on yard daycare. 3) Varied timed van pools/shuttles for those who work early shifts and leave late. 4) Larger daycare facilities to accommodate more children so parents do not need to use off yard daycares.	
CAR/VANPOOL SERVICE	Contractors should not be entering the shipyard at same time as it causes even more backup. There is no van pool transpiration for my area which is 40 min south of the shipyard. Entrance at gate needs to be improved. Maybe a certain lane or gate should be designated for people without CAC cards.	

APPENDIX D

Public Outreach Plan

Kittery and Portsmouth Naval Shipyard Joint Land Use Study

Public Outreach Plan

The JLUS process is designed to create a locally relevant document that builds consensus and obtains support from the various stakeholders involved. To achieve the JLUS goals and objectives, the process included a public outreach program with a variety of participation opportunities for interested and affected parties.

Stakeholders

An early step in any planning process is the identification of stakeholders. Informing or involving them early in the project is instrumental to understanding, addressing, and resolving their most important issues through the development of integrated strategies and measures. Stakeholders include individuals, groups, organizations, and governmental entities interested in, affected by, or affecting the outcome of the JLUS document.

Stakeholders identified for the Kittery and Portsmouth Naval Shipyard JLUS included, but were not limited to, the following:

- Local jurisdictions (counties and cities)
- DOD officials (including OEA representatives)
- Portsmouth Naval Shipyard
- Local, regional, and state planning agencies
- Local, regional, and state transportation agencies
- Local, regional, and state government representatives
- Military organizations
- Nongovernmental organizations
- The public (including residents and landowners)

Working Group and Policy Committees

The development of the Kittery and Portsmouth Naval Shipyard JLUS was guided by two committees, comprising city, county, PNSY personnel, federal and state agencies, local governments, and other stakeholders.

Working Group

The Working Group (WG) consists of officials from participating jurisdictions, military installation leadership, and representatives from Kittery, Portsmouth Naval Shipyard and federal and state agencies. The WG is responsible for the overall direction of the JLUS, preparation and approval of the study design, approval of policy recommendations, and approval of draft and final JLUS documents.

Policy Committee

The Policy Committee (PC) is responsible for identifying and studying technical issues. Membership includes county and municipal planners, military base planners and staff, and other subject matter experts as needed to help assist in the development and evaluation of implementation strategies and tools. Items discussed by the WG were brought before the PC for consideration and action. The WG and PC served as liaisons to their respective stakeholder groups. The WG and PC members were charged with conveying committee activities and information to their organizations and constituencies and relaying their organization's comments and suggestions to both committees for consideration. The PC members were encouraged to conduct meetings with their organizations and / or constituencies to facilitate this input.

Public Meetings

Roundtables

In addition to the WG and PC meetings, a series of roundtable sessions were held during the data collection phase of the JLUS. Each session highlighted a particular area of focus with specially-targeted stakeholders to generate a deeper understanding of areas of impact within the study. The public was welcome to attend. These sessions provided an opportunity for the exchange of information with the greater community and region, assisted in identifying the issues to be addressed in the JLUS, and provided an opportunity for input on the potential strategies. Each workshop included an interactive presentation and facilitated discussion for the public to participate in the development of the plan.

Interviews

In addition to the roundtable sessions, one on one interviews were sought with a selection of particular stakeholders requiring more specific discussion than the roundtable session format would allow.

Open House

An open house was held in early June to educate the public about the JLUS and to share a summary of existing conditions and early analysis following data collection. The information was displayed on a series of boards that the public could interact with and provide their input on.

Shipyard Visit

The JLUS team set up tables on the mall on the shipyard in July to engage with PNSY employees by providing project updates as well as advertising a survey relating to transportation and parking issues.

Public Outreach Materials

Joint Land Use Study Overview / Compatibility Factors Fact Sheet

At the beginning of the JLUS process, a Fact Sheet was developed describing the JLUS program, objectives, scope, and timeline. This Fact Sheet was made available at the meetings for review by interested members of the public. This Fact Sheet also served as an informational companion to a flyer describing each of the 24 compatibility factors investigated for JLUS analysis. While not every factor may apply to the Kittery and Portsmouth Naval Shipyard JLUS, this list provides an effective tool to ensure a comprehensive evaluation of compatibility factors is conducted within the JLUS Study Area.

Stakeholder Engagement Roundtable Summary Sheet

The study's five roundtable sessions generated feedback ranging across a wide variety of topics and representing a wide variety of organizations, agencies, and individuals. The summary sheet provided a high-level overview of the key issues identified as well as key recommendations for further refining data collection and analysis. The sheet featured a sample map of PNSY commute origins to demonstrate one of the many existing condition areas being analyzed for the first phase of the JLUS report. This Fact Sheet was made available at public meetings and on the website.

Website

A project website was developed to provide stakeholders, the public, and media representatives with access to project information. This website was maintained for the entire duration of the project to ensure information was easily accessible. Information contained on the website included study documents, maps, public meeting information, other JLUS resources, and a box for comments and questions to be submitted to the project team. The project website is located at www.smpdc.org.

Media Articles

The study utilized the project team media correspondent to strategically develop news articles and public notices at intermittent periods during the study. These were used to educate the public generally about the study and its progress, as well as inform about opportunities for engagement.

Surveys

In order to understand more specifically local issues and opportunities relating to transportation and parking, two (online and paper) surveys were created – one for the general public, and one specifically for PNSY employees.

APPENDIX E

Housing and Economic Analysis

Town of Kittery and Portsmouth

Project #:210801654

Community Profile

Town of Kittery is located within York County in the southern-most portion of Maine. Kittery is home to the Portsmouth Naval Shipyard on Seavey's Island. In 2018, the Town of Kittery had a population of 9,796 (ESRI Demographic and Income Profile, April 1, 2019). At \$66,005, the median household income in the Town of Kittery was higher than York County which was \$60,945 in 2018.

Table 1.
Population and Housing within the Town of Kittery and York County, Maine

	Town of Kittery, Maine		York County, Maine	
	2018	2023	2018	2023
Population	9,796	10,074	211,021	220,039
Median Age	45.2	46.1	45.3	46.1
High School Graduate or Greater	96.3		91.4	
Percent White	97.1%		95.9%	
Percent Non-white/Other	2.9%		4.1%	
Income				
Median Household Income	\$66,005	\$74,095	\$ 60,945	\$ 67,715
Per Capita Income	\$39,144	\$44,090	\$ 32,558	\$ 36,984
Households	4,437	4,561	86,765	90,537
Families	2,517	2,567	55,985	58,057
Average Household Size	2.18	2.18	2.39	2.39
Median Household Income	\$66,005	\$74,095	\$60,945	\$67,715
Housing Units	5,198	5,365	113,675	118,500
Owner Occupied Housing Units	56.4 %	58.0 %	56%	57%
Renter Occupied Housing Units	28.9 %	27.0%	20%	19%
Vacant Housing Units*	14.6%	15.0%	23.7%	23.6%

Source: ESRI Demographic and Income Profile, Kittery, Maine, April 2019

*Unoccupied housing units are considered vacant (e.g., for rent, for sale or for seasonal use only).

Housing

Town of Kittery

In 2018, Kittery had a total of 5,198 housing units, of which 56.4 percent were owner-occupied. The percent of renter-occupied homes in the Town of Kittery is higher (28.9 percent) than York County (20 percent). The average household size of an owner-occupied unit in Kittery was higher (2.29) than renter-occupied units (2.12), ESRI, 2019).

Naval Shipyard Portsmouth

NSY Portsmouth Homes serves active duty Navy families assigned to Portsmouth Naval Shipyard as well as qualified military retirees, DOD civilian employees and general public applicants. NSY Portsmouth Homes leases 212 single family attached housing units within two distinct neighborhoods, an on-base neighborhood and The Admiralty, an off-base neighborhood. The on-base neighborhood consists of 26 single family homes and is located near the Exchange, Commissary and base gym, is open to qualified Active Military only and it offers a variety of two- to six-bedroom homes. The Admiralty Village neighborhood is located off-base in Kittery. The Admiralty Village neighborhood consists of 186 two to four-bedroom single family homes and is open to Active Duty military personnel stationed at Portsmouth Naval Shipyard, military retirees, DOD employees and the general public. Both rental communities have waiting lists.

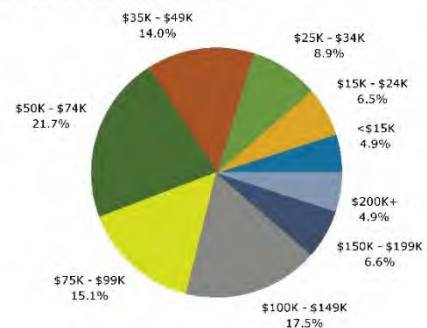
Housing Affordability

Nation-wide, housing affordability has been a great concern in terms of affordability and supply. According to the US Housing and Urban Development (HUD), households that spend more than 30 percent of their income on housing costs are “cost burdened,” and households that spend more than 50 percent of their income on housing are “severely cost burdened” and may have difficulty affording necessities such as food, clothing, transportation and medical care.

In 2017, the annual median income needed to afford purchasing a home in Kittery was \$101,515 (Maine State Housing Authority, 2017). In a September 2018 report to the Kittery Town Council, the Kittery Housing Working Group noted that the median home price was \$350,000 in 2017. Thus, approximately 72 percent of households in Kittery were unable to afford to buy a home.

Housing affordability appears to be more acute for rental households. The average rent for a 2-bedroom unit was \$1,093 (Maine State Housing Authority, 2017). Approximately 40 percent of rental households pay 35 percent or greater of their household income as opposed to 10 percent of owner-occupied households (American Fact Finder, US Census 2017).

2018 Household Income



ESRI Demographic and Income Profile, Kittery Maine, 2019

In 2019, the Town of Kittery added 27 additional housing units. At the same time, 61 homes were listed for sale, with a median listing price of \$420,000. Average rental rates averaged between \$1,750 and \$1,900 (Kittery Budget Proposal Fiscal Year 2020, Presentation).

Kittery Housing Working Group

Within the Town of Kittery, affordable housing options is and will be critical in the coming years. The town established the Kittery Housing Workgroup in 2018. The Workgroup is tasked with understanding Kittery's housing needs, educating the community on the affordable housing challenges, and to identify short-term and long-term implementing solutions that would remove barriers to providing affordable housing options. This workgroup identified proposed text amendments, including the Accessory Dwelling Unit ordinance. Kittery has processed a zoning text amendment to ease restrictions on the creation of accessory dwelling units (ADU) on residential parcels. Allowing the development of ADUs on residential would provide a mechanism for existing residents to remain in their homes and neighborhoods while increasing the supply of housing options in a manner that is compatible with the existing housing stock.

In 2018, the Town of Kittery replaced the Business – Park (BP) zone district with a new Mixed Use - Neighborhood (MU-N) district. This new MU-N district is intended to encourage higher density, mixed-use development at appropriate locations, to provide increased housing opportunities and a desirable setting for business while balancing such increased development with environmentally-conscious and ecologically-sensitive use of land.

Maine Housing Bonds

The Maine State Housing Authority is accepting eligible proposals for new housing for older adults. A \$15,000,000 Housing Bond will be used to leverage private and other funds to provide affordable housing for low-income households headed by a person 55 years of age or older. Funds can be used for the construction of new energy-efficient affordable housing and the adaptive reuse of existing structures. Funding will be awarded to eligible projects on a first-come, first-served basis.

Economic Analysis

Town of Kittery is located within York County in the southern-most portion of Maine. Kittery is home to the Portsmouth Naval Shipyard on Seavey's Island in the Piscataqua River. The Portsmouth Naval Shipyard is responsible for the maintenance, repair and modernization of the Navy's fleet of attack submarines and has been an important economic player in the regional economy. In 2018, the Portsmouth Naval Shipyard had a total economic impact of \$882,613,734 in the region (Seacoast Shipyard Association, 2019). Civilian payroll represents 62 percent of the total Shipyard economic impact (see Table 2).

Table 2.
2018 Portsmouth Naval Shipyard Annual Economic Impact

CIVILIAN PAYROLL	Number of Employees	\$548,036,970
Portsmouth Naval Shipyard	6,972	\$120,731,514
Maine	3,894	\$314,558,123
Town of Kittery	403	\$29,581,603
Other States	3,078	\$233,478,847
PURCHASED GOODS & SERVICES:		
Shipyard Contracting Office:		\$81,364,419
DLA Contracting Office:		\$18,581,338
Shipyard Purchase Card:		\$20,785,757
CONTRACTED FACILITY SERVICES (PUBLIC WORKS DEPARTMENT)		
Maintenance/Alterations/Support:		\$ 97,652,400
Military Construction:		\$ 55,788,418
Utilities (natural gas/fuel oil/water/ sewer/electricity/communications)		\$ 16,055,375

Source: Seacoast Shipyard Association, February 2019

According to U.S. Navy Captain David Hunt, commanding officer of the Shipyard, the base is in the process of being modernized and more than a billion dollars-worth of construction will occur over the next six years.

Portsmouth Naval Shipyard Employment

In 2016, the Shipyard had a total of 6,763 active military and civilian employees. In 2018, the number of employees at the Shipyard had risen to 6,972 with a civilian payroll of \$548,036,970 and a military payroll of \$44,349,057 (\$27,756,728 Navy and \$ 16,592,329 Coast Guard). In 2018, 403 of the 6,972 civilian employees of the Shipyard were from Kittery, which represents approximately 10 percent of Kittery's civilian workforce.

Economic Base Analysis

The management, business, science and arts sectors account for almost half of the employment in Kittery, which translates into a location quotient of 1.28 (See Table 3). That is reflective of the concentration of employees in certain occupations associated with the Shipyard that are not as common within the larger Maine region.

Table 3.
2017 Civilian Employment in Town of Kittery and Maine

Civilian Employment	Town of Kittery		Maine	
	Number	Percent	Number	Percent
Management, business, science & arts	2,304	47%	241,309	37%

Table 3.
2017 Civilian Employment in Town of Kittery and Maine

Civilian Employment	Town of Kittery		Maine	
	Number	Percent	Number	Percent
Service	769	16%	120,502	18%
Sales & office	1,092	22%	152,919	23%
Natural resources, construction & maintenance	318	6%	70,206	11%
Production, transportation & material moving	424	9%	73,757	11%
Total	4,907	100%	658,693	658,693

Source: American Fact Finder, 2017

Retail Gap Analysis of the Town of Kittery Study Area

A retail leakage and surplus analysis was performed for Kittery. The report identified leakage and surplus of major store types within the Town of Kittery and the larger York County. Within Kittery, gaps in four major store types were identified – gas stations, clothing and clothing accessories stores; sporting goods stores; and food services and drinking places stores (See Table 4). Much but not all of the town’s retail gap is being satisfied by stores within the larger York County area.

Table 4.
Retail Trade Area Surplus/Gap Analysis

	Town of Kittery		York County	
	Surplus/Leakage	No. Businesses	Surplus/Leakage	No. Businesses
2017 Industry Summary				
Total Retail Trade and Food & Drink	-37.2	197	5.5	1,831
Total Retail Trade	-38.0	151	8.5	1,267
Total Food & Drink	-28.2	46	-16.9	564
2017 Industry Group				
Motor Vehicle & Parts Dealers	53.5	3	25.6	138
Furniture & Home Furnishings Stores	8.2	6	4.1	59
Electronics & Appliance Stores	64.3	5	54.0	49
Building Materials, Garden Equipment & Supply Stores	42.9	5	10.6	112
Food & Beverage Stores	10.2	19	-13.1	158
Health & Personal Care Stores	15.2	6	6.4	71
Gasoline Stations	-45.6	6	11.8	59
Clothing & Clothing Accessories Stores	-77.8	45	5.7	130
Sporting Goods, Hobby, Book & Music Stores	-86.9	4	-15.6	95
General Merchandise Stores	95.4	2	38.0	52
Miscellaneous Store Retailers	-82.9	49	-19.6	328

Non-Store Retailers	-7.7	1	42.6	16
Food Services & Drinking Places	-28.2	46	-16.9	564
Restaurants/Other Eating Places	-29.7	43	-15.8	517

Source: Esri and Infogroup, Retail Market Place 2019

Observations & Recommendations.

Retail. There is an additional “induced economic impact” of the Shipyard on Kittery’s economy, beyond the 10% of Kittery’s civilian workforce that are in jobs that support the Shipyard. The induced economic impact comes from the spending at Kittery businesses by the military personnel at the base, and the civilians whose jobs support the base. That spending results in an additional positive impact on Kittery’s economy, and supports additional jobs in Kittery. The retail gap analysis conducted for Kittery identified the following sectors in which supportive goods and services are not being satisfied within the town: gasoline stations; clothing & clothing accessories stores; sporting goods, hobby, book & music stores; miscellaneous store retailers; non-store retailers, and food services & drinking places, restaurants and other eating places. While employment in sales occupations is projected to grow by three percent, the increasing presence of e-commerce is expected to result in slight decline of cashiers in traditional brick and mortar stores. Given that Kittery is known as a tourist destination and contains several outlet stores, the gap analysis indicates that opportunities exist to expand the restaurant, hospitality, and service sectors.

Business expansion and diversification. According to the US Department of Labor Occupational Outlook Handbook (April 12, 2019), management, business, science and arts sectors are expected to grow faster than the average of all occupations. This growth is fueled by a growing economy and a complex tax and regulatory environment. Employment in math occupations is projected to grow 28 percent from 2016 to 2026, much faster than the average for all occupations. Growth is anticipated as businesses and government agencies continue to emphasize the use of big data.

The Town’s efforts to promote business diversification within the primary economic development areas of Downtown/Forside, Route 1 Bypass, Route 236/Dennett Road Area, and in the Route 1 Mixed Use area could build upon and encourage the expansion of existing management, business, science and arts sectors.

APPENDIX F

Environmental Analysis (Moffatt & Nichol)



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TECHNICAL MEMORANDUM

To: Jason Schrieber, AICP, and Whitney Burdge (Stantec)

From: Brian Joyner, PE, and Arash Niroomandi, PhD

Date: October 6, 2019

Subject: Assessment of public data relative to coastal storm surge and sea level rise for the Kittery, Maine and Portsmouth Naval Shipyard Joint Land Use Study (JLUS)

M&N Job No.: 10730

The purpose of this memo is to summarize public data on present-day coastal storm surge extreme water levels and estimates of future conditions associated with sea level rise, relative to the Portsmouth Naval Shipyard (PNSY) in Kittery, Maine (Figure 1). The information presented has been obtained from publicly available websites and online tools including NOAA’s Center for Operational Oceanographic Products and Services (CO-OPS), the Federal Emergency Management Agency (FEMA) Map Service Center (MSC), the United States Army Corps of Engineers (USACE) Coastal Hazards System (CHS) and the Dept. of Defense (DoD) Coastal Assessment Regional Scenario Working Group (CARSWG).

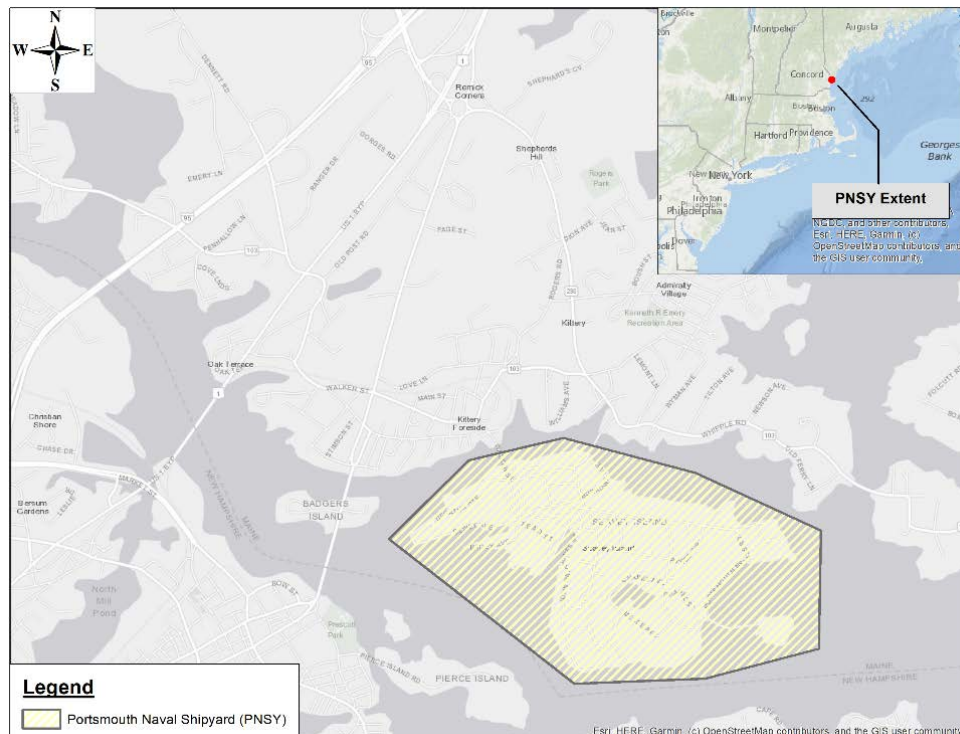


Figure 1: Location of Portsmouth Naval Shipyard (PNSY).

The memo is organized by data set and source. Some of the data sets provide different estimates of extreme storm surge water levels. No attempt is made in this assessment to evaluate the reasons for those differences or to determine which agency’s estimates are more accurate. The data gathered from publicly available sources are presented solely on the basis of the assumptions accompanying the estimates, forecasts, and hazard maps utilized at the time of this assessment. No independent verification of the extreme water levels or sea level rise projections was performed for this assessment.

Though various agencies and non-governmental organizations have researched sea level rise (SLR) processes and published projections, it is considered that NOAA’s estimates published in 2017¹ generally cover the range of SLR applicable for the JLUS and similar planning studies.

NOAA Tidal Water Levels near PNSY

NOAA’s Seavey Island, ME tide observation station 8419870, though presently inactive (not recording new data), is located near PNSY, and this station’s data set was consulted to provide a set of typical tidal water level positions. Tidal datums published by NOAA for the historical observations between 1983 and 2001 at station 8419870 are summarized in Table 1. Mean Higher High Water (MHHW) occurs at elevation 4.22 feet NAVD88, and the Highest Astronomical Tide is 5.90 feet NAVD88. MHHW is relevant to the JLUS as it represents the approximate level to which water is likely to rise due to astronomical tidal effects on the majority of days throughout a typical year. As mean sea level rises, the MHHW position will rise as well, as will HAT, and areas that are currently not flooded at MHHW and HAT may begin to experience flooding in the future.

Table 1: Tidal Water Levels with respect to NAVD88 at NOAA’s Seavey Island tide station 8419870

HAT	5.90	Highest Astronomical Tide
MHHW	4.22	Mean Higher High Water
MHW	3.81	Mean High Water
NAVD88	0.00	North American Vertical Datum of 1988
MSL	-0.19	Mean Sea Level
MTL	-0.24	Mean Tide Level
MLW	-4.30	Mean Low Water
MLLW	-4.62	Mean Lower Low Water

These tidal levels are illustrated in Figure 2, along with estimated water levels estimated by NOAA using a Generalized Extreme Value (GEV) analysis for this tide station. The results are also presented in Table 2. The NOAA extreme water levels estimate indicates a 100-year return period (1% annual chance) coastal storm surge water level of approximately 8 feet NAVD88. The 1% annual chance (a.c.) water level has a 1% chance of being equaled or exceeded in any given year, and it is a typical statistical value evaluated in coastal planning and design.

¹ Sweet, W.V., R.E. Kopp, C.P. Weaver, J. Obeysekera, R.M. Horton, E.R. Thieler, and C. Zervas, 2017: *Global and Regional Sea Level Rise Scenarios for the United States*. NOAA Technical Report NOS CO-OPS 083. NOAA/NOS Center for Operational Oceanographic Products and Services.



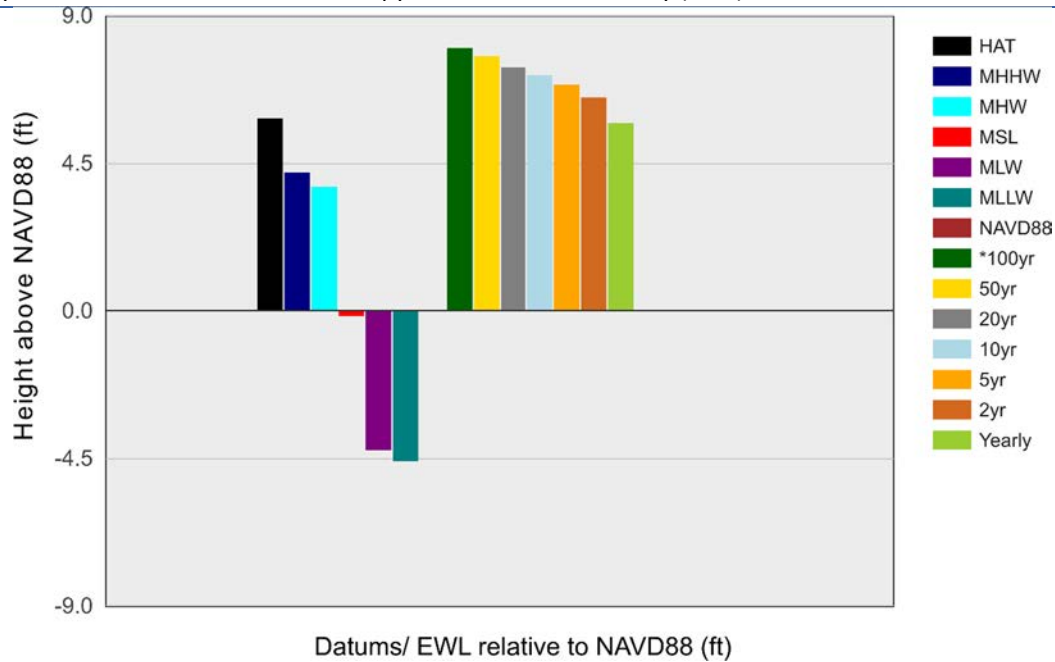


Figure 2: Tidal Datums and Extreme Water Levels, Station 8419870, Seavey Island, ME.

Table 2: NOAA extreme water levels with respect to NAVD88 datum, station 8419870, Seavey Island, ME

Station Name:	Seavey Island, ME
EWL Type / Datum	NOAA GEV /NAVD88
*100 Yr	8.02 feet
50 Yr:	7.78 feet
20 Yr	7.46 feet
10 Yr:	7.20 feet
5 Yr:	6.93 feet
2 Yr:	6.50 feet
Yearly:	5.74 feet

* Period of the record is less than return period



Federal Emergency Management Agency (FEMA) Preliminary Flood Zones

FEMA has studied coastal and riverine flood hazards and published Flood Insurance Studies (FIS) and Flood Insurance Rate Maps (FIRM) for York County, Maine, including the Town of Kittery and Seavey Island. The effective FIS and FIRM for the Town of Kittery are dated 1984, with a few FIRM panels revised in 1986. However, FEMA has also completed a much more recent restudy of the flood hazards, including coastal storm surge, for the JLUS area. This memo utilizes the 2017 preliminary FIRM as best available data from FEMA.

Figure 3 depicts the Special Flood Hazard Area (SFHA) zones, also known as “flood zones,” and Base Flood Elevations (BFEs) included in the GIS layers available from FEMA for the 2017 preliminary FIS. Areas labeled as Zone AE are subject to flooding in the 1% annual chance (a.c.), also known as the 100-year return period, coastal storm surge event, and the BFE value is the determined 1% a.c. water level. The BFE includes wave height effects, where waves are present. Areas labeled as Zone VE are the Coastal High Hazard Area and generally have higher BFEs than adjacent Zone AE along with greater risk of damage from wave action. Zone VE is characterized by an estimated wave height of 3.0 feet or greater in the 1% a.c. coastal storm. Areas labeled Zone X are considered to have a lower chance of flooding in any given year; specifically, they are subject to flooding in the 0.2% a.c. (500-year return period) coastal storm.

According to the 2017 preliminary FIRM data, the majority of the PNSY extent and the adjacent areas of Kittery are located outside of areas that would flood in the 1% and 0.2% a.c. coastal storms. However, PNSY is bounded by AE and VE Zones indicating that the area may become susceptible to flooding in extreme storm events in the future due to sea level rise (SLR). The VE Zone coastal high hazard area, which indicates the areas subject to high velocity water including waves, covers areas located at edge of the Seavey Island with BFEs varying between 14 to 15 feet NACD88 (Figure 3, green areas). Further inland specifically in the middle and west, PNSY is surrounded by AE Zone with BFE varying between 10 to 14 feet NAVD88 indicating vulnerability of these areas to 1% a.c. storm events with present-day tidal ranges and sea level.

The point features identified in Figure 3 as “USACE NACCS Data Points” are described below in the discussion of additional extreme storm surge water levels.



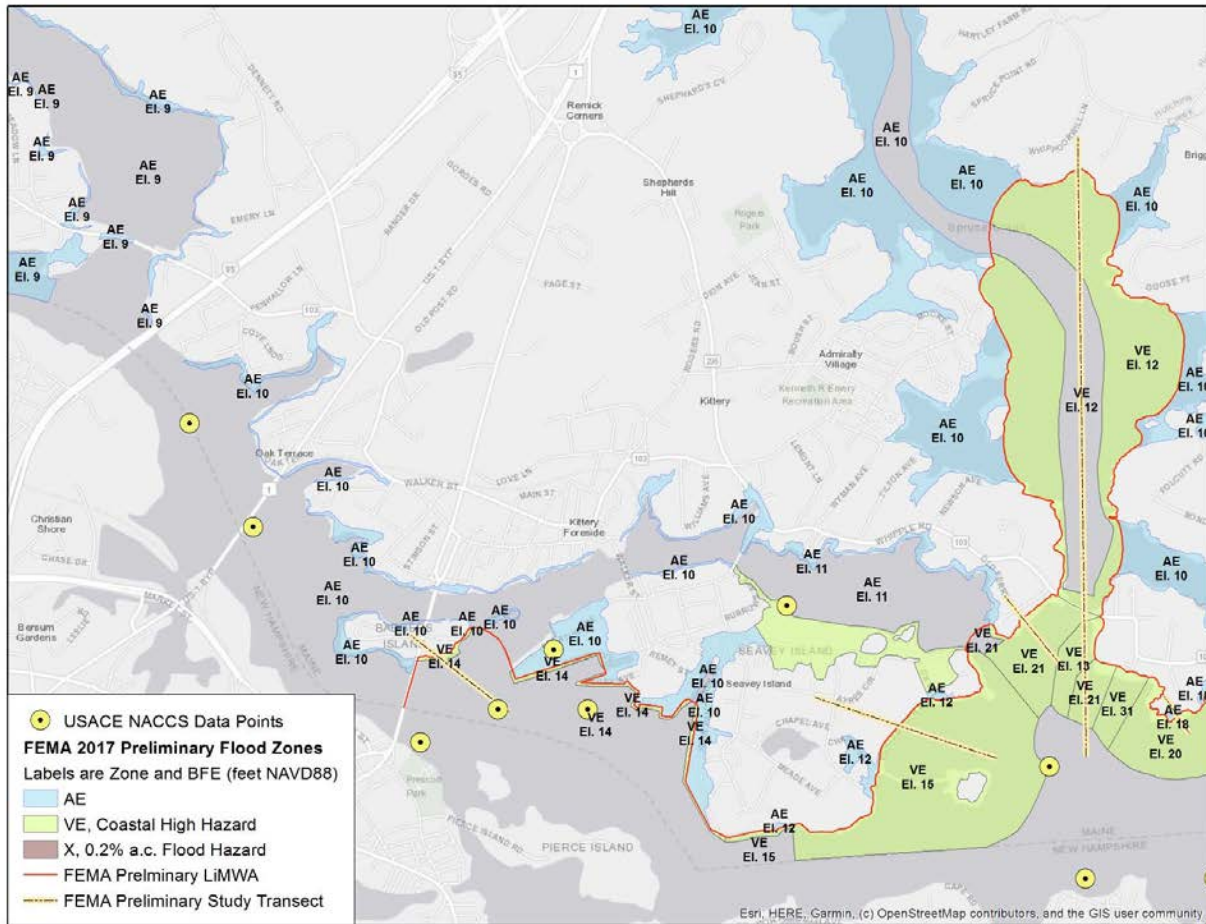


Figure 3: FEMA Preliminary (2017) FIRM Zones and BFEs in the JLUS Study Area

USACE NACCS Extreme Storm Surge and Waves

The North Atlantic Coast Comprehensive Study (NACCS) Coastal Hazards System (CHS) stores the results of the large-scale, high-resolution numerical modeling of tropical and extratropical coastal storm responses such as storm surge water level, wave height, wave period, wave direction, and current magnitude. The CHS also stores storm climatology and observed coastal storm responses, as well as statistical analyses of the modeling and measurements. These data are intended to serve as a resource to coastal planners, scientists, and engineers as part of a regional approach to consistently characterize coastal storm and flood hazard.

Figure 4 shows values of Extreme Water Levels (EWLs) for 50-, 100- and 500- year² return period conditions determined through the NACCS modeling, obtained from the CHS, at several points near PNSY and the Town of

² The 50-year return period value has a 2% annual chance (a.c.) of being equaled or exceeded in a given year, while the 100-year and 500-year return period values have a 1% a.c. and 0.2% a.c., respectively.



Kittery. The CHS data indicate that 100-year return period storm surge stillwater levels around PNSY vary between 11 to 13 feet NAVD88, with 500-year return period values as high as 14 feet NAVD88.

It is important to note that the water levels (EWL) shown in Figure 4 are the “stillwater level” and do not include the additional effects of wave crests, which would result in a higher total water surface elevation. This is a difference between the CHS data set shown here and the FEMA data set described above and shown in Figure 3, where the FEMA BFEs do include the wave crest heights.

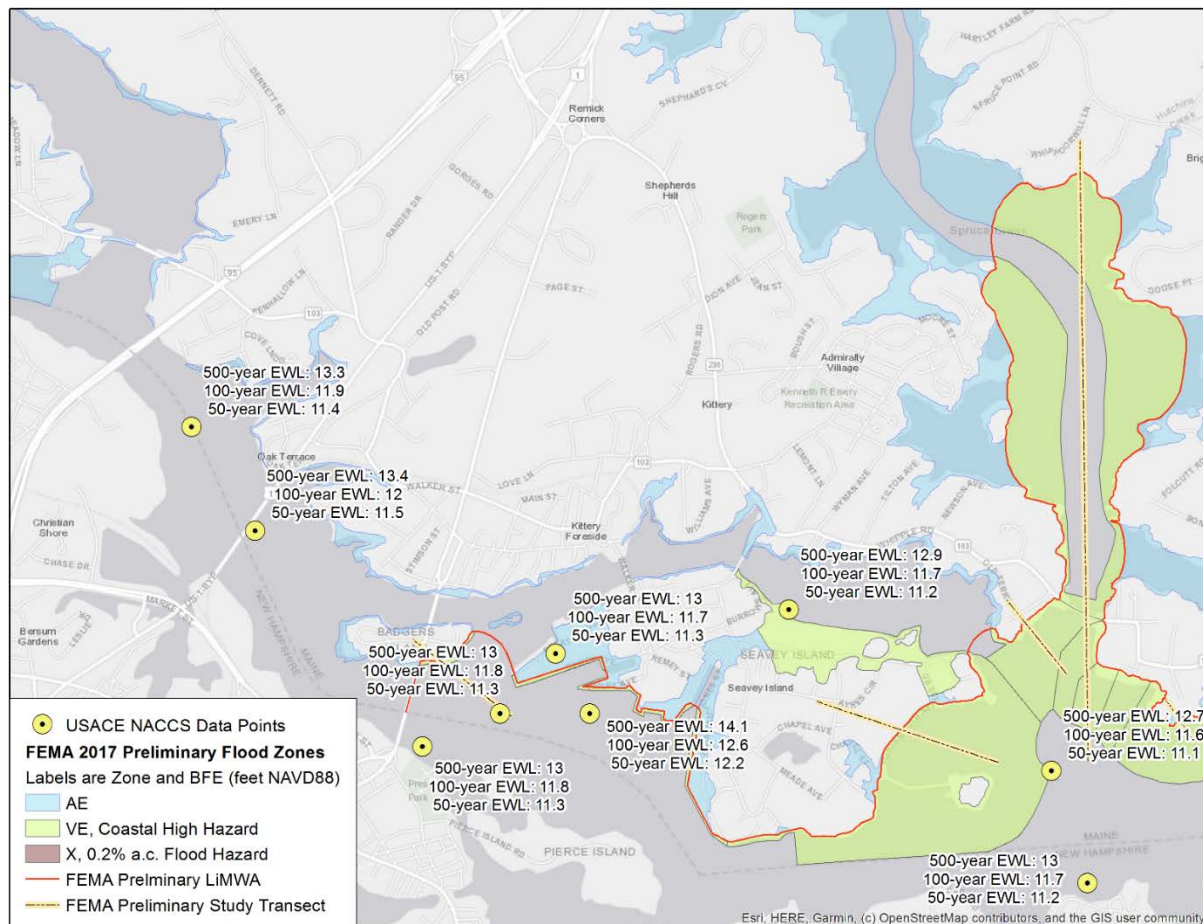


Figure 4: NACCS 50-, 100- and 500-year Return Period Extreme Water Levels (EWLs)

NOAA and CARSWG Sea Level Rise (SLR) Projections

The trend of rising mean sea levels, due to global climate change and regional hydrodynamic and geophysical processes, poses potential threats to the natural and built environment in coastal areas by increasing the frequency and depth of inundation of both daily tides and extreme storm surges. It is not known with certainty how quickly the global and regional SLR progression will occur at any given coastal location; rather, SLR



projections are typically evaluated as a series of possible curves based on historical measurements and computer models of future climate atmospheric and oceanographic conditions. In planning studies and coastal engineering design, vulnerabilities and impacts associated with SLR and future extreme water levels are estimated by considering a range of plausible and scientifically credible future conditions, or scenarios.

The USACE Sea Level Change Curve Calculator³ provides access to SLR projections by USACE, NOAA, and other agencies. The tool uses sets of equations based on each agency's research to produce a graph and table of the projected SLR Curves based on the user selected controls and desired output. The tool allows comparisons to scenarios in the National Oceanic and Atmospheric Administration Technical Report OAR CPO-1 Global Sea Level Rise Scenarios for the United States National Climate Assessment (2012); the National Research Council's (NRC) Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future report (2012); the NPCC2 New York City Panel on Climate Change 2015 Report, Chapter 2: Sea Level Rise and Coastal Storms (2015); the New York State Department of Environmental Conservation Proposed Regulation 6 NYCRR Part 490; The Maryland Climate Change Commission 2013 (2013); the Dept. of Defense' Coastal Assessment Regional Scenario Working Group (CARSWG) Regional Sea Level Scenarios For Coastal Risk Management Report (2016); and the U.S. Global Change Research Program under NOAA (2017 (Sweet et al., 2017).

The present assessment focused on the SLR projections released by NOAA in 2017 (Sweet et al., 2017) and the projections included in the CARSWG database for the PNSY area. The NOAA 2017 projections include Local Vertical Land Movement (VLM) and are modeled on a 1-degree grid along the coastline throughout the US and its territories, and they consider seven SLR scenarios listed (in decreasing order of SLR values) as Extreme, High, Intermediate-High, Intermediate, Intermediate-Low, low and local Vertical Land Movement (VLM). Each of these scenarios are based on future Global Mean Sea Level (GMSL) rise and future greenhouse-gas emissions and associated ocean-atmosphere warming and corresponds to different levels for coastal-risk planning, management of critical infrastructure and other purposes.

CARSWG (Hall et. Al, 2016) considers five global mean SLR scenarios – Highest, High, Medium, Low, Lowest – for which regional or local adjustments are provided. Both the CARSWG (2016) and NOAA (2017) SLR projections for the project area are shown in chart form in Figure 5. The ranges of SLR projected at a given point in the future agree well between the CARSWG and NOAA curves for the Low through Intermediate-High scenarios. Choosing year 2070 as an example that provides a 50 year future planning horizon, and excluding the CARSWG Lowest curve, the two sources project between approximately 1.0 and 3.5 feet of SLR above the present local mean sea level.

³ http://corpsmapu.usace.army.mil/rccinfo/slc/slcc_calc.html



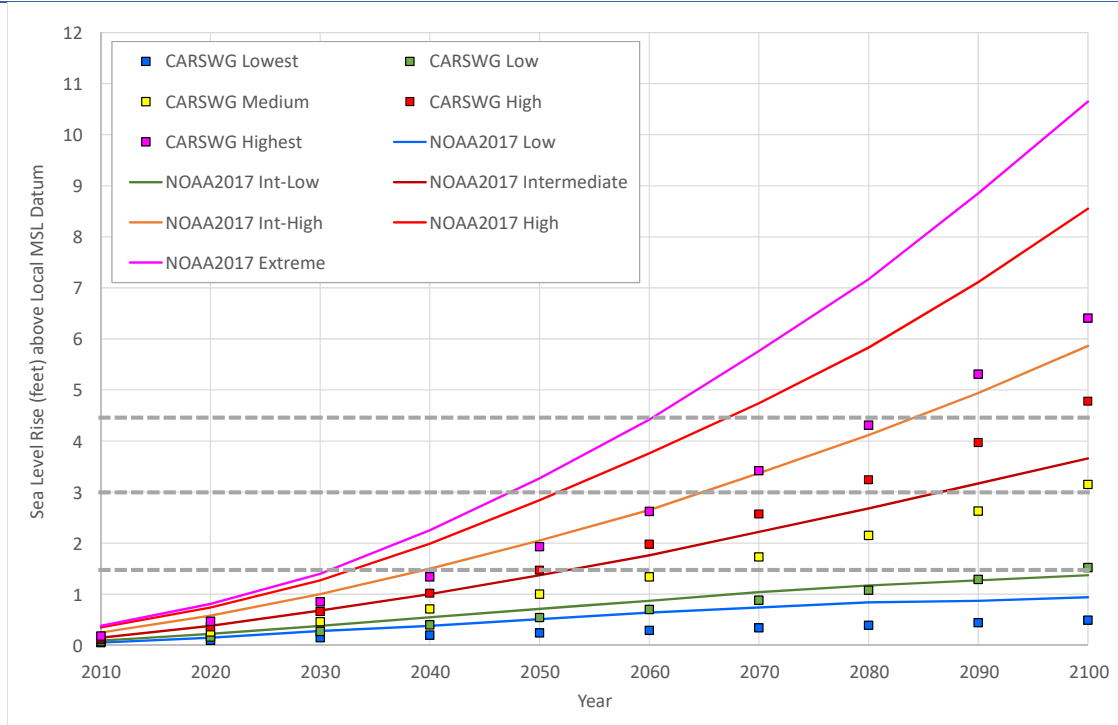


Figure 5: NOAA (Sweet et. al, 2017) and CARSWG (Hall et. al, 2016) SLR Projections Relative to PNSY / Kittery, ME

It can be difficult to choose one particular SLR projection curve for planning and engineering in coastal areas. For example, the CARSWG regional sea level scenarios for coastal risk management report (Hall et. Al, 2016) indicates that simply defaulting to the middle scenario as an appropriate choice for decision-making is strongly discouraged. It is recommended that, instead of choosing one single SLR curve, the JLUS should consider a few SLR values that would bracket the range of projections for the JLUS planning horizon timeframe that also reflects a specific land use’s risk tolerance, function and ability to adapt. For example, vulnerabilities and potential mitigation actions within the JLUS could be tested through year 2070 using SLR values of 1.0 foot, 2.0 feet, 3.5 feet and 4.7 feet.

In addition, due to the significant sources of uncertainty associated with future SLR projections, it is noted that the values presented here can only be used as a guideline for decision makers to adapt and accommodate for the future SLR. The determination of specific design extreme water levels and SLR values for any specific project should be determined by that project’s designers after careful consideration of the available data sources, and an assessment of the project’s vulnerability to each SLR scenario and its ability to adapt to future hazards which may exceed the initial design assumptions.



APPENDIX H

Highlight of Draft Final Report Public Comments

Strategy Issue Area Paraphrased Comments

Biking and Walking	Add bike lanes to Route 1
	Utilize Strava Metro program for outputs on detailed/actionable data to inform transportation improvement initiatives
	Direct bike path from gate 1 to Memorial Bridge so they can access bridge safely
	TIP program to include stipends for e-bike purchase?
Communications	(With 911 strategy), consider same plan in SMRP Traffic Incident Management Plan for activation of a call tree between dispatch centers to re-route traffic during incidents
	Code Red program (instead of reverse 911, which doesn't exist anymore), based in York communication center as financial partnership between York police, York fire, Kittery water, York sewer district
	Central website repository needed on Kittery, PNSY, and DOD to show info about parking options, ride share and public services
Congestion	Contractors with greater than x employees must provide off-site parking and transportation in the contract
	Move services off-base which don't require security clearance and are contributing to back-ups (e.g. daycare, clinic, dispensary, dental, pharmaceutical) since PNSY is overhaul facility and not naval base
	Consider signal at Whipple and Gate 2
	Require upcoming apartment development (300+ units) to have a second vehicle entrance/exit so Dennett doesn't also become backed up
	Dedicated TIP Vanpool along rail spur
	Move some departments to Pease or former Portsmouth post office
	Expand shipyard shuttle to serve Admiralty village
	Hire traffic coordinator for 3 hrs a day for gate 2
	Provide designated area downtown (if not dedicated lane) for bus to pull over and let passengers out without backing up traffic
	Investigate compressed work schedule in addition to WFH
	For congestion compatibility needs, evaluate teleworking by job, not department
	FYI- Veterans Administration, Defense Contract Agency, and Defense Audit Administration are some which are allowing telework at some level
	Elevated pedestrian network on base (because pedestrians often cause significant delay at stops)
S. Berwick congestion caused by people trying to avoid \$3 toll on 95. Pressure state to lower toll.	
Parking	Buy existing businesses for construction of parking garages
	Convert wetlands (behind Carls) for parking facility
	Make agreements with local businesses with larger lots to dedicate portion of spaces to workers for a monthly fee (Kittery post office, blue mermaid)
	Contractors prohibited from shipyard parking; congestion (as firefighter) is of concern for being able to respond to emergencies during these times
	Potential example of Newport News Shipyard where sailors had parking passes for designated areas with frequent internal shuttle driven by duty drivers between 6-8 and 5-7 that took ppl to gates
	Increase yard capacity by converting parallel spaces into angled
Traffic and Travel Safety	Reduce speed limit on Love Lane
	Close Love Lane to thru-traffic during morning and evening set periods
	Bike lanes that permit scooters
	FYI- Respondent's street is changed to 1-way traffic between 6-7am for residents, only, but is not followed or enforced
	Adding raised crosswalks for speed control
	Need for 15mph on 236 for schoolkids
	Make all local roads 'resident only' with cop stationed at 5, using funds earned for off-site parking
Transit	If vehicle purchase is issue, use school buses to pick up local workers just outside of walking distance
	Have Coast conduct study (if they haven't) on why people stopped riding
	PNSY should pursue statutory changes/exemptions to have flexibility from prohibition that requires congress to make all changes to TIP