SUBASE New London Joint Land Use Study (JLUS) Implementation Project

City of Groton Parking Management Plan Findings and Recommendations

Prepared for: **Southeastern Connecticut Council of Governments**

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Introduction

In October 2019, the Southeastern Connecticut Council of Governments (SCCOG), with financial support from the United States Department of Defense (DoD), Office of Economic Adjustment, and technical support from the Connecticut Office of Military Affairs, SUBASE New London, and the City of Groton published the results of the SUBASE New London Joint Land Use (JLUS) Implementation project. That project assessed the potential regional impacts of expanded activities at SUBASE New London and Electric Boat (EB) on the southeastern Connecticut region, with a particular focus on the housing market and transportation network in the City of Groton. More specifically, the JLUS analyzed whether the region can accommodate additional residents and workers resulting from approximately 5,000 new jobs at EB from 2019 through 2030. Key takeaways from that document included quality of life and placemaking efforts to bolster economic development initiatives and help communities both attract and retain residents. To accommodate employment growth and quality of life within the boundary of the City of Groton, the JLUS examined existing housing stock, affordable housing, transportation, and public infrastructure. Parking challenges were outlined in the JLUS in relation to both housing and transportation as the provision of sufficient parking for EB employees, sufficient off-street parking for residents, and the protection of curbside parking on residential streets were referenced. A City of Groton Parking Study was recommended.

> *"A detailed parking study of the City of Groton should be conducted to quantify the locations, supply, utilization, and need for parking to determine if improvements can be made to modify current parking related regulations, consolidate parking areas, relocate parking areas to preferred locations, or expand parking supply in certain areas within the City based on need. The study should be a collaborative effort among the City, key stakeholders, and the public to create a parking management plan that identifies preferred parking locations while allowing for development of currently underutilized land. Land use, zoning districts and regulations should be reviewed and considered for revisions to best accommodate the economic development goals with the parking supply and demand requirements."*

The SCCOG, through competitive procurement, engaged the services of Kimley-Horn to complete the parking study recommended in the JLUS. The corresponding scope of services included:

- Projecting future parking needs to accommodate growth at EB and the City's economic development goals for adjacent neighborhoods (Thames Street/Five Corners)
- Identifying and prioritizing potential parking sites
- Assessing current operational practices for the City's parking program and identify potential improvements
- Developing strategies to meet expected future parking needs to include recommendations for updating zoning regulations and the need for future parking facilities

This document covers the four major tasks outlined above and offers an initial examination of parking challenges and potential solutions. The fifth and final phase or chapter of the report will include the still-to-be completed stakeholder outreach and public engagement tasks that will be required to promote

parking recommendations. The project team may then modify those recommendations based upon stakeholder input.

I. Existing and Future Parking Analysis

The first major task in the study assesses existing and future parking supply, demand, and surplus/deficit conditions for the City of Groton. This task represents the first chapter in a larger effort to be presented to stakeholders and the larger City of Groton community. A key product in this chapter of work was the creation of a geographic information system (GIS) tool that combines current land use activity, current peak parking occupancy, and visions of future development and travel mode to forecast current and future parking demand by land type, zone, and block. The importance of this tool cannot be overstated as field surveys of parking use within a public garage, private lot, or curbside space do not provide insight into why those spaces are occupied, who is parking in those spaces, or if the experience between parking and arriving at a destination is an acceptable one. An analysis that attempts to connect the relationship between building type, location, and density does provide great insight into the true destination of the parker and the success (or frustration) they experience when finding a parking space near (or far from) their destination. Additionally, given the impact of COVID-19, any data collected during this period needed to be adjusted to reflect typical parking utilization patterns and demand before COVID.

Study Area

Exhibit 1 illustrates the study area boundary: the railroad to the north, Route 349/Poquonnock Road to the east, Shennecossett Road to the south, and the coast to the west. Apart from Electric Boat (EB), this area is dominated by single family residential neighborhoods and has only a small amount of office, retail, and restaurant uses. From a parking perspective, this area mainly consists of private off-street lots, a small number of public lots, and a mix of residential and non-residential on-street facilities.

Given the size of the study area, the area was subdivided into zones which are loosely designated on the characteristics of the land use activities found in each area and by major roadways that might affect acceptable walking distances from parking location to destination. Additionally, each block within the study area was assigned a unique code that was used to geographically link on- and off-street parking supply and demand. This is an important distinction as the parking demand model and forecast of future condition is based on land use information which is best defined by blocks. As a result, inventory and occupancy data is expressed in terms of block coding.

Exhibit 1: Study Area Boundary and Block Coding

Methodology

As background, this chapter of the report briefly outlines the tasks and methodology that Kimley-Horn employed to achieve Southeastern Connecticut Council of Governments (SCCOG's) expectations for the first phase of this assignment. After a project kick-off meeting, a preliminary tour of the study area was completed. Kimley-Horn then reviewed available data, plans, and reports provided by the City to understand important background information to analyze in conjunction with EB facilities.

STAKEHOLDER INTERVIEWS

During the project kick-off meeting, different City and EB stakeholders were identified. Prior to the development of a field data collection plan, Kimley-Horn conducted group and one-on-one virtual interviews to 1) reinforce the goal of the study; 2) educate stakeholders on the study methodology; 3) gather insight into the issues, challenges, and solutions that are specific to each group or individual; and 4) obtain guidance and approval for the field data collection plan.

The list of stakeholders interviewed included, but was not limited to, the City of Groton Mayor; Chief of Police; Public Works Director; Planning and Zoning Director; Town of Groton Planning Director; EB human resources, facilities, and planning staff; SCCOG staff, and residents of Groton. Given COVID-19 travel and meeting restrictions, all interviews were virtual, and topics included pre-COVID parking stress and challenges, curbside (City) and off-street (EB) parking management practices, the residential parking permit program, EB staffing volumes (before and during COVID), EB staffing projections, commercial and residential development initiatives, and future public outreach strategies. Collecting parking activity patterns during the pandemic also was a topic of discussion given the fact that hourly occupancy data would not be representative of current conditions and, in the case of EB parking demand, could not be used to estimate future EB parking needs. Kimley-Horn staff described to stakeholders the role of the land-use-based and population-based parking demand modeling efforts and how those models would be used to replicate pre-COVID parking conditions.

DATA COLLECTION

A data collection plan was created by Kimley-Horn and approved by SCCOG. Data collection took place on December 2, 2020 to capture existing parking inventory and occupancy within the study. The data collection plan met the following conditions:

- Occupancy surveys conducted during a single typical weekday as determined by Kimley-Horn and the parking committee
- Occupancy survey conditions during four time periods during a typical weekday to ensure that the system-wide peak was recorded, and unique off-peak issues were identified
- Data collection techniques including a combination of foot patrols and vehicle "windshield" surveys
- No information on parking inventory or use of spaces within the EB complex was collected by Kimley-Horn and any parking data relative to EB operations within its complex must be provided by General Dynamics

PARKING SUPPLY AND DEMAND ANALYSIS

After data collection was completed, existing peak-hour parking data was determined, and peak-hour occupancy was analyzed for the different parking facility types. Please note, given the impact of COVID-19, Kimley-Horn created two existing condition scenarios. The first used December 2020 field data and land use information to establish the current relationship between active (and inactive) office, retail, restaurant, and residential land uses as well as observed peak parking occupancy. These relationships are best represented by building square feet, residential dwelling units, theater/restaurant seats, and hotel rooms. For example, the recommended peak-hour parking ratio per 1,000 gross square feet of office is typically between 2.5 and 3.5 spaces per 1,000 gross square feet. However, given COVID conditions, the parking ratios derived from the field surveys needed to be adjusted to reflect typical pre-COVID conditions. Existing and future land use data was provided by the City and was used to perform a parking supply and demand analysis. The steps used to perform the parking supply and demand analysis included:

- Development of an interactive parking supply and demand model
- Assessment of the impact of future development and transit initiatives
- Assessment of future parking supply/demand surplus and deficit

The interactive parking supply and demand model is based on data collected in the field in December 2020 and adjusted based on parking industry standard demand ratios to reflect non-COVID conditions. To assess the impact of future development and transit initiatives, the City provided a list of potential future developments that was layered into the pre-COVID land use analysis. This data was considered for the assessment of future parking supply and demand surplus and deficit.

REPORTING

In addition to this report, a presentation of the preliminary findings of **Chapter 1 – Existing and Future Parking Analysis,** was given to stakeholders on March 18, 2020 where discussion regarding solutions to the future parking deficit began.

Assessment of Existing Conditions

The assessment of existing conditions is a foundational component of this comprehensive parking study. The parking demand was linked to available parking supply to determine the adequacy of the existing parking system's capacity.

PARKING INVENTORY

The following pages summarize the inventory of all on-street, public off-street, and private off-street spaces in the study area by zone and block ID. Private off-street parking spaces include lots that service apartment buildings, restaurants, offices, light industrial uses, and other commercial businesses but does not include driveways in single-family residential neighborhoods. A spreadsheet containing the inventory data for each individual garage, lot, and block face for on-street parking has been provided to SCCOG and the City. It must be noted that the inventory of EB spaces that is presented herein was first based on field surveys. Given the mixture of EB owned, operated, and leased parking lots and the condition of some of those lots (faded pavement markings, complicated property boundaries, and dated lot signage), Kimley-Horn worked with EB staff to clarify which EB and non-EB lots are, in fact, available to meet current EB needs.

Table 1 illustrates that of the 13,526 parking spaces within the study area, 3,470 (26 percent) are on-street, 644 (5 percent) are lots or structures open to the public (which could be publicly or privately owned and operated), and 9,412 (70 percent) are restricted to a specific user group. Facilities open to the public include lots and one parking structure that are publicly or privately owned. For example, a privately-owned parking lot that offers parking to anyone for a monthly rate is classified as publicly accessible.

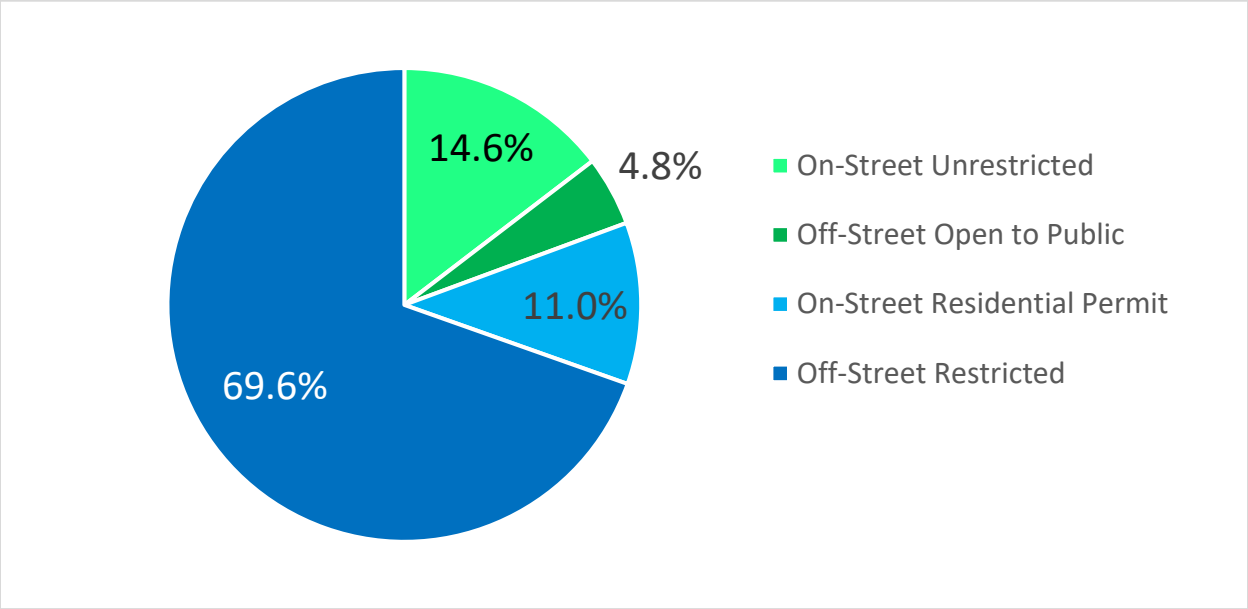
While there is no "right mix" of public and private on- and off-street parking facilities, it was surprising to find only 644 (5 percent) spaces within the study area are owned/operated by the City and/or available to the public. This dramatically limits the parking system's ability to meet the needs of different parking user groups as the majority of off-street facilities are restricted to a specific user group. This limitation also applies to curbside parking. Based on the single-family residential nature of the area, a majority of on-street spaces are preserved for residents and their short-term parking visitors through the City's residential parking permit program. With regards to the supply of curbside spaces in residential permit program zones, it was initially difficult to determine through field surveys if a street or curbside area was part of a zone as the majority of residential permit program signage only noted 30-minute, 1-hour, and 2-hour limitations and few streets had definitive "residential permit parking only" signage. Finally, the curbside spaces that do not fall within a residential permit program zone include various duration limitations (15-minute, 30-minute, etc.); Americans with Disabilities Act (ADA) handicapped accessible; loading zones; and unrestricted spaces and were simply labeled non-residential for purposes of this study.

Table 1: Current Inventory of Parking Spaces by Type and Zone

Zone	On-Street		On-Street	Off-Street		Off-Street	Total
	Non-Residential	Residential Permit Parking	Total	Open to Public	Restricted	Total	
A	975	508	1,483	282	1,856	2,138	3,621
B	334	71	405	122	1,967	2,089	2,494
C	163	282	445	240	4,041	4,281	4,726
D	504	633	1,137	0	1,548	1,548	2,685
Total	**1,976**	**1,494**	**3,470**	**644**	**9,412**	**10,056**	**13,526**
Percentage	15%	11%	26%	5%	70%	74%	100%

As illustrated in **Figure 1**, 81 percent of all parking spaces in the study area are restricted to specific user groups and are not available to the public.

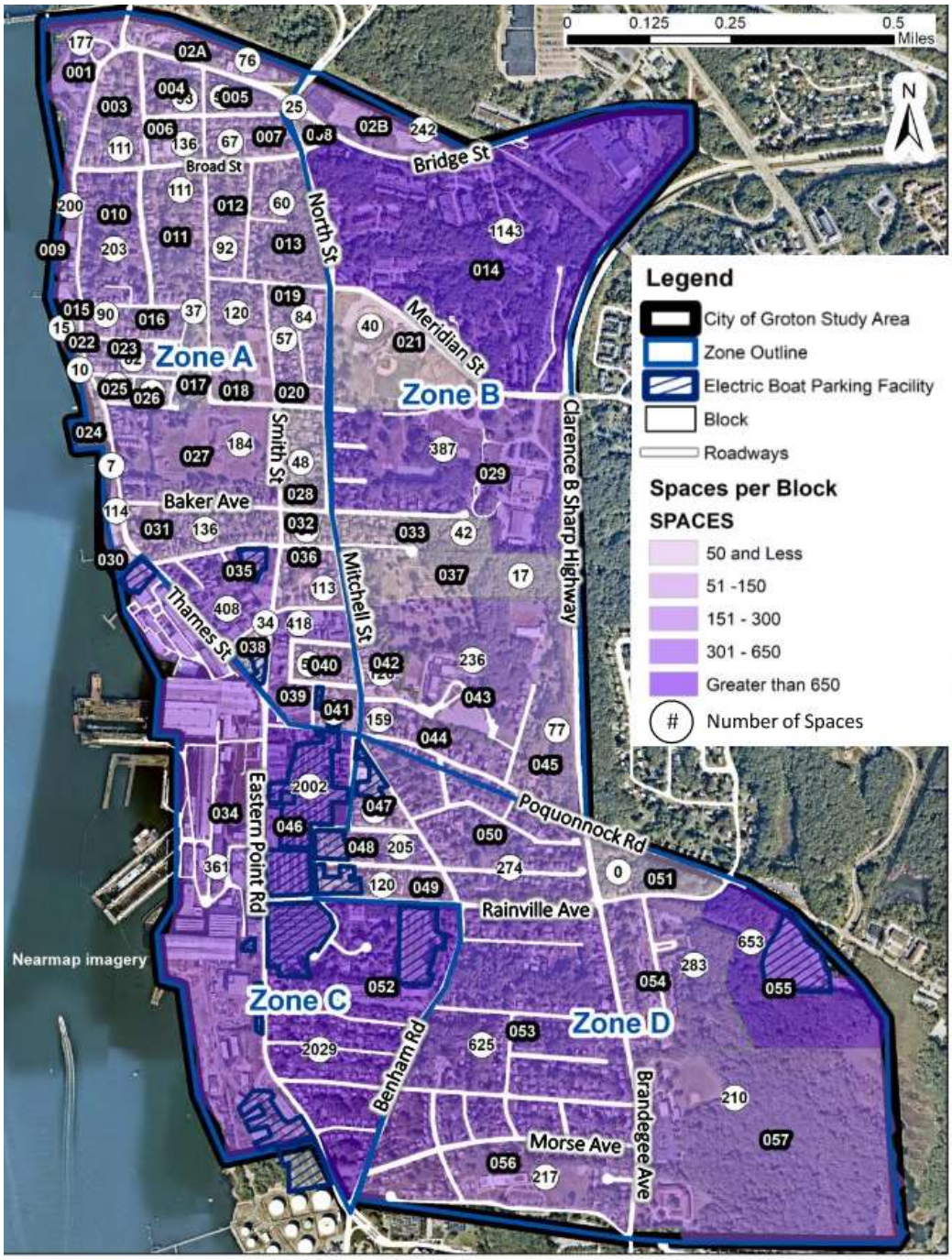
Figure 1: Percent Inventory by Parking Spaces Type



The restrictive nature of private lots and limited number of publicly-accessible spaces underlines the importance of maximizing the efficiency of spaces that are available to anyone who frequents those offices, apartments, shops, and restaurants that do not have a reserved supply of spaces.

Exhibit 2 shows the total supply of each block in the City of Groton study area.

Exhibit 2: Inventory of All On- and Off-Street Spaces by Block



PARKING OCCUPANCY

Parking counts for all public and private, on- and off-street spaces in the City of Groton study area were conducted on Wednesday, December 2, 2020 between the hours of 5:00 AM to 7:00 AM, 10:00 AM to 12:00 PM, 3:00 PM to 5:00 PM, and 8:00 PM to 10:00 PM. From the count data collected, a peak period of parking activity was determined, and peak hour occupancy heat maps were modeled throughout the study area.

Peak Period Determination

While the detailed survey data for all four time periods has been provided to the City, the focus of the assessment of existing and future parking occupancy, supply, and demand is on the peak period of activity. Summarizing the count data by zone, **Table 2** shows that parking occupancy of all public and private, on- and off-street spaces peaked between 10:00 AM and 12:00 PM and equaled 5,723 observed vehicles, or 42 percent of the total system supply.

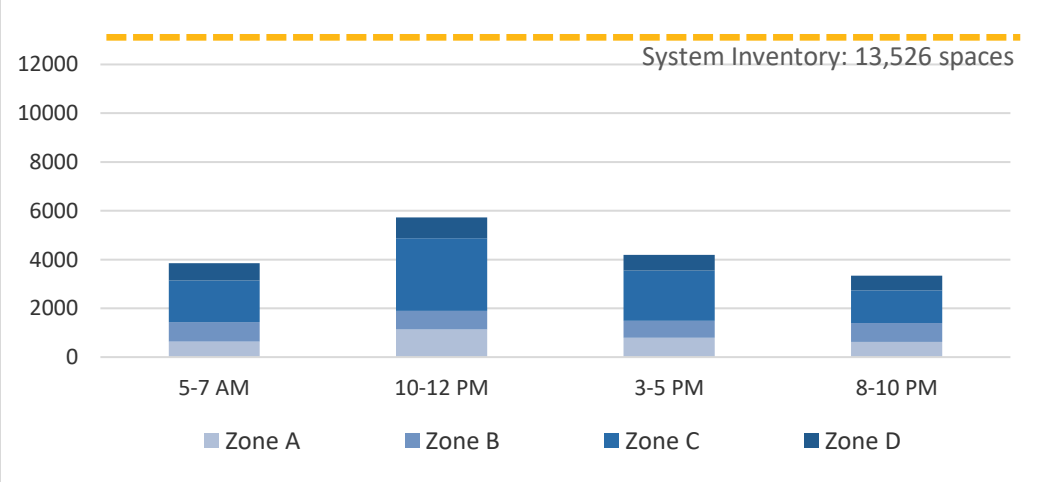
Table 2: Inventory and Occupancy of All On- and Off-Street Spaces

Zone	Inventory	# of Occupied Spaces			
		5:00-7:00 AM	10:00-12:00 PM	3:00-5:00 PM	8:00-10:00 PM
A	3,621	638	1,130	796	628
B	2,494	803	768	687	770
C	4,726	1,707	2,977	2,061	1,341
D	2,685	699	848	647	597
Total	**13,526**	**3,847**	**5,723**	**4,191**	**3,336**
%	**---**	**28%**	**42%**	**31%**	**25%**

Denotes Peak Period

When looking at the peak hour through the lens of the different zones in the study area, it appears that the 10:00 AM to 12:00 PM time period consistently experiences the most occupancy with the exception of Zone B. Zone B consists of mostly institutional and residential uses and experiences the most occupancy during the 5:00 AM to 7:00 AM time period and is reflective of the fact that most residents' vehicles are still at home that early in the morning.

Figure 2: System Wide Parking Occupancy by Survey Period



Peak Period Parking Occupancy

Based on the system-wide, weekday, daytime peak of parking activity in the study area, **Exhibit 3** illustrates the relative occupancy of each lot, street, and block face. **Exhibit 3** also shows that the highest parking occupancy occurs in Zone C near EB facilities. The rest of the study area experienced low parking densities largely due to teleworking and stay at home order restrictions from the COVID-19 pandemic.

Exhibit 3: Peak Parking Occupancy by Block – City of Groton

ON-STREET PARKING OCCUPANCY

From a geographic and land use perspective, single-family dwelling units and related zoning dominate the study area and, therefore, the most prominent designation of on-street parking in the study area are residential permit program zones**.** As noted previously, 11 percent of all parking spaces and 43 percent of all on-street spaces in the study area fall under this restriction. The remaining 57 percent of non-residential on-street parking permit spaces include a small number of ADA accessible, 15-minute, 30-minute, 1- and 2-hour limits, and a large volume of unrestricted curbside spaces. While the field data does differentiate between the occupancy of ADA, 15-minute, and other timed curbside spaces, the summary of parking occupancy that follows focuses on residential permit versus non-residential curbside parking categories given the dominance of the residential permit program spaces. **Table** shows residential and nonresidential inventory and occupancy data for Zones A and B in the study area.

Table 3: Inventory and Occupancy of Residential On-Street Spaces by Zone

Zone	On-Street Space Type	Inventory	# of Occupied Spaces				% Peak Hour Occupancy
			5:00-7:00 AM	10:00-12:00 PM	3:00-5:00 PM	8:00-10:00 PM	
A	Residential Permit	1,064	174	153	136	201	14%
	Non-Residential	437	99	89	75	99	20%
B	Residential Permit	405	35	34	34	30	8%
	Non-Residential	0	0	0	0	0	-

Exhibit 4 shows the peak hour occupancy of on-street parking facilities in the northern section of the study area. Between Zones A and B, most on-street parking spaces are unoccupied except for some areas near the river rising above 50 percent occupancy.

Exhibit 4: Peak On-Street Parking Occupancy – City of Groton North

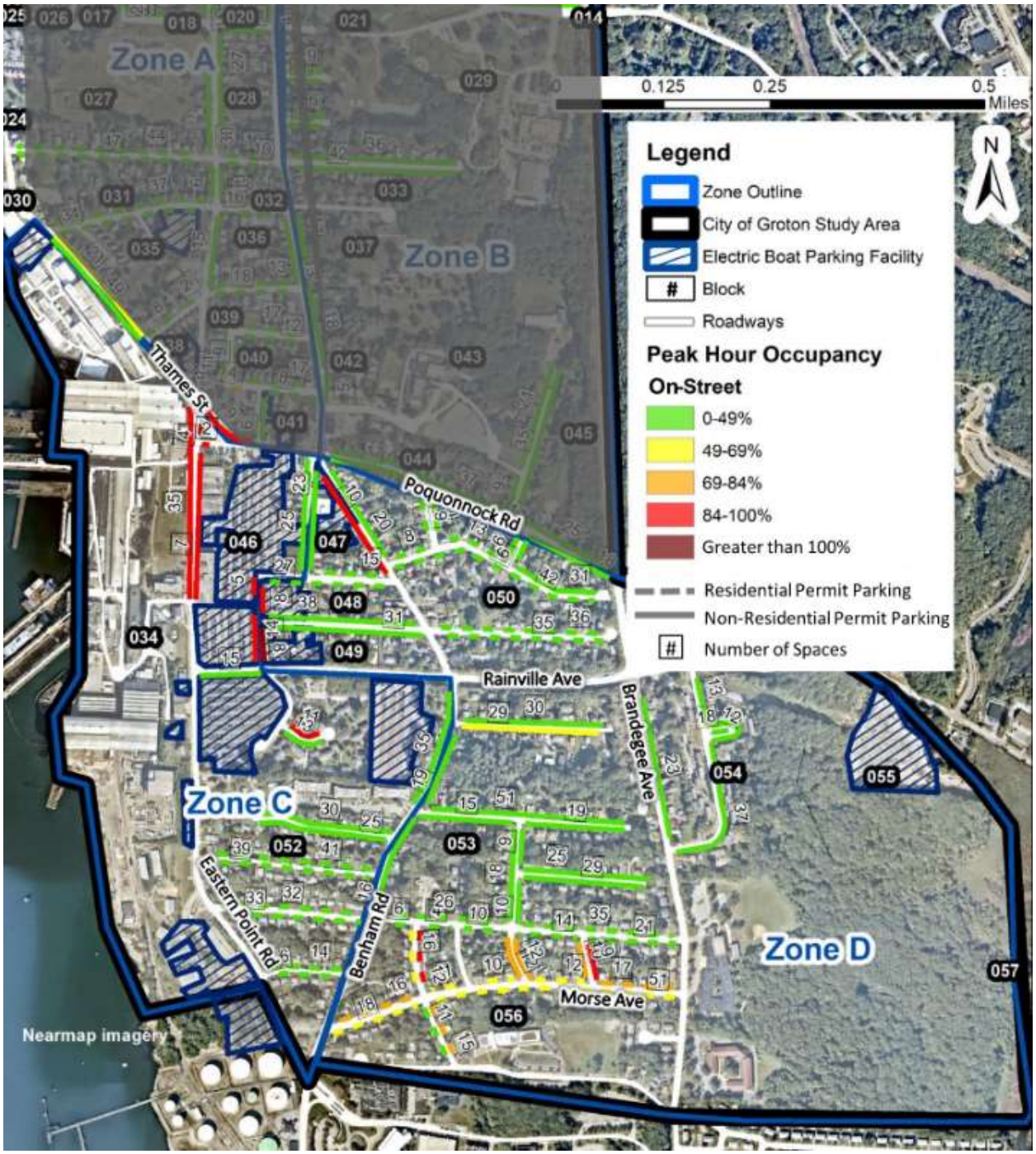
Table 4 shows the residential and non-residential inventory and occupancy data for Zones C and D in the study area.

Table 4: Inventory of Occupancy of Non-Residential On-Street Spaces by Zone

Zone	On-Street Space Type	Inventory	# of Occupied Spaces				% Peak Hour Occupancy
			5: 00-7:00 AM	10:00-12:00 PM	3:00-5:00 PM	8:00-10:00 PM	
C	Residential	270	67	87	78	52	32%
	Non-Residential	175	25	18	26	37	10%
D	Residential	637	166	170	133	151	27%
	Non-Residential	500	113	175	170	196	35%

There are a higher number of on-street areas with high occupancy, mostly contained within Zone D. The southern areas of Zone D are mainly residential, with dashed lines illustrating residential parking permit areas. **Exhibit 5** shows the peak hour occupancy of on-street parking facilities in the southern section of the study area.

Exhibit 5: Peak On-Street Parking Occupancy – City of Groton South



OFF-STREET PARKING OCCUPANCY

Table 5 summarizes the off-street parking inventory and occupancy for lots or garages that are available to the public. These facilities make up less than 6 percent of the total available parking inventory in the City of Groton. The peak period was observed to be 10:00 AM to 12:00 PM with 445 total spaces occupied, of which the vast majority are contained within Zones A and C.

Table 5: Inventory and Occupancy of *Publicly Available* Off-Street Spaces by Zone

Zone	Inventory	# of Occupied Spaces			
		5:00-7:00 AM	10:00-12:00 PM	3:00-5:00 PM	8:00-10:00 PM
A	282	80	222	96	42
B	122	2	3	13	0
C	240	60	220	200	150
D	0	0	0	0	0
Total	**644**	**142**	**445**	**309**	**192**
%	**---**	**22%**	**69%**	**48%**	**30%**

Denotes Peak Period

Private off-street spaces, as shown in **Table 6**, experience peak occupancy during the 10:00 AM to 12:00 PM period. The peak hour for these facilities is shown to be 10:00 AM to 12:00 PM when 4,552 spaces (48 percent) of the spaces are occupied.

Table 6: Inventory and Occupancy of *Private* Off-Street Spaces by Zone

Zone	Inventory	# of Occupied Spaces			
		5:00-7:00 AM	10:00-12:00 PM	3:00-5:00 PM	8:00-10:00 PM
A	1,856	285	666	489	286
B	1,967	766	731	640	740
C	4,041	1,555	2,652	1,757	1,102
D	1,548	420	503	344	250
Total	**9,412**	**3,026**	**4,552**	**3,230**	**2,378**
%	**---**	**32%**	**48%**	**34%**	**25%**

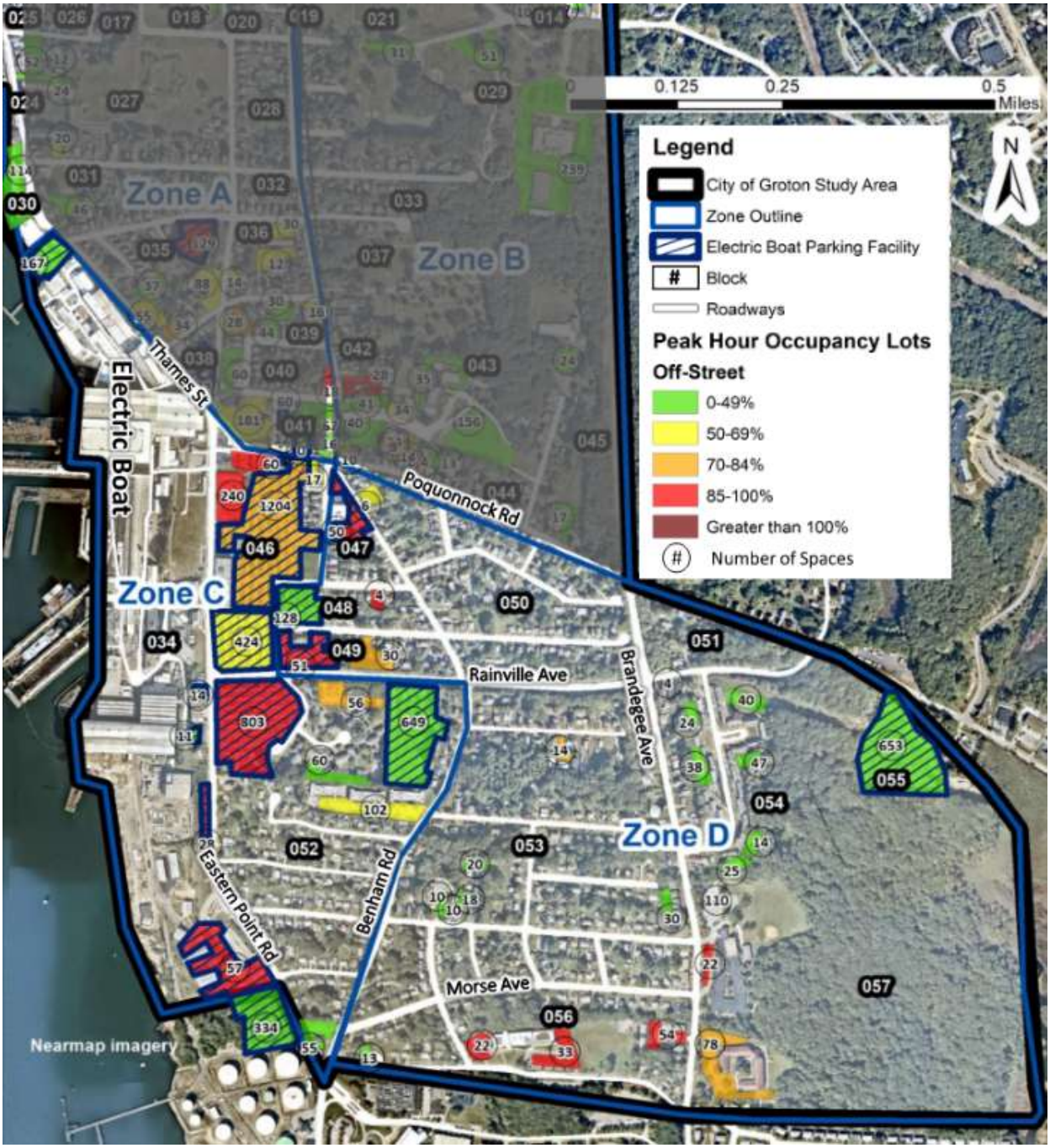
Denotes Peak Period

Exhibit 6 shows that much of the off-street parking facilities on the northern side of the study area (Zones A and B) experience under 50 percent occupancy (dark green shaded lots/garages) during the peak period. In these two zones, there are a select few off-street facilities that are above the 50 percent category. It is acknowledged that this occupancy data is derived from counts performed during the pandemic and that adjustments will be made later in the report to account for the decrease in parking demand.

Exhibit 6: Peak Public and Private Off-Street Parking Occupancy – City of Groton North

As shown in **Exhibit 7**, the surface lots in the northern section of Zone C are the most occupied. These lots are directly linked, as shown by crosshatching, to EB. A few lots in Zone D also show high occupancy, which belongs to the Marine Science Magnet High School of Southeastern Connecticut and Sutton Place Apartments/Avery Heights Apartments on Brandegee Avenue.

Exhibit 7: Peak Public and Private Off-Street Parking Occupancy – City of Groton South



Land Use and Population Parking Demand Analysis

As noted in the introduction, the modeling of existing and the forecasting of future parking demand is based on an analysis of the relationship between current, peak, weekday, daytime, parking activity, and land use and employment population activity. Parking occupancy only records where a vehicle is parked, but the land-use and population analysis suggest where the individual would prefer to park if they could park in the same block where they live, work, or play. Additionally, the land use and population-based modeling of existing parking demand can be recalibrated to reflect pre-COVID conditions, upon which future EB and development parking demand can be layered.

As noted earlier, as opposed to applying parking demand estimates to existing and future office buildings, manufacturing space, and/or production targets, the estimate of additional EB parking demand is best modelled using staffing projections, (population data). Given projected EB staffing volumes and anticipated staff modal splits (drive alone, carpool, public transit, etc.), Kimley-Horn layers estimated EB parking demand onto the broader analysis of land use activity throughout the study area.

City of Groton Land Use Demand

The City of Groton maintains a GIS database of all land use activity in the study area. For purposes of this study, land uses were classified as either office, retail, restaurant, residential, institutional/cultural, or research/industrial. Institutional and cultural uses included government buildings, churches, educational facilities, and other historical or cultural landmarks. These figures do not include EB facilities as parking needs for EB are more accurately assessed using population data. The total density (in square feet or dwelling units) was quantified for the study area and for each zone and block. Total units of the land uses in the study area are shown in **Table 7** broken out by zone.

Table 7: Existing Land Use and Densities (Excluding EB)

Zone	Land Use Type and Density/Units						Parking
	Office Sq.ft.	Retail Sq.ft.	Restaurant Sq.ft.	Institutional Sq.ft.	Industrial Sq.ft.	Residential DU	Peak Occupancy
ZONE A	99,062	140,407	18,919	233,918	49,273	826	1,130
ZONE B	12,138	106,689	7,552	178,352	0	540	768
ZONE C	432,257	13,193	14,229	1,218	3,799,921	322	2,977
ZONE D	0	28,525	0	5,752	9,128	432	848
City of Groton	543,457	288,814	40,700	419,240	3,858,322	2,120	5,723

Parking demand ratios were then developed for each land use type based on the observed count of peak parking, calibrated by past planning experience and with the understanding of the change in parking behavior due to the COVID-19 pandemic. The demand ratios were applied to each specific land use within each block to recalculate peak hour parking demand. The Groton parking ratios and calibration process are shown in **Table 8.** In effect, the total system-wide peak volume of parked vehicles in all on-street and public and private off-street spaces were used to adjust the land-use-based parking demand ratios so that the demand estimates by building and block equaled the occupancy of all spaces observed during a typical non-event weekday daytime period.

One of the challenges of this land-use-to-peak-parking occupancy analysis is the presumption that all parking activity that was observed during field surveys is associated with the expected land use. However, the presence of EB creates a different parking relationship in this study area. An in depth look at EB's relationship to parking is presented in the next section of this report.

Table 8: Estimated Weekday Daytime Parking Demand Ratios (Spaces Demanded per Unit)

City of Groton (without EB)	Land Use Type and Density/Units							Calibration		
	Peak Period	Office Sq. Ft.	Retail Sq. Ft.	Restaurant Sq. Ft.	Institutional Sq. Ft.	Industrial Sq. Ft.	Residential DU	Demand Estimate	Peak Occupancy	Calibration Deviation
Parking Ratios	10a-12p	1.2	1.5	1.5	0.5	1.0	0.5	-		
Parking Demand	10a-12p	650	430	60	210	60	1,060	2,470	2,062	408

It must be restated that these ratios reflect a weekday daytime period between 10:00 AM and 12:00 PM when parking activity as a system peaks. Land use activities and associated parking demand ratios that typically peak in the evening and weekend are not referenced in this analysis. For example, residential dwelling units in an urban area can generate parking demand ratios as high as 1.0 and 2.0 spaces per unit depending on the number of bedrooms. However, during a weekday daytime period, many study area residents have driven their cars to their place of business. As such, the parking demand ratio for residential development during the weekday daytime period could be as low as 0.2 to 0.4 per unit. As will be discovered, COVID-19 had a direct impact on daytime residential parking and parking demand ratios. In addition, this process only included the City of Groton as a population-based analysis. An analysis was performed separately for EB.

As noted previously, the land use-based parking demand ratios illustrated here were influenced by COVID-19. For example, office peak weekday parking demand ratios typically fall within the 2.0 to 3.5 spaces per 1,000 gross square feet range, yet the office ratio shown in **Table 8** is only 1.2. This suggests that during the December field survey, office spaces in Groton were at 35–60 percent of normal capacity. Additionally, the typical weekday daytime demand ratio of 0.2–0.4 per dwelling unit for residential land uses was not applicable as a ratio of 0.5 spaces was determined based on the field data. This data shows that more residents' vehicles were parked at home during the pandemic than typically experienced.

EB Population Demand

Table 9 below shows the estimated EB demand based on observed parking occupancy in December 2020. In addition to EB owned and operated facilities, EB employees are known to park in non-EB owned/operated off-street lots, one garage, and, where appropriate, on-street parking spaces nearby. As noted in **Table 9**, Kimley-Horn assumed that 100 percent of observed parking occupancy in EB owned/operated lots, 100 percent in private but leased off-street lots (and one garage), and 100 percent occupancy in curbside spaces within close proximity to EB lots are associated with EB, while only 10 percent of observed occupancy in other on-street areas are associated with EB populations. These EB parking capture assumptions are shown in the table below and lead to an estimated peak demand for 3,528 EB staff, contractors, and visitors parking spaces.

Table 9: Estimated EB Demand Based on Observed Occupancy

Parking Type		Inventory	Peak Hour Occupancy 10:00 AM-12:00 PM	EB Capture	Estimated EB Occupancy
Off-Street	EB Owned/Operated	4,784	2,489	100%	2,824
	Private but Publicly Available	963	631	100%	631
	Off-Street Total	**5,747**	**3,455**	**100%**	**3,455**
On-Street	Residential Permit Areas	436	61	10%	6
	Adjacent to EB Plant	146	58	100%	58
	Other (Non-Residential)	431	87	10%	9
	On-Street Total	**1,013**	**206**	**35%**	**73**
Total		**6,760**	**3,661**	**96%**	**3,528**

To validate or calibrate the estimate of current parking demand from field observations, EB population data, trip mode, and persons per parked vehicle estimates were used to model EB parking demand. As shown in **Table 10,** the "Existing COVID" column reflects the existing conditions. Electric Boat provided information for total employees, percent on site during pandemic, and percent on site for first shift during 6:30 AM to 2:30 PM which falls within the parking system peak hour of 10:00 AM to 12:00 PM. Further, estimations were made for carpool and mode split factors in Groton based on surrounding area observations.

Table 10: Estimated Electric Boat Demand based on Population

	Existing COVID	Existing Non-COVID	Future Non-COVID
Total EB Employees	6,000	6,000	8,500
Percent on Site Due to COVID	80%	100%	100%
Adjusted Total EB Employees	4,800	6,000	,8500
Percent EB First Shift (6:30-14:30)	75%	75%	75%
Adjusted First Shift EB Employees	3,600	4,500	6,375
Estimated Car/Van Pool Person Per Auto	1.03	1.03	1.03
Estimated Alternative Mode Arrival	0.98	0.98	0.98
Population-Based EB Peak Hour Parking Demand	**3,425**	**4,282**	**6,066**

Using the data provided by EB and assumptions made, the estimated EB demand for the population using the existing conditions was found to be 3,425. This shows a deviation of only 103 from the estimated EB occupancy of **Table 9**. The calibrated population demand assumptions were then used to model pre-COVID conditions (4,282 space demand). Electric Boat also provided information for planned population growth—they intend to employ 2,500 more people in the future. This is reflected in the future non-COVID condition in the report and resulted in a demand estimate of 6,066 parking spaces.

Parking Demand Scenario Modeling

After calibrating and understanding City of Groton land use parking demand and EB employment parking demand in the study area for existing conditions (Scenario 1), two additional scenarios were created to model parking demand in existing non-COVID times (Scenario 2) and future non-COVID times (Scenario 3). These three scenarios are summarized in the following section.

Note that unlike the graphic depictions of observed parking occupancy which color codes peak parking occupancy by lot and block, Scenarios 1 through 3 color codes the relationship between parking demand (building and population activities) and supply (parking lots, garage, and on-street spaces). A perfect example of the relationship between a demand generator and parking supply is Block 034 which encompasses EB. There are very few parking spaces within the EB compound and when compared to the EB demand for parking a deficit of 2,775 spaces is illustrated. However, that demand is clearly satisfied by the large parking surpluses that exist in adjacent blocks as a parking lot does not generate demand. For ease of identification, the lots owned/operated by EB are identified using cross hatching.

SCENARIO 1: EXISTING PARKING DEMAND

City of Groton Land Use Demand Analysis – Scenario 1

Exhibit 8 shows the land-use-specific parking demand for the study area. Blocks shaded dark red identify areas where there is a deficit of parking based on the comparison between land use and population-specific parking demand and parking supply. Red suggests areas of stress where parking occupancy exceeds 85 percent of the supply while yellow and green show where ample parking is available. Also mapped in the exhibit is a ¼-mile radius around the EB block (Block 034) as a measure of a potential acceptable walking distance between parking locations and end destination.

Exhibit 8: Scenario 1 – Existing Land use Demand (During COVID-19)

There are only a few blocks in Scenario 1 that do not have sufficient parking to accommodate the land-use-based parking demand that is generated within that block. For example, Block 051 south of Poquonnock Road has a parking inventory of 0 spaces, but the land uses within it still generate a demand of 10 spaces which is illustrated as a deficit for that block. However, shaded colors of orange, green, and yellow illustrate blocks where the supply of on- and off-street spaces is greater than the demand generated by the buildings that occupy those blocks. The majority of the blocks in the study area have a surplus of parking for Scenario 1 during COVID-19.

The larger circles show a summary of the parking space surplus/deficit for each zone. For this scenario, most of the zones experience a network surplus, with Zone C being the only one to show a deficit. Zone C, being inhabited mostly by EB, explains this deficit, as EB generates a large demand that cannot be fully offset by surpluses within Zone C. It should be noted that EB has a parking facility (Lot M) outside Zone C that works to meet overall EB parking demand.

EB Population Demand Analysis – Scenario 1

As a parking study within a study, further analysis was done to assess the impacts specifically from EB. After careful evaluation of the study area—in addition to the lots owned and operated by EB—various publicly available off-street lots and on-street parking within the ¼-mile walking buffer were determined to be *primarily utilized* by EB. The sum of the surpluses of these pre-determined facilities were used to accommodate the deficit from EB, or Block 034. **Table 11** below shows how this deficit can be dispersed to surrounding surpluses, differentiating between facilities owned and operated by EB and facilities primarily utilized by EB. In this scenario, the deficit can be accommodated by EB facilities alone, and overall, there is a surplus of 1,726 spaces.

Table 11: Electric Boat Surplus and Deficit Summary – During COVID-19

EB (Block 034) Demand/Deficit	Supply of EB Parking Facilities	Surplus of Additional Parking Utilized by EB	EB Surplus/Deficit within Walking Buffer
-2,802	3,770	758	1,726

SCENARIO 2: EXISTING PARKING DEMAND (PRE COVID-19 IMPACTS)

The second scenario models the study area's existing parking supply and demand pre-COVID-19. Land use parking demand ratios were adjusted to match more typical conditions and are shown in **Table 12**. EB employment was updated to reflect the provided existing non-COVID number of employees.

Table 12: Existing Land Use Demand Ratios for Scenario 2 – Pre-COVID-19

Zone	Land Use Type and Density/Units						
	Peak Period	Office Sq.ft.	Retail Sq.ft.	Restaurant Sq.ft.	Institutional Sq.ft.	Industrial Sq.ft.	Residential DU
City of Groton	10:00 AM-12:00 PM	2.0	3.0	8.0	2.0	1.0	0.6

City of Groton Land Use Demand Analysis – Scenario 2

Exhibit 9 shows the existing population and land use-based parking supply and demand analysis adjusting for pre-COVID conditions. Like **Exhibit 8,** blocks shaded dark red identify areas where there is a deficit of

parking based on the land use and population-specific demand. Red suggests areas of stress where parking capacity exceeds 85 percent of the supply and parking surplus is low, and yellow and green areas show where ample parking is available.

Exhibit 9: Scenario 2 – Existing Land use Demand (Pre-COVID-19)

The larger circles show a summary of the parking space surplus/deficit for each zone. As shown, the deficit in Zone C has increased in this scenario. In Scenario 1, Zone C experienced a surplus of approximately 100 spaces. However, the deficit in Block 034 within Zone C was much greater, but the demand was dispersed through available surpluses in the Zone. In Scenario 2, there were fewer surpluses available in Zone C due to the increased land use demand from adjusted parking demand ratios for non-COVID conditions which makes the overall deficit in this zone much greater—approximately 1,550 spaces. The remaining zones still experience overall surpluses in this scenario.

EB Population Demand Analysis – Scenario 2

Table 3 below shows how the EB parking deficit in Block 034 can be dispersed to surrounding surpluses, differentiating between facilities owned and operated by EB and facilities primarily utilized by EB.

Table 13: Electric Boat Surplus and Deficit Summary – Pre-COVID-19

EB Demand Deficit	Supply of EB Parking Facilities	Supply of Additional Parking Utilized by EB	Surplus/Deficit within Walking Buffer
-3,957	3,260	678	-19

In this scenario, the deficit cannot be accommodated by EB facilities or facilities utilized by EB, and overall, there is a deficit of 19 parking spaces. Presumably, during typical conditions this parking deficit is likely satisfied by other private parking lots that were not initially included in Kimley-Horn's determination of non-EB owned/operated supply and/or by creative parking on residential streets and in residential driveways. Interviews with stakeholders revealed the fact that homeowners were, during peak EB staffing periods, selling access to driveways to EB workers and other commuter groups.

SCENARIO 3: FUTURE PARKING DEMAND

Assessment of Future Conditions

Understanding parking supply and demand in existing conditions will equip the City to plan appropriately for the future. Through coordination with the City and EB, a third scenario was created to model planned parking demand generators in a future condition.

In this scenario, it was assumed that parking behavior returns to pre-pandemic behavior. As such, the parking demand under Scenario 2 was used as a foundation. Potential future developments, provided by the City of Groton, were added to existing land uses which increased demand based on land use as shown in **Table 14.** Additionally, this future scenario accounts for EB's plan to hire 2,500 more employees in the future.

Table 14: Summary of Future Developments – Post-COVID-19

Zone	Industrial Sq. Ft.	Institutional Sq. Ft.	Office Sq. Ft.	Residential DU	Restaurant Sq. Ft.	Retail Sq. Ft.
A	35,340	-	95,758	5	12,737	-
B	-	-	10,000	80	-	15,900
C	-	-	-	-	-	-
D	-	-	-	60	1,658	-

City of Groton Land Use Demand Analysis – Scenario 3

Exhibit 10 shows the land use-specific parking demand given future conditions post-COVID-19. Like **Exhibit 8** and **Exhibit 9,** blocks shaded dark red identify areas where there is a deficit of parking based on the land-use-specific demand. Red suggests areas of stress where parking capacity exceeds 85 percent of the supply and parking surplus is low, and yellow and green areas show where ample parking is available.

Exhibit 10: Scenario 3 – Future Land use and Population Demand (Post COVID-19)

EB Population Demand Analysis – Scenario 3

Table 15 shows how the deficit in block 34 is dispersed to surrounding surpluses, differentiating between facilities owned and operated by EB and facilities primarily utilized by EB.

Table 15: Electric Boat Surplus and Deficit Summary – Post-COVID-19

EB Demand Deficit	Supply of EB Parking Facilities	Supply of Additional Parking Utilized by EB	Surplus/Deficit within Walking Buffer
-5,181	3,260	678	-1,243

In this scenario, the deficit cannot be accommodated by EB facilities or facilities used by EB, and overall, there is a deficit of 1,243 spaces.

Once this deficit number was identified, it was shared and discussed with EB as part of the stakeholder process. As a result of these discussions, EB has presented a scenario to internally address this parking shortfall by year 2027 when EB estimates additional employees are anticipated to begin employment. Their plan of action to address the identified parking deficit includes:

- Leasing up to 640 spaces from Pfizer at their East Campus (would require shuttle services)
- Leasing 330 spaces at the Buckeye Lot beginning 9/30/2024
- Leasing 225 spaces (with expansion up to 500) from Pfizer at their West Campus (would require shuttle services)
- Relying on the availability of approximately 225 spaces at the Thames Garage

This plan identifies the potential availability of up to 1,695 additional parking spaces that may be available to EB employees exceeding the identified deficit number of 1,243 spaces by 452 spaces. In addition to their plan to make additional parking inventory available to their increasing workforce, EB also has identified other options they plan to explore and possibly implement to further reduce parking demand. These measures include:

- Shifting workers from first shift to other shifts to equalize parking demand among shifts
- Increase work-from-home opportunities for their employees to reduce building footprint needs and reduce parking demand
- Promote rideshare and carpooling opportunities
- Increase public transportation in partnership with the City of Groton
- Reduce greenhouse emissions by 2.5 percent per year

Finally, EB has identified the fact that on any given workday, 20 percent of their workforce may not be present in Groton due to paid time off, sick leave, etc. This condition was accounted for when field data counts were taken and is accounted for in the 1,243-space deficit projection.

The plan identified by EB is a viable solution to meeting their upcoming increase in parking demand. However, this plan is mostly dependent on other parties supplying additional parking inventory, as EB does not directly own or control any of the parking facilities identified in their plan. The fact that leases can be cancelled with notice at any given time is concerning. For this reason, it is recommended to plan for a 1,243-space deficit until EB's identified plan is solidified and reviewed by the City of Groton as being acceptable.

Summary of Existing and Future Parking Supply and Demand Conditions

Regarding parking inventory, curbside spaces in residential parking permit zones, as well as a vast majority of off-street spaces, have time limitations (30-minute, 1-hour, and 2-hour) and/or are restricted to specific groups (resident permit holder, EB staff/visitor, or other permitted groups). This limits the amount of shared parking throughout the study area. Occupancy counts showed that systemwide, there is a significant surplus of spaces even during pre-COVID conditions but, adjusting for COVID-19, off-street facilities within proximity to EB have exceeded their practical capacity. Considering land use demand, and excluding EB, future potential development will have only a modest impact on the systemwide parking surplus or deficit condition. However, EB staffing projections (+2,500 employees) are anticipated to create a 1,243-parking space deficit within an area of influence around the facility.

Given an understanding of future City of Groton area parking needs and the needs of EB, the next chapters of this parking management plan will examine opportunities to create and fund additional parking structures, including park-and-ride intercept facilities and/or mixed-use development; municipal regulations, ordinances, and administrative policies to help the City of Groton manage existing and future public parking assets; and maintain and improve the quality of residential life through parking management. Finally, once those parking responsibilities are documented, the parking management plan will identify a municipal parking organizational structure to meet those responsibilities.

II. Structured Parking Solutions

Given an anticipated 1,243 space parking deficit anticipated due to Electric Boat (EB) expansion, this chapter examines the potential to mitigate this deficit through the development of a parking structure or structures. Working with the Southeastern Connecticut Council of Governments (SCCOG) staff, five alternative sites were examined and include sites within close proximity to EB and more remote sites that could act to intercept EB commuters. It must be noted that this chapter assesses the advantages and disadvantages of these locations and does not presume who will fund, design, own, operate, or maintain a new and large parking facility or parking facilities. While four of the five sites are on land owned by EB, this assessment does not presume that EB will be solely responsible for new parking facilities development. That said, as the parking deficit is exclusively associated with EB production, it is anticipated that some public and private partnership centering on, but not be limited to, General Dynamics will be required to develop and operate a large EB centric parking facility.

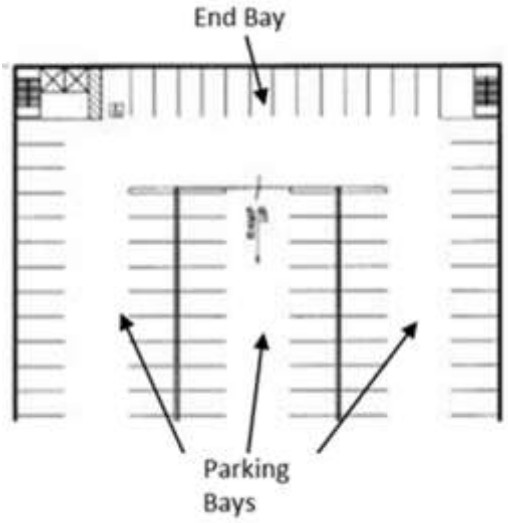
Structured Parking Design, Operations, and Management Best Practices

Before the structured parking site alternative feasibility assessments can be presented, some background in structure parking design, operation, and maintenance is required. The design, construction, finance, and management guidelines that follow do not cover all the elements associated with structured parking as they can include but not be limited to project delivery, site constraints, safety and security, lighting, and structural systems. For the purpose of a new structured parking assessment for the City of Groton parking management plan, the design guidelines that follow focus on site requirements/constraints, concept design and circulation, vehicular access, parking stall geometrics, design efficiency, design durability, and parking operations and management. It must be noted that the guidelines presented in this document have been previously published by the National Parking Association (NPA), American Council of Engineering Companies (ACEC), American Concrete Institute (ACI), US Green Building Council's (USGBC), International Building Code (IBC), and the Precast/Prestressed Concrete Institute (PCI), but can be influenced by local building codes and design standards unique to the area.

SITE REQUIREMENTS AND CONSTRAINTS

Large and rectangular-shaped sites are ideal for parking structures. Although flat sites are generally more economical to develop, sloped sites can provide design opportunities such as access on different levels and/or no ramping between levels. For a reasonably efficient parking layout, double-loaded parking bays range in width from about 54 to 60 feet, depending upon the angle of parking and the width of the parking space. The overall width of the structure should be determined based upon multiples of the chosen parking bay width. An ideal length for a parking structure is at least 240 feet. Longer sites provide the opportunity to park along the end bays, which provides more parking spaces, improves efficiency, and lowers the cost per space. A longer site also allows for shallower ramps which provide improved user comfort.

Figure 3: Site Layout



PARKING LAYOUT EFFICIENCY

Parking efficiency is expressed in square feet of construction per parking space. Building less structure-per-space results in a drop in the per-space cost. Non-parking speed ramps, for example, increase the square feet per space. An efficient site, development footprint, and functional design could achieve a design efficiency of 300–330 square feet per space. An inefficient footprint and complicated structural and functional requirements would increase that figure and, therefore, overall construction and operating costs. For example, a 500-space parking structure that was developed at $50-per-square-foot construction cost would cost $7.5 million under a per-space efficiency of 300 square feet, while that same 500-space facility would cost $8.75 million if per-space design efficiency equaled 350 square feet.

PEDESTRIAN REQUIREMENTS

Pedestrian traffic is equally as important in a parking structure as vehicular traffic. A safe, secure, and well signed pedestrian path must be provided. Pedestrian access at the grade level should be separated from vehicular ingress and egress. Pedestrian access is usually adjacent to stair/elevator towers. It also is desirable to place a dedicated pedestrian aisle adjacent to a vehicle entry/exit because pedestrians are naturally attracted to these openings.

Figure 4: Pedestrian Wayfinding

DURABILITY

The design of a parking structure should, at a minimum, conform to the intent of ACI's guide for the *Design of Durable Parking Structures (ACI 362).* It is recommended to perform an analysis in the schematic design phase to determine which durability elements should be included in the design of a parking structure. These elements include sealers, deck coatings, concrete additives, corrosion inhibitors, and epoxy-coated reinforcement. Durable parking structures also require quality concrete (low water-to-cement ratio), adequate concrete cover, proper concrete curing, and good drainage. Tradeoffs between initial costs and long-term maintenance costs should be considered. Enhanced durability systems should be provided in areas with severe exposure—such as supported structure near vehicular entries and snow storage areas on the roof level.

The design life of a properly-maintained parking structure should be 60± years. The life span of a parking structure must be carefully considered given changing travel patterns and shifts in travel mode. A parking structure developed in the City of Groton, for example, would have a useful life cycle through 2085, assuming a 2025 completion date.

ACCESS

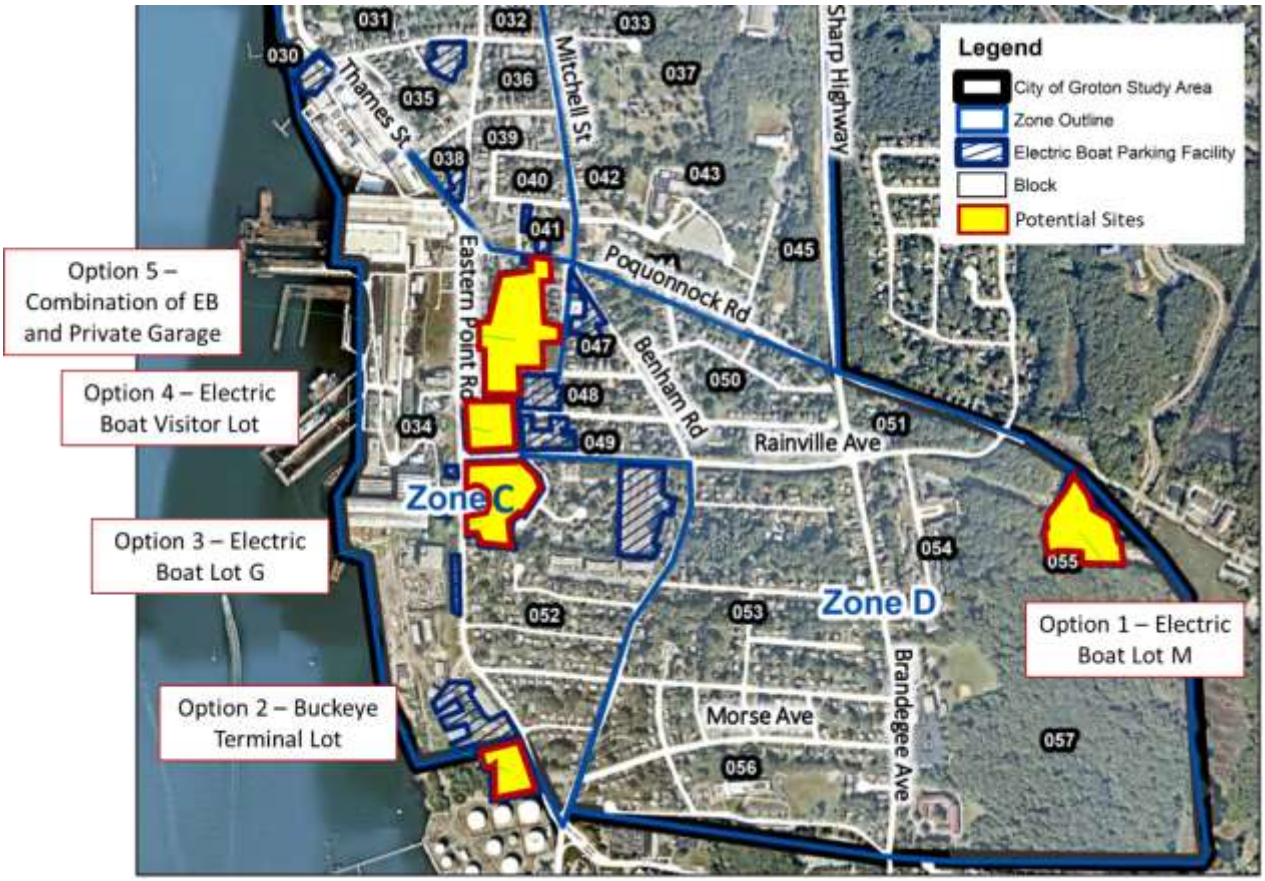
Vehicle entrances should be visible and easily identifiable. The minimum distance of entry/exits from corner intersections should be at least 75–100 feet (preferably 150 feet). Entrances and exits should have clear lines of sight. It is preferable to enter a facility from a one-way street or by turning right from a two-way street and to exit a facility by turning right on a low-volume street. High traffic volumes and left turns can slow exiting and cause internal traffic backups. Entry lane gates should be located far enough away from the street to allow at least one vehicle behind the vehicle in the service position (at a ticket dispenser, card reader, or cashier booth) without blocking the sidewalk.

It is very important to provide the appropriate number of entry/exit lanes to meet projected peak traffic volumes. The number of lanes is a function of user groups served, peak-hour traffic volumes, and service rates of the parking control equipment. It is recommended to have a parking professional prepare a lane and queuing analysis to guarantee sufficient entry and exit capacities.

Evaluating Structured Parking Site Alternatives

Five different sites in the study area were examined as potential options for development of structured parking for the purpose of meeting the supply/demand deficit that will occur with the influx of 2,500 new EB employees. **Exhibit 11** identifies these locations that are available for the development of a structured parking facility.

Exhibit 11: Alternative Sites for Structured Parking



Based on the size and physical configuration of each parcel studied, different space counts are achieved which help offset the new parking demand that will be generated by EB. **Table 16** identifies the net space count gain achievable at each site and also identifies the fact that each site is capable of meeting the projected 1,243 space deficit that will be generated by EB's new employees.

Table 16: Alternative Structured Parking Site Space Counts

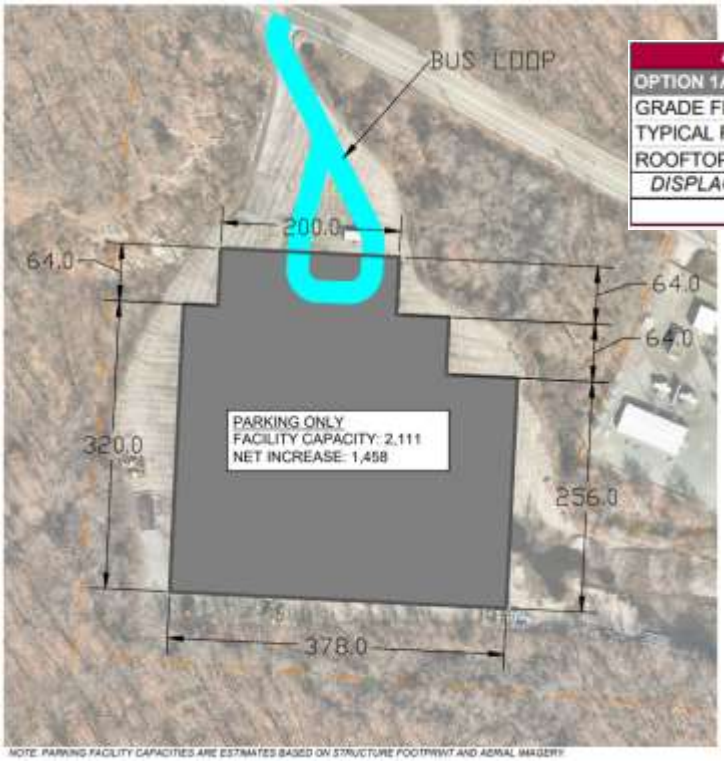
Name	Location	Total Spaces	# of Floors	Displaced Spaces	Net Gain
#1 - Lot M	Poquonnock Road	2,111	6	653	1,458
#2 - Buckeye Lot	Eastern Point Road	1,735	4	334	1,401
#2 - Buckeye Lot (w/Retail)	Eastern Point Road	1,666	5	334	1,332
#3 - Lot G	Eastern Point Road	1,940	4	803	1,137
#3 - Lot G (w/Retail)	Eastern Point Road	2,055	5	803	1,252
#4 - EB Visitor Parking Lot	Eastern Point Road	1,900	5	424	1,476
#4 - EB Visitor Parking Lot (w/Retail)	Eastern Point Road	1,703	6	424	1,279
#5A – Combination EB lots/private garage rebuild	Eastern Point Road	2,835	4	1,444	1,391
#5A – Combination EB lots/private garage rebuild with mixed use	Eastern Point Road	2,975	5	1,444	1,534
#5B – Combination EB lots/private garage with retail	Eastern Point Road	2,298	5	1,044	1,254
Blended with Lot M/Private Garage Rebuild	Poquonnock Road/Eastern Point Road	2,132	4/5	932	1,200

Each site offers unique advantages and disadvantages based on their physical location. The following offers a brief overview for each site.

OPTION 1 – LOT M

The development of Lot M would require an enhanced EB shuttle system be adopted to transport employees to and from Lot M to the front gate due to the increase in parking capacity. This would result in increased shuttle traffic on streets currently designated for shuttle use from the lot to the front gate. Although additional shuttles would be required to be added to the current system to support the new garage, this garage is located outside the core residential area and development at this site would not detract from the aesthetic value of adjacent residential neighborhoods or increase employee vehicular traffic that would traverse these same neighborhoods if another site(s) is chosen in the core area. To meet the need for 1,243 new spaces, this garage would be required to have six stories. This site also is surrounded by a protected wetlands area that would require numerous mitigation issues be adopted as part of the garage design and construction phase of the project. Finally, this site would require State and local environmental approvals based on the wetland designation, increasing the timeline for the approvals process and adding to the expected delivery date for construction completion.

Exhibit 12: Option 1 – Remote Lot M Parking Structure



AREA	PARKING COUNT	FLOOR HEIGHT
OPTION 1A - PARKING ONLY		
GRADE FLOOR	313	12'/16'
TYPICAL FLOOR	385	12'/16'
ROOFTOP	258	12'/16'
DISPLACED SPACES	*-653*	-
NET TOTAL	**1458**	**(6 FLOORS)**

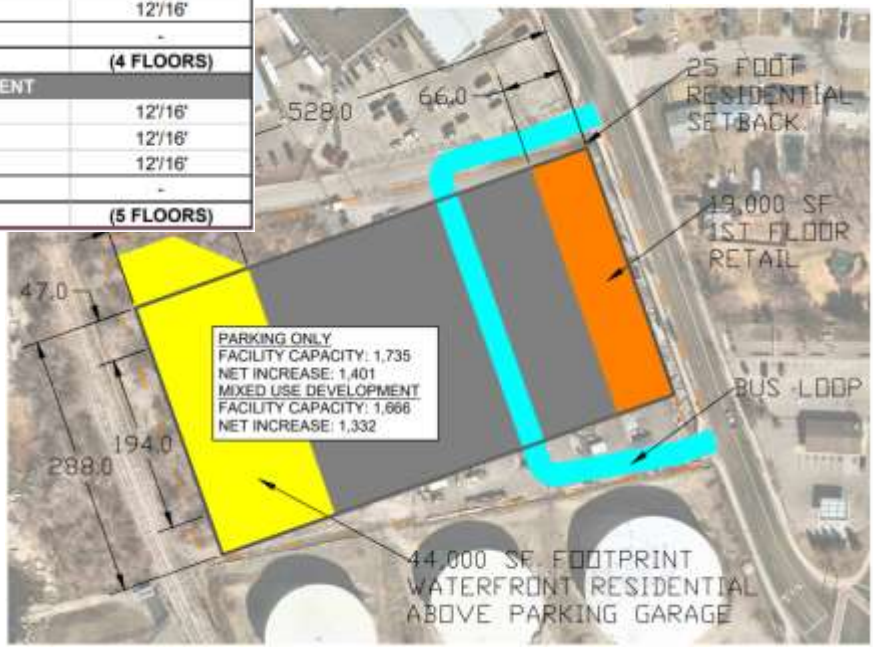
NOTE: PARKING FACILITY CAPACITIES ARE ESTIMATED BASED ON STRUCTURE FOOTPRINT AND AERIAL IMAGERY

OPTION 2 – BUCKEYE TERMINAL LOT

This lot offers closer proximity to the main gate versus Lot M, but would still require shuttle service to make the facility more attractive to the user. This facility could provide a parking-only scenario or also offer a mixed-use option that includes a grade-level retail wrap and potentially a multi-story residential use above. However, it is assumed that there would be security concerns regarding the introduction of non-EB employees in the parking facility as well as a direct sightline possibility into the boat yard if a housing component were to be placed above the garage. Additionally, it is not known if this facility would be considered a brownfield and require site mitigation to remove environmental hazards currently present. Although this lot is capable of being converted to a structured parking facility, it is not one of the more viable options for garage development because of these issues.

Exhibit 13: Option 2 – Buckeye Terminal Parking Structure

AREA	PARKING COUNT	FLOOR HEIGHT
OPTION 2 - PARKING ONLY		
GRADE FLOOR	392	12'/16'
TYPICAL FLOOR	462	12'/16'
ROOFTOP	419	12'/16'
DISPLACEMENT	-334	-
NET TOTAL	**1401**	**(4 FLOORS)**
OPTION 2 - WITH MIXED REDEVELOPMENT		
GRADE FLOOR	325	12'/16'
TYPICAL FLOOR	346	12'/16'
ROOFTOP	303	12'/16'
DISPLACEMENT	-334	-
NET TOTAL	**1332**	**(5 FLOORS)**

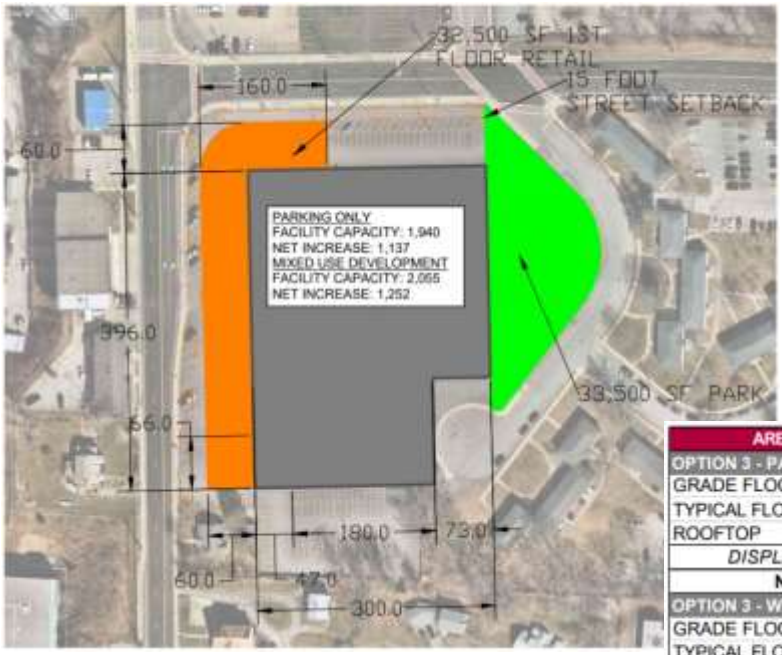


OPTION 3 – LOT G

This facility offers more viable options for the development of structured parking as it is bounded by two different roadways—Eastern Point Road and Chester Street—both of which can provide access to and from the potential parking facility. Much like the Buckeye Terminal Lot, this lot also offers the capability to support either a mixed-use garage or strictly a parking garage. The footprint of this lot makes it possible to incorporate a grade-level retail wrap facing Eastern Point Road as well as offers the potential for residential housing above the garage. However, the same security issues mentioned for the Buckeye Terminal Lot also are applicable to this site.

This site does provide for the development of approximately 40,000 square feet of green space between the residential community and a new garage. To make the garage even more palatable to the adjacent residential neighborhood, the façade treatment of the garage could be designed to be more aesthetically pleasing by including design elements that help meld the garage into its surroundings by using colors and different architectural style befitting the neighborhood.

Exhibit 14: Option 3 – EB G Lot Structured Parking Concept



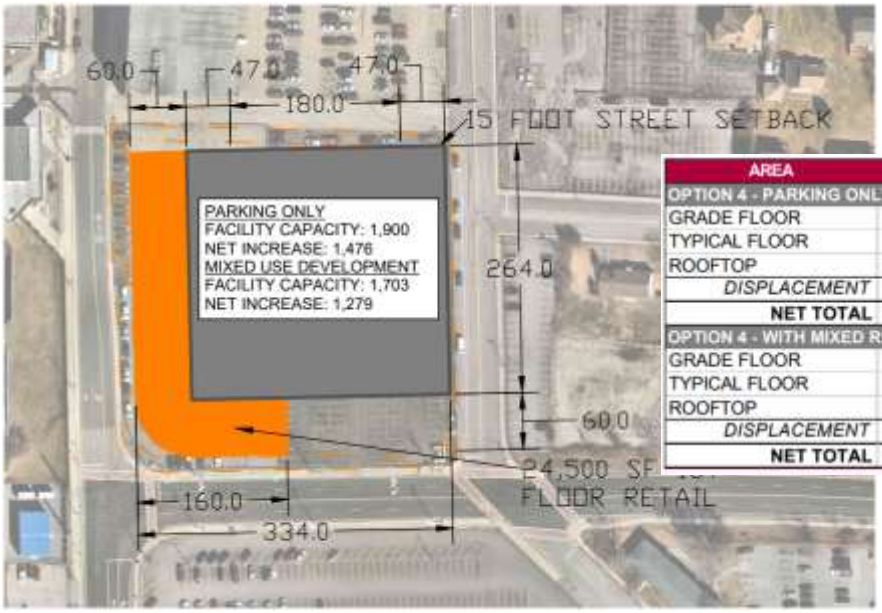
AREA	PARKING COUNT	FLOOR HEIGHT
OPTION 3 - PARKING ONLY		
GRADE FLOOR	390	12'/16'
TYPICAL FLOOR	554	12'/16'
ROOFTOP	442	12'/16'
DISPLACEMENT	-803	-
NET TOTAL	**1137**	**(4 FLOORS)**
OPTION 3 - WITH MIXED REDEVELOPMENT		
GRADE FLOOR	285	12'/16'
TYPICAL FLOOR	469	12'/16'
ROOFTOP	363	12'/16'
DISPLACEMENT	-803	-
NET TOTAL	**1252**	**(5 FLOORS)**

OPTION 4 – EB VISITOR LOT

As with Lot G, the EB Visitor Lot footprint also offers the ability to incorporate grade-level retail as well as a housing component above the garage. But again, the security issues are the same as with the other sites offering mixed-use potential.

This site also is a more viable solution, as it does offer a distinct advantage over the prior sites identified—it is bounded by roadways on three sides, Eastern Point Road, Brown Street, and Forest Street. This allows for the flexibility of designing a facility that would better accommodate the end-of-shift vehicular unloading patterns by allowing vehicles to exit at multiple locations, resulting in potentially smaller queues in the garage waiting to exit. Although not immediately adjacent to the residential community, it is within close enough proximity to warrant the same architectural treatments as identified for the Lot G Option.

Exhibit 15: Option 4 – EB Visitor Lot Parking Structure

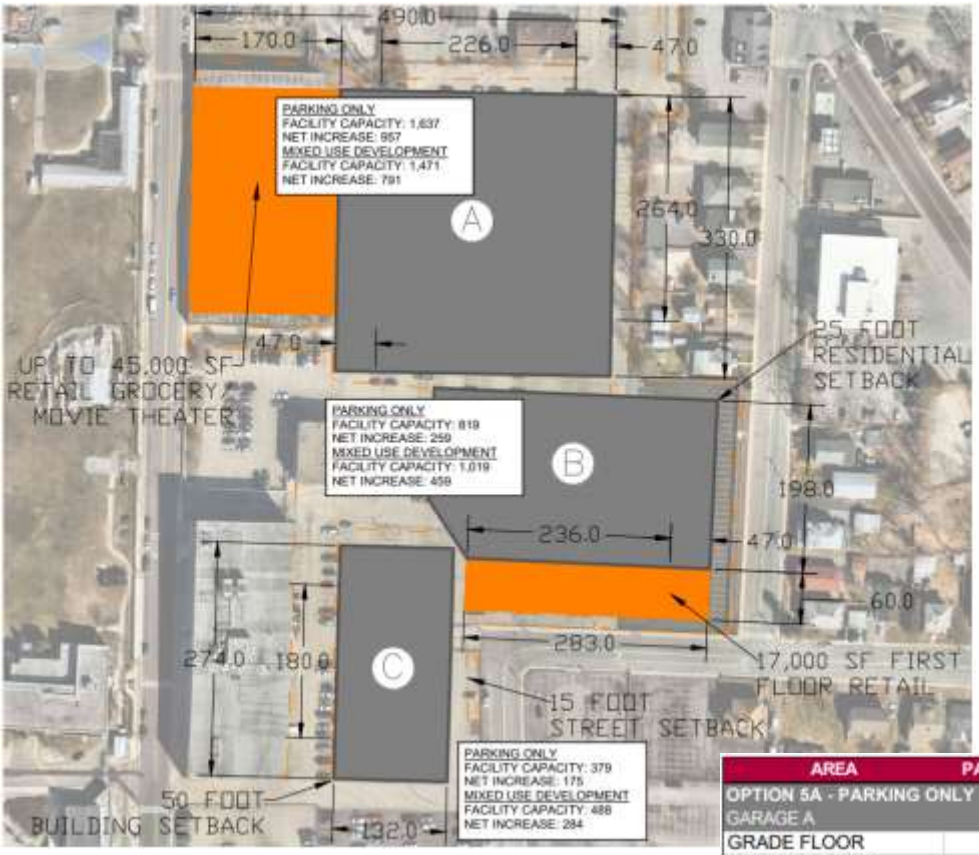


AREA	PARKING COUNT	FLOOR HEIGHT
OPTION 4 - PARKING ONLY		
GRADE FLOOR	358	12'/16'
TYPICAL FLOOR	421	12'/16'
ROOFTOP	279	12'/16'
DISPLACEMENT	*-424*	-
NET TOTAL	**1476**	**(5 FLOORS)**
OPTION 4 - WITH MIXED REDEVELOPMENT		
GRADE FLOOR	185	12'/16'
TYPICAL FLOOR	325	12'/16'
ROOFTOP	218	12'/16'
DISPLACEMENT	*-424*	-
NET TOTAL	**1279**	**(6 FLOORS)**

OPTION 5A – COMBINATION OF EB LOTS AND PRIVATE GARAGE WITH THAMES ST. GROCERY STORE/MOVIE THEATER CONCEPT

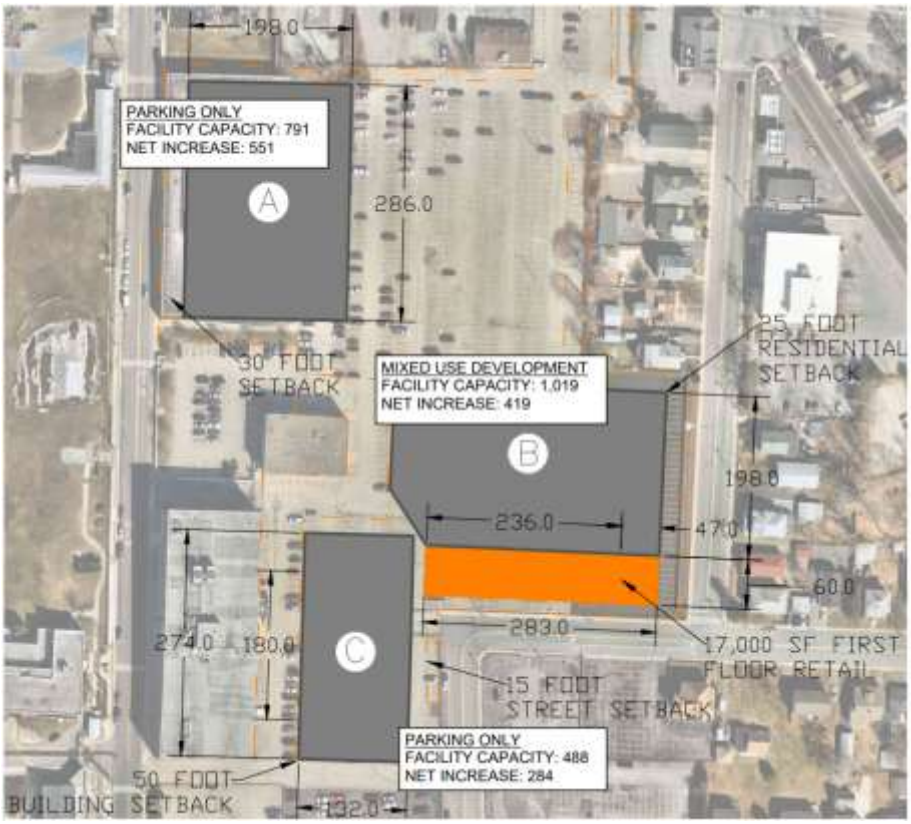
This option would utilize the existing Thames Street Garage, privately owned by a third-party entity, as well as existing EB surface parking. This site provides the opportunity for up to 62,000 square feet of mixed-use space. The option depicted in Exhibit 16 illustrates the potential for a 45,000-square-foot use that could include anything from a grocery store to a movie theater. However, this development scenario calls for the demolition of the existing Thames Street Garage and the development of three smaller garages that would serve EB's new demand, as well as providing for a shared-use opportunity with the retail component. However, the drawbacks to this scenario include the need to purchase the Thames Street Garage and create three smaller parking garages to meet the parking demand of both EB and the retail use. Naturally, this would be the costliest approach to parking garage development, as it requires land acquisition and the separate construction of three parking facilities. For these reasons, we would consider this option to be the least viable at this time.

Exhibit 16: Option 5A – Combination EB Lots and Private Garage with Thames St. Grocery Store/Movie Theater Concept



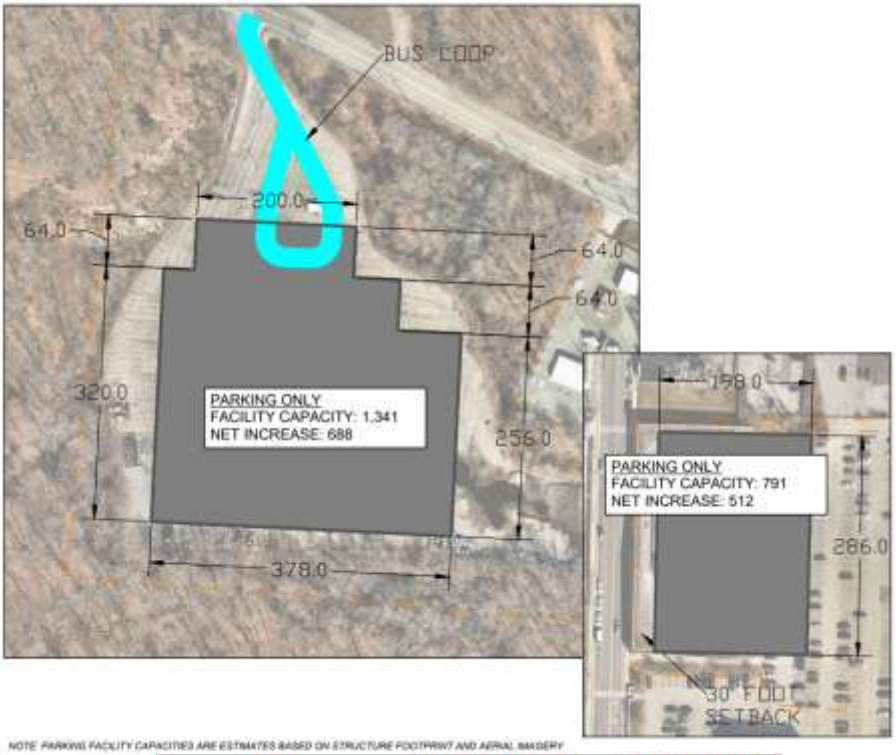
AREA	PARKING COUNT	FLOOR HEIGHT
OPTION 5A - PARKING ONLY		
GARAGE A		
GRADE FLOOR	400	12'/16'
TYPICAL FLOOR	471	12'/16'
ROOFTOP	295	12'/16'
GARAGE B		
GRADE FLOOR	204	12'/16'
TYPICAL FLOOR	240	12'/16'
ROOFTOP	135	12'/16'
GARAGE C		
GRADE FLOOR	92	12'/16'
TYPICAL FLOOR	109	12'/16'
ROOFTOP	69	12'/16'
DISPLACEMENT	*-1444*	-
NET TOTAL	**1391**	**(4 FLOORS)**
OPTION 5A - WITH MIXED REDEVELOPMENT		
GARAGE A		
GRADE FLOOR	275	12'/16'
TYPICAL FLOOR	324	12'/16'
ROOFTOP	224	12'/16'
GARAGE B		
GRADE FLOOR	164	12'/16'
TYPICAL FLOOR	240	12'/16'
ROOFTOP	135	12'/16'
GARAGE C		
GRADE FLOOR	92	12'/16'
TYPICAL FLOOR	109	12'/16'
ROOFTOP	69	12'/16'
DISPLACEMENT	*-1444*	-
NET TOTAL	**1534**	**(5 FLOORS)**

Exhibit 17: Option 5B – Combination EB and Private Garage without Thames Street Development



AREA	PARKING COUNT	FLOOR HEIGHT
OPTION 5B - PARKING AND REDUCED MIXED DEVELOPMENT		
GARAGE A		
GRADE FLOOR	146	12'/16'
TYPICAL FLOOR	172	12'/16'
ROOFTOP	129	12'/16'
GARAGE B		
GRADE FLOOR	164	12'/16'
TYPICAL FLOOR	240	12'/16'
ROOFTOP	135	12'/16'
GARAGE C		
GRADE FLOOR	92	12'/16'
TYPICAL FLOOR	109	12'/16'
ROOFTOP	69	12'/16'
DISPLACEMENT	*-1044*	-
NET TOTAL	**1254**	**(5 FLOORS)**

Exhibit 18: Blended Option – Site Option 1 Reduced with Option 5 Reduced



NOTE: PARKING FACILITY CAPACITIES ARE ESTIMATES BASED ON STRUCTURE FOOTPRINT AND AERIAL IMAGERY

AREA	PARKING COUNT	FLOOR HEIGHT
OPTION 1B/5C - PARKING ONLY, 2 SITES		
LOT M GARAGE		
GRADE FLOOR	313	12'/16'
TYPICAL FLOOR	385	12'/16'
ROOFTOP	258	12'/16'
DISPLACED SPACES	*-653*	-
NET TOTAL	**688**	**(4 FLOORS)**
LOT B DEMO/REBUILD GARAGE		
GRADE FLOOR	146	12'/16'
TYPICAL FLOOR	172	12'/16'
ROOFTOP	129	12'/16'
DISPLACED SPACES	*-279*	-
NET TOTAL	**512**	**(5 FLOORS)**
COMBINED NET TOTAL	**1200**	**-**

Site Analysis and Concept Advancement

Each site concept identified offers unique opportunities to the City of Groton and EB for the development of additional parking inventory. These opportunities have been presented to SCCOG staff so that SCCOG could hold discussions with the City to gather input on the different options presented. As a result of these discussions, the SCCOG has requested that Options 3 and 4 (without retail components) be investigated further and that preliminary cost projections be developed to consider further development of one or more facilities.

The following drawings identify the points of vehicular ingress/egress, pedestrian stair and elevator cores, and the space count per floor for the two selected options. Moreover, the cost projection for each also is included. It must be noted that the cost projections are based on current projected costs. In today's environment, construction materials and construction labor costs are escalating rapidly and can change drastically overnight. We have found that costs can change significantly in a 2-week period, and it is anticipated that the development of a new parking garage will not occur for some time. As a result, we recommend updating these cost projections prior to making any decisions regarding the development of structured parking.

OPTION 3 – LOT G

Refinements of the preliminary concepts illustrate a precast concrete structure that includes grade and three supported levels of parking, incorporating two bank elevator locations at the mid-section of the garage (Eastern Point Road) as well as the northwest corner Eastern Point Road/Chester Street) of the facility. Two additional stair towers are located on the northeast and southeast sides of the garage adjacent to the proposed green space. Vehicular ingress/egress occurs mid-section of the garage on both surrounding streets.

Exhibit 19: Option 3 – Lot G Ground Level Concept

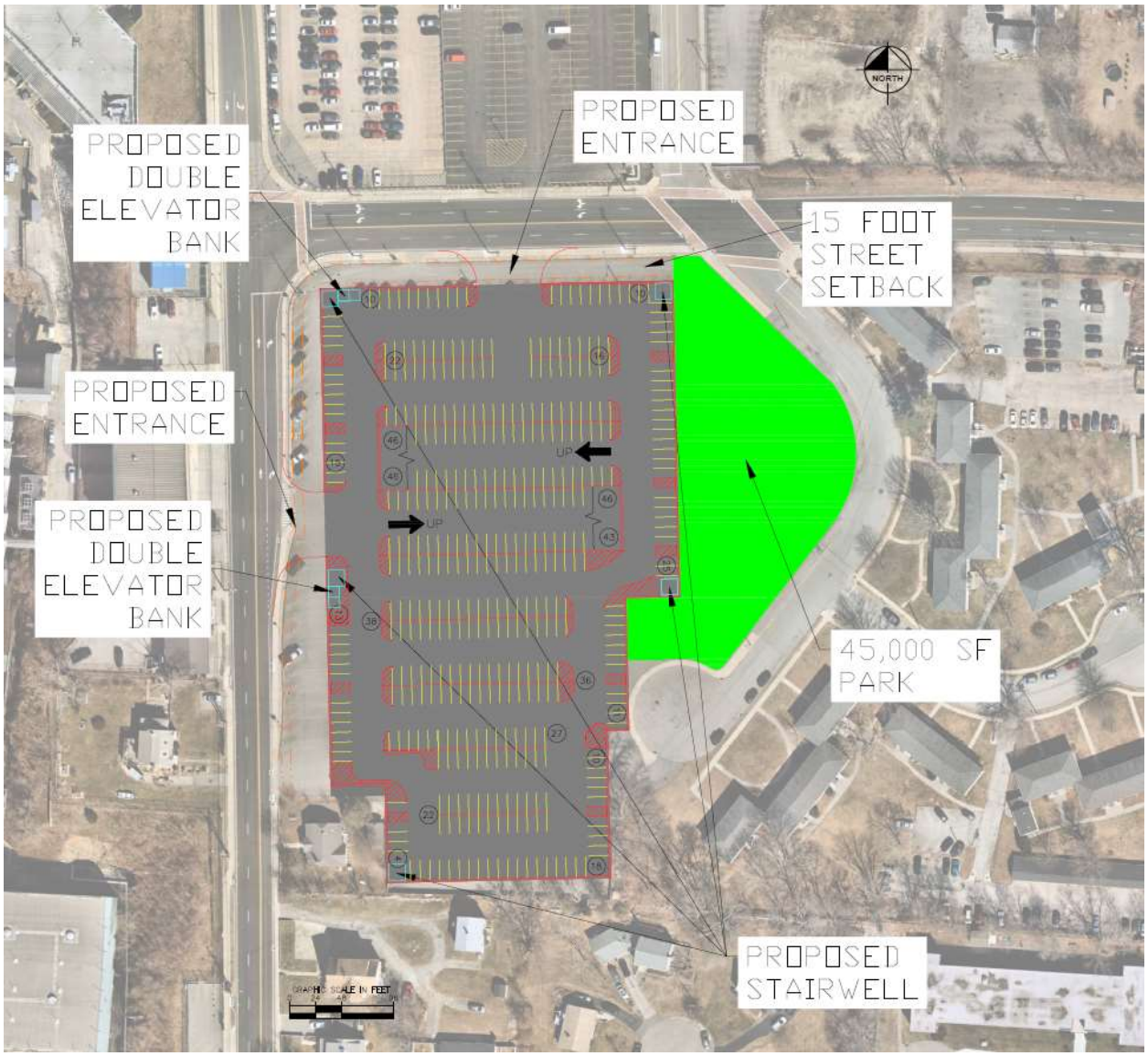


Exhibit 20: Option 3 – Lot G Typical Level and Roof Concept

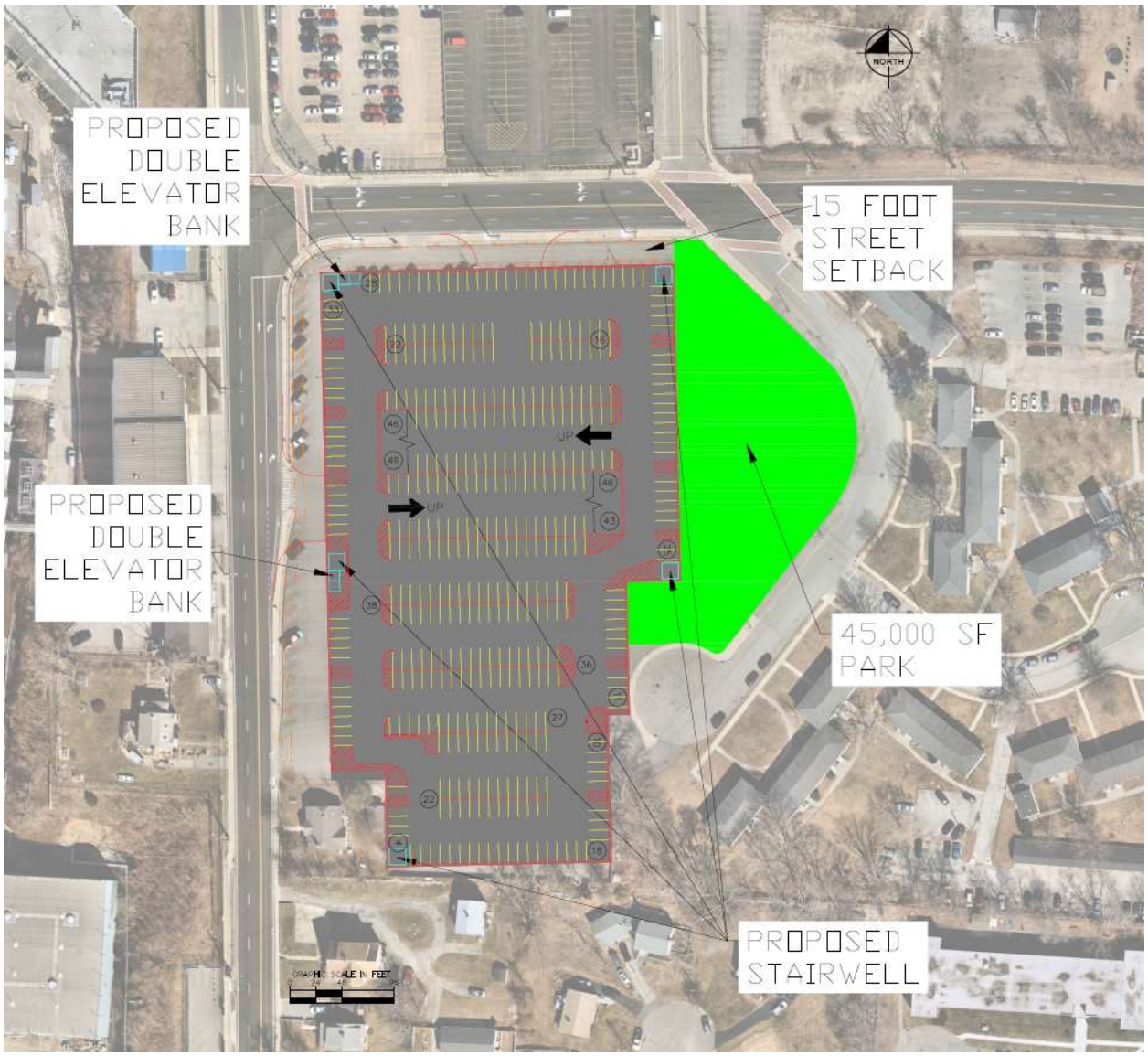


Exhibit 21: Option 3 – Lot G Financing Pro Forma

PROJECT DESCRIPTION

1,940 Space Parking Garage

PROJECT DEVELOPMENT COST				
Garage Structure	1,940	Spaces		
Cost/Space	$35,000		$67,900,000	
Hard Construction Cost Estimate				**$67,900,000**
Misc. Construction Costs*		15%	$10,185,000	
Total Construction Budget				**$78,085,000**
Architectural/Engineering		5.5%	$3,734,500	
Surveys, Soil, Title, Testing, Etc.		1.0%	$679,000	
Professional Fees Estimate				**$4,413,500**
TOTAL PROJECT DEVELOPMENT COST TO BE FINANCED				**$82,499,000**
FINANCING COSTS				
Cost of Issuance			$2,474,970	
Debt Service Reserve (DSR)			$680,000	
Construction Fund Earnings (CFE)			($586,000)	
Capitalized Interest Fund (Annual debt service payment X 18 months)			$7,050,000	
LOAN SIZE				**$92,117,970**
DEBT SERVICE CALCULATION			Tax Exempt	
Principal			$92,117,970	
Rate			3.00%	
Term			30	
ESTIMATE OF ANNUAL DEBT SERVICE (Level Payments)				**$4,700,000**
ASSUMED OPERATIONAL COSTS				
Annual Operating Cost per Space			$350	
Spaces			1,940	
ESTIMATE OF ANNUAL PROJECT OPERATING EXPENSE				**$679,000**
TOTAL ANNUAL PROJECTED EXPENDITURE				**$5,379,000**
TOTAL ANNUAL PROJECTED REVENUE				**$0**
PROFIT/(LOSS)				

*Includes:
General Conditions
Contractor Overhead/Profit
Contingency

DSR: A bond requirement amount equal to debt service obligation for one year. Since DSR balance remains fixed throughout the life of the bond, the issuer can realize annual interest earnings on the balance until bond reaches maturity.

CFE: These funds are drawn down over a 12-18 month period. Issuer can earn 1.5% interest on amount of unused CFE to lower amount of bond issue.

OPTION 4 – EB VISITORS LOT

Refinements of the preliminary concepts illustrate a precast concrete structure that includes grade and four supported levels incorporating two bank elevator locations at the northwest and southwest corners of the garage along Eastern Point Road. In addition, there is a stair tower located at the northwest corner of the garage on Brown Street. Vehicular ingress/egress occurs at the northern and southern mid-section of the garage on both Chester Street and Brown Street.

Exhibit 22: Option 4 – EB Visitors Lot Ground Level Concept

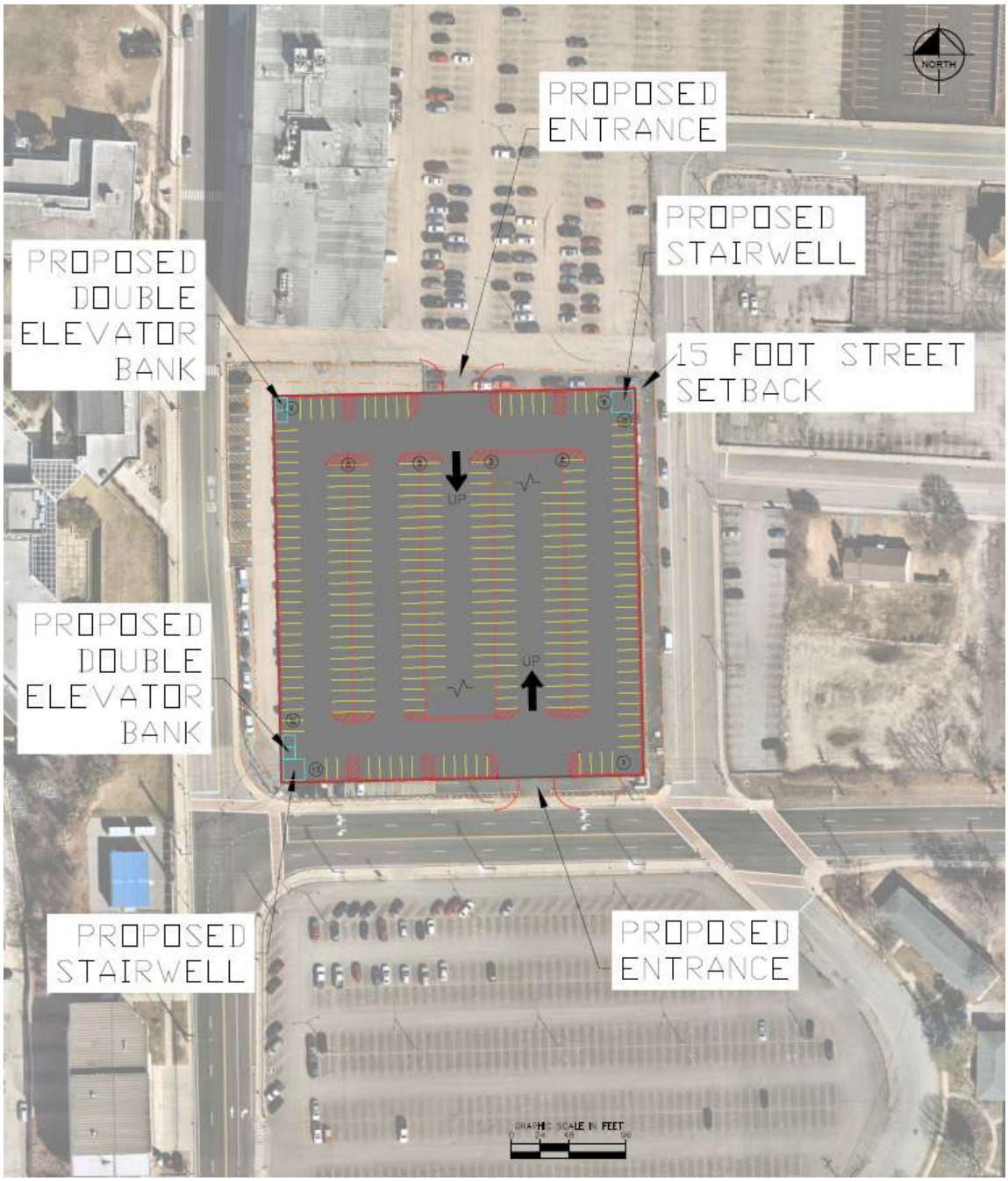


Exhibit 23: Option 4 – EB Visitors Lot Typical Level and Roof Concept

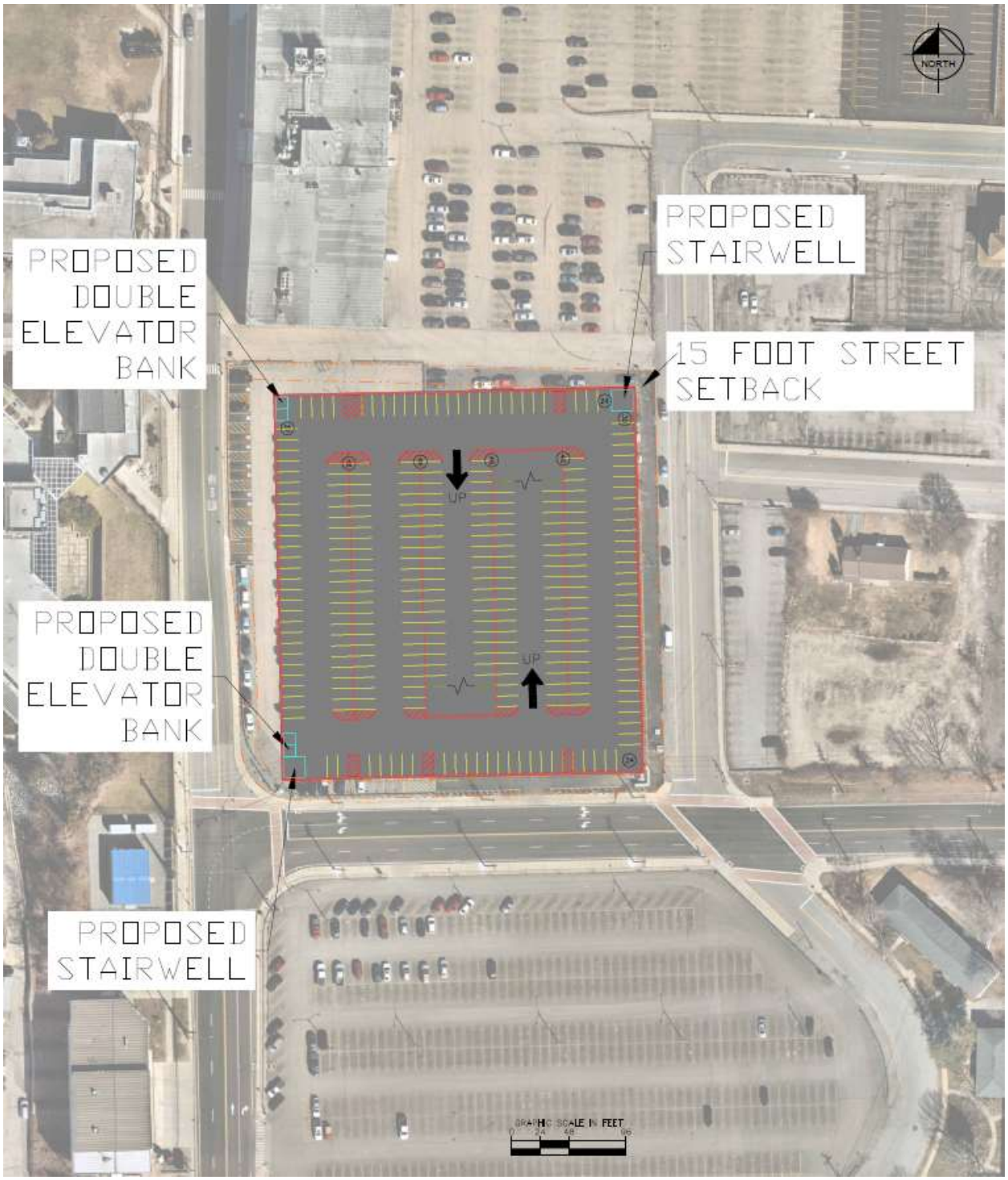


Exhibit 24: Option 4 – EB Visitors Lot Financing Pro Forma

PROJECT DESCRIPTION

1,900 Space Parking Garage

PROJECT DEVELOPMENT COST				
Garage Structure	1,900 Spaces			
Cost/Space	$35,000		$66,500,000	
Hard Construction Cost Estimate				**$66,500,000**
Misc. Construction Costs*		15%	$9,975,000	
Total Construction Budget				**$76,475,000**
Architectural/Engineering		5.5%	$3,657,500	
Surveys, Soil, Title, Testing, Etc.		1.0%	$665,000	
Professional Fees Estimate				**$4,322,500**
TOTAL PROJECT DEVELOPMENT COST TO BE FINANCED				**$80,798,000**
FINANCING COSTS				
Cost of Issuance			$2,423,940	
Debt Service Reserve (DSR)			$680,000	
Construction Fund Earnings (CFE)			($574,000)	
Capitalized Interest Fund (Annual debt service payment X 18 months)			$6,906,000	
LOAN SIZE				**$90,233,940**
DEBT SERVICE CALCULATION			Tax Exempt	
Principal			$90,233,940	
Rate			3.00%	
Term			30	
ESTIMATE OF ANNUAL DEBT SERVICE (Level Payments)				**$4,604,000**
ASSUMED OPERATIONAL COSTS				
Annual Operating Cost per Space			$350	
Spaces			1,900	
ESTIMATE OF ANNUAL PROJECT OPERATING EXPENSE				**$665,000**
TOTAL ANNUAL PROJECTED EXPENDITURE				**$5,269,000**
TOTAL ANNUAL PROJECTED REVENUE				**$0**
PROFIT/(LOSS)				

*Includes:
General Conditions
Contractor Overhead/Profit
Contingency

DSR: A bond requirement amount equal to debt service obligation for one year. Since DSR balance remains fixed throughout the life of the bond, the issuer can realize annual interest earnings on the balance until bond reaches maturity.

CFE: These funds are drawn down over a 12-18 month period. Issuer can earn 1.5% interest on amount of unused CFE to lower amount of bond issue.

III. Parking Management Alternatives

Given the increased demand for parking within the City of Groton caused by the expansion of activities at Electric Boat (EB), it is clear that there will be increased competition for available on-street spaces as well as interest in creating additional surface parking facilities within walking distance of EB. It is likely that property owners and individuals searching for parking will look for creative solutions to a shortage of parking, which will increase demand for municipal enforcement of policies governing parking and interest from private property owners in creating new parking supply. At the same time, residents, businesses, and employees will look to the City to minimize disruptions and preserve quality of life in the City of Groton despite the growth in parking demand. This chapter discusses the current system in place for the regulation of municipally owned parking supply in the City of Groton and presents recommendations for changes to the existing commercial and residential parking programs as well as recommendations for increasing the capacity of the City of Groton to manage increased demands for available parking.

Given this background, the following presents background on the evolution of public on- and off-street parking management; an assessment of the City's current parking plan, design, and enforcement capabilities; the strength and weakness of alternative parking management structures; and redefinition of existing departmental roles and responsibilities. Note that recommendations on departmental roles and responsibilities presented here are preliminary, as they are based on initial parking policy recommendations including hours of curbside management, parking regulatory signage, expanding a residential parking permit program, and the use of license plate recognition (LPR) in parking enforcement. Following input received during the various stakeholder engagement events and during public presentations to occur under the final phase of work for this contract, Kimley-Horn will refine and finalize these management recommendations. However, for public discussion and discourse, the following is presented for review and consideration.

Finally, it is important to note that any recommended parking program changes will adhere to the following key principles:

- Promote the health and safety of residential neighborhoods by limiting non-residential parking and traffic activity
- Ensure that the parking management program is, at a minimum, financially self sufficient
- Place no undue burden on City services without appropriate parking planning and compensation
- Discourage the proliferation of surface parking lots while balancing the needs of redevelopment
- Balance the parking needs of commuter employees and local businesses in commercial and industrial zoned areas

A History

The notion of a single-source responsibility center for parking was popularized after World War II. Enabled by the GI Bill, returning veterans moved into newly-constructed suburban homes—unlike previous generations who lived in cities. However, their work destinations largely remained in cities. A high volume of vehicles inundated roadways and city streets because they had insufficient parking supply to

accommodate the ever-growing parking demand. Initially, cities attempted to manage parking themselves. Recognizing that the on-street parking supply was inadequate, they began to build off-street parking facilities. They learned that the on-street parking spaces were much more popular than their off-street counterparts. The cities began to use parking meters to create turnover parking. City officials also recognized that certain expertise was required to manage parking, particularly the new off-street facilities. In the late 1940s, many cities formed parking departments and parking authorities to provide expertise and focus on parking management. As time passed, the cities that created specialized parking entities began to manage, operate, and construct off-street parking facilities. While most departments and authorities flourished, the cities that continued the fragmented approach to parking management languished in their ability to deliver quality parking management services.

Although the parking departments and authorities generally succeeded in the management of off-street parking, a fundamental flaw existed: the relationship between on- and off-street parking was ignored. Typically, police departments oversaw on-street parking enforcement. Overall parking management was unsuccessful because the pricing of parking meters and fine structures were determined by those who possessed little experience in transportation system management and pricing strategies and who might be influenced by special interests.

Current Parking Management Environment

BACKGROUND

The City of Groton currently uses the Police Department approach to enforce on-street parking regulations, including residential parking located in the study area. For the most part, parking enforcement consists of life-safety violations and enforcement of the residential parking permit program. No actual revenues are derived from parking operations—other than citation revenue—to offset the cost of the enforcement program.

The City of Groton does not own or manage any public off-street parking assets apart from the lots that serve existing public buildings (fire station lot, police station lot, etc.). The on-street parking program is limited to a broad and expansive residential parking permit program and a small number of timed parking spaces adjacent to commercially zoned properties and businesses.

With the influx of new EB employees, the need to construct additional off-street parking is paramount. Based on the parking demand generated by these new employees, approximately 1,200 new parking spaces are projected to be required. This deficit number requires that a parking structure or structures be built to meet this new demand. However, the lead time to build a garage is 12–18 months, with 3–6 months to develop construction documents. These estimates on schedule do not include receiving the necessary permit approvals from the appropriate governing agencies as well as identifying and securing funding. Given the uncertainty as to when and where additional parking supply will be developed, short-term solutions must be identified to mitigate the negative impact that EB and other commuter vehicles may have on residential streets, on existing and future retail and restaurant establishments, and on the overall quality of life for both Groton residents and commuters.

It is anticipated that new employees driving to work in the study area due to the EB program expansion will require greater levels of parking enforcement. The City will need to promote adherence with current and newly adopted on-street parking regulations and program policies as well as closely manage the finite curbside space in the study area. Refining the current parking program also will help better support redevelopment efforts in the future by encouraging the turnover of spaces and limiting the monopolization of curbside space by EB employees.

RECOMMENDATIONS

Although best industry practice would dictate that a parking program be managed by an agency exclusively dedicated and responsible for operating, managing, and long-term planning of parking in the study area, the City of Groton's current and future parking needs do not support this type of recommendation or cost, as its parking program is exclusively related to only curbside and residential parking program management. Therefore, Kimley-Horn's recommendation is to keep all parking enforcement responsibilities in the Police Department, with the addition of one full-time and one part-time civilian (non-sworn) parking enforcement officer positions added to increase the Department's enforcement capacity. These positions should be solely dedicated to the enforcement of on-street parking regulations in both the business district as well as residential parking areas and would not require sworn officers to enforce parking regulations. It is anticipated that revenues generated by the recommended commuter employee parking program will fully offset the cost of these two new positions.

Similarly, other City departments currently charged with supporting parking management, such as the Department of Public Works (snow removal, signage fabrication, painting, etc.), the Building and Zoning (facility standards are constructed/maintained), and the Planning Department (development/review including parking requirements) would continue in their roles and day-to-day involvement in parking.

Current Parking Technology

BACKGROUND

The success of any parking program is founded on effective enforcement of regulations. As would be expected with a basic parking program, the City of Groton does not utilize technology to manage or enforce on-street parking or the current residential parking permit program. This is not necessarily a detriment to current parking management efforts because it is, at present, the most cost-effective mode of operation since no actual parking program revenues are generated to offset capital, operational, and long-term parking planning costs.

Parking citations are currently handwritten and not electronically tracked. With the growth of the commuter employee population, a more rigorous parking enforcement program will become necessary to help preserve the quality of life for the City of Groton residents. Regular parking enforcement patrols will need to occur during normal business hours Monday through Friday. This will require—as will be noted in the recommendations section—at least one full-time employee, one part-time employee, and one motor vehicle to be solely dedicated to parking enforcement efforts in the study area.

To control operational costs and achieve proper coverage of the enforcement area, the employment of state-of-the-art parking enforcement technology will be required. Vehicle-mounted LPR systems allow a

parking enforcement officer to cover a greater area and, in the case of the City of Groton, cover the entire study area within the recommended posted 2-hour time limits.

RECOMMENDATIONS

License Plate Recognition (LPR) Technology

Figure 5: Sample LPR Installation

The use of LPR technology for on-street parking enforcement is strongly recommended. This is the same technology used by police departments nationwide for parking enforcement, scofflaw identification, and stolen vehicle identification. This technology will allow parking enforcement staff to perform parking enforcement patrols several times per day as it is a rapid method to monitor.

This technology would be mounted to the exterior of a patrol vehicle. Four cameras that read license plates would be placed on a vehicle (two front and two rear). These cameras photograph each license plate as parking enforcement drives through a traffic lane. The license plate information obtained is then transmitted to a database that notifies the officer if a permit parker is parked in the proper location or a non-resident is parked in residential areas. The cost of this technology is approximately $30,000 to $35,000 per enforcement vehicle, excluding the cost of the motor vehicle. Although this cost is substantial, it is more cost-effective than hiring additional staff to achieve the same level of parking enforcement coverage.

It is anticipated that parking revenues generated by a commuter parking program will help fund the capital and operating expense associates with the adoption of this technology for parking enforcement.

Commercial District Parking Rates and Time Limits

BACKGROUND

Presently, curbside parking is complementary for the various user groups in the study area. The term “complementary” is used because there is a cost to the municipality for providing parking. Spaces need to be striped, regulatory signage needs to be fabricated and installed, snow needs to be plowed, and roadway surfaces need to be repaired or replaced.

By setting parking rates, fees, and associated time limits, parking demand can be controlled by pricing the most convenient and desirable parking higher than less convenient parking locations. The same approach is taken by theaters, stadiums, and similar venues where premium seating is priced higher than less desirable seating. This approach encourages the turnover of convenient curbside spaces and promotes better availability of parking.

Municipalities commonly establish restrictions for on-street parking to encourage turnover and ensure a supply of readily available curbside space. Generally, on-street parking is best suited for short-term parking (2 hours or less). Therefore, long-term on-street parking (employees or commuters) is discouraged through meter rates, time limits, and, most importantly, proper parking enforcement efforts.

A commercial district's on-street parking spaces are one of its most valuable assets. These spaces are the lifeblood of street-level retail, restaurants, and service businesses that municipal governments try to support and attract. Ideally, as a commercial district's most valuable spaces, the rates for on-street spaces should set the bar for off-street and structured parking prices. Normally, if on-street parking is priced too low, it becomes difficult to encourage the turnover of these spaces and the use of off-street facilities. If parking on-street is available at no cost, it encourages misuse by business owners, employees, commuters, and those seeking a no-cost alternative, and ultimately, does not serve the best interest of the business community.

RECOMMENDATIONS

The recommendations in this report have been tailored to provide the most cost-effective approach to future conditions due to the unique situation in the study area, as it relates to parking and current redevelopment efforts. Our recommendations vary slightly from what would normally be considered best industry practice. This is driven by the fact that the City of Groton's land use activity and associated parking demands are driven almost exclusively by EB commuters and residential neighborhoods. For example, it is recommended that all curbside parking in commercially zoned areas, except current 30-minute parking, be designated as 2-hour maximum parking. No parking meters are recommended at this time due to the cost to purchase, install, collect, and maintain these devices. Instead, timed parking should continue to be enforced to ensure sufficient spaces are available for the business community to conduct related commercial business activity and that EB employees are not monopolizing these spaces.

As redevelopment takes hold and curbside parking demand by local businesses increases, the reevaluation of the placement of parking meters and implementation of a mobile payment app should be revisited. A reevaluation also may include the reduction of employee/commuter permits for on-street parking to accommodate greater amounts of other users or as other off-street inventory is created.

Employee/Commuter Parking Program

BACKGROUND

As evidenced by the field surveys, EB employees do presently use a good deal of on-street spaces in non-residential areas within walking distance of EB. The creation of a fee-based commuter curbside parking would introduce incentives for EB commuters to park in EB facilities and use provided shuttle services, offset the cost of expanding the enforcement of the parking program by the City of Groton, reduce traffic created by commuters seeking parking where demand exceeds supply, and provide certainty for commuters holding valid parking passes. As a result of this management program, the revenues generated would not only help offset the cost of an enhanced residential parking program enforcement but also help offset the cost of maintaining regulatory signage systems and roadway surface repairs.

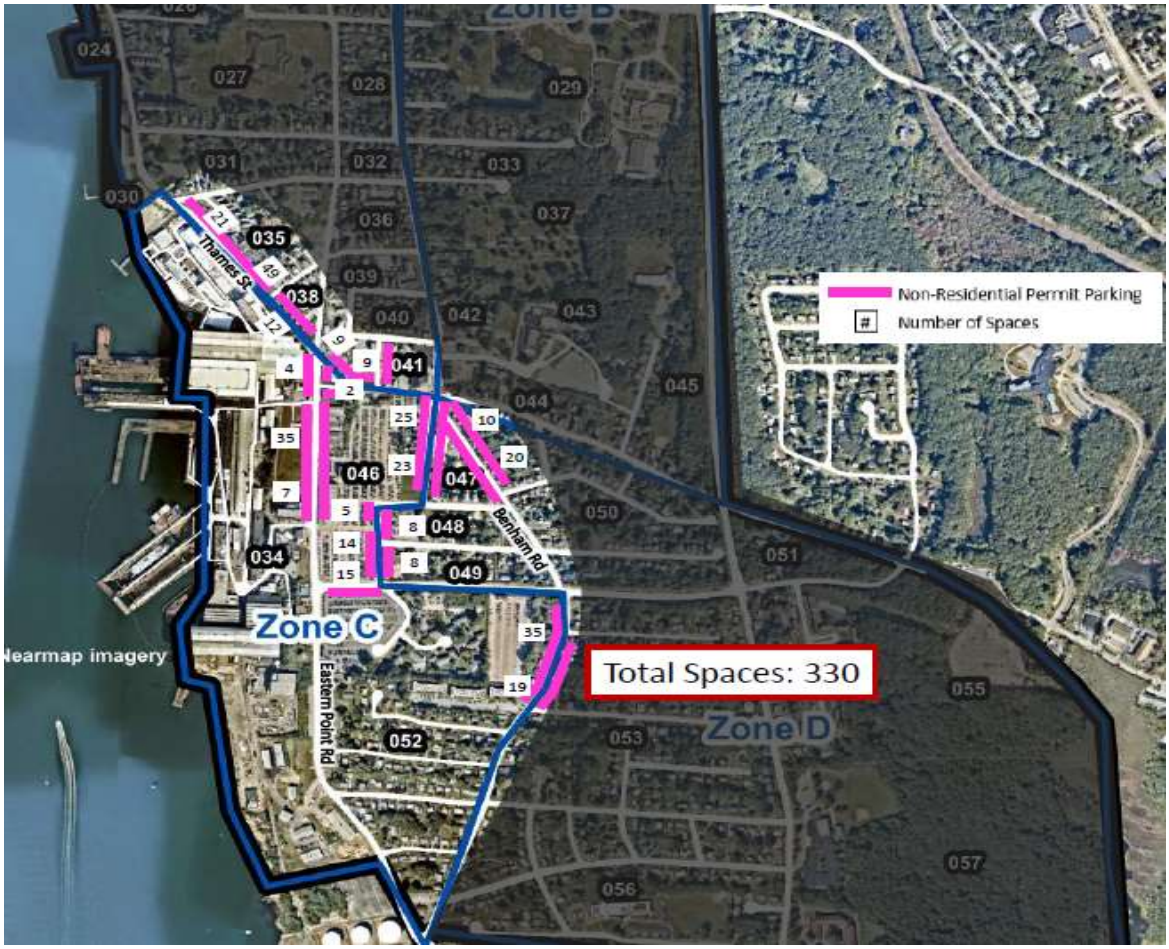
It should be noted that once a paid commuter pass program is implemented, some commuters will choose to park outside the pass-managed area, shifting some demand to areas that are currently less utilized for parking. The City should monitor these shifts and consider expanding or reducing the area of parking managed under the commuter parking program to meet the needs of commuters and to mitigate secondary impacts.

In an effort to designate a fee that would be attractive to the intended user group as well as offset the costs to operate and enforce the recommended program policies, a parking market rate analysis was conducted of selected municipalities within a 50-mile radius to identify the fees assessed by these municipalities for their parking programs. A summary of this analysis is presented in Appendix A.

RECOMMENDATIONS

Development of a fee-based commuter parking program on streets near EB that are not located within existing residentially zoned neighborhoods is highly recommended. This will require employees that wish to participate in the parking program to register with the City of Groton to avoid being ticketed for exceeding the 2-hour posted time limit. The number of on-street commuter parking permits to be distributed would be limited to the actual number of curbside spaces that exist within the program area to assure that an on-street commuter space would remain available. The map below identifies the initial area of implementation.

Exhibit 25: Sample Area Commuter Parking



It is recommended that a monthly fee of $85 per month ($1,020 annually) should be initially assigned to limit it to those employees who feel they must park within the closest proximity to their work location. This equates to $0.48 per hour based on 8 hours per day parked and an average of 22 business days per month. If participation in the program meant each space was filled on a monthly or annual basis, the approximately 330 spaces could generate $336,600 in annual revenue. Parking rates should be increased annually by no less than 3 percent to cover escalating program costs. Revenues generated by this program should be pledged to offsetting operational costs such as labor, signage maintenance, and other parking improvements in the study area.

Residential Parking Program

BACKGROUND

Residential Parking Programs are developed to manage parking and maintain livability in residential areas. They are typically developed for densely populated areas where a mix of parking users compete for parking which often spills over into residential neighborhoods. A residential permit program does not guarantee a resident a space directly in front of their home—or even on their street—but allows them to park in an on-street area that commonly includes numerous streets. The City of Groton currently maintains a residential permit program for its residents to prevent EB employees from long-term parking in residential areas.

RECOMMENDATIONS

There are several recommendations for changes to this program. The first is a conversion from the use of a permit to the use of each license plate as the credential for the identification of residential users. The second is the institution of program fees, on a graduated basis, based on the number of vehicles per household to help offset management and enforcement costs related to the residential permit program. The final recommendation is to require all users to apply for permits using the City's website. Participants in the residential permit program would register their vehicles on the City's website and add information that assists the City in managing the program. Each household in the residential permit program would receive a "Flex Pass" that visitors would place on the dashboard of their vehicle for purposes of identification. If the City initiates the LPR parking enforcement program, residents also could manage visitor parking privileges through the City's online registration program. The visitor's license plate data would be recorded and input into the LPR system in real-time to avoid a citation being issued in error. Electronic management helps control administrative time required to manage the program. These changes will allow for easier and less labor-intensive enforcement of this program by the City, reduce consumable costs for the City, and allow program users to register or delete users utilizing the City's website. Additional insight into the residential permit program recommendations will be presented later in this report.

Regulatory Signage Program

BACKGROUND

Parking regulatory signage in the study area was found to be sufficient for current regulatory purposes and provides sufficient support for citation issuance. However, with the programmatic changes recommended for the study area, upgrading of signage will be required.

RECOMMENDATIONS

In the commercial and residential districts, more detailed signage will be required that identifies curbside spaces as having 2-hour time limits except for commuter employee parking or residential parking. Residential 2-hour signage should be upgraded from its simple 2-hour parking limit notification to a 2-hour parking/residential parking zone with the hours of the program in effect. **Figure 20** to the right illustrates the verbiage used to convey program parameters. Program hours should be set to 5:00 AM to 6:00 PM Monday through Friday for commuter parking. Residentially-restricted parking permit hours also should be stated as 5:00 AM to 6:00 PM. If EB adopts longer hours of operation and production, or if EB employees negatively impact the residential community during these extended hours of operation, the residential permit program hours of enforcement should be adjusted to match the hours of operation and/or limit the impact on residential neighborhoods.

Figure 6: Sample Signage

Implementation and Prioritization

The following table identifies and lists by level of priority the changes recommended in this section of the report. In addition to the level of importance is the projected cost for each recommendation. To be successful, recommendations should not be chosen a la carte; recommendations are intertwined and operationally impact each of the other recommendations. The recommendations and the associated timeline are provided as a road map for the essential changes required to manage future parking conditions properly and cost-effectively in the study area based on the recommendations supplied in this report.

Table 17: Parking Program Improvement Prioritization Schedule

Time Frame	Tasks
Immediate (0–12 Months)	• Begin parking enforcement program planning and adopt program budget. • Create local legislation to develop and enforce on-street commuter parking program. • City review of recommended zoning language changes. • Hold discussions (City and EB) to work to resolve parking deficits, including the option to develop structured parking. Discussion should include who will develop, fund, and maintain any new structure as well as identify lay-down areas for construction materials including precast deliveries. • Agree upon (City and EB) the appropriate location for the development of additional parking inventory. Conduct traffic analysis to evaluate impact of additional parking demand. • Develop project timeline (City and EB) for development of an additional 1,243 spaces to meet new parking demand generated by EB and secure funding source. • Develop temporary parking plan to accommodate displaced parkers during construction phase. • Identify lay-down areas for construction materials, including precast deliveries and routes; precast will be delivered onsite. • Investigate, with the design team, a phased opening of any new parking facility to alleviate on-street parking stress as soon as possible.
Near Term (12–24 Months)	• Procure technology/vehicle required for parking enforcement program. • Create public education program to keep public informed of upcoming parking changes. • Installation of signage program for on-street commuter parking enforcement. • Hiring and training of required parking enforcement staff. • Stripe on-street parking spaces as well as “No Parking” and “Loading Zone” areas. • Adoption of City-approved zoning change language. • Creation of City website to automate the administrative side of the commuter parking program. Program participation will dictate that all commuter parking arrangements occur through the new website to reduce the City’s cost of operation.
Long Term (24+ Months)	• Evaluate the efficiency and performance of the on-street commuter program and identify any need for changes to the program. • With the opening of new parking inventory, evaluate the need to continue the on-street commuter program. • Continual reevaluation of zoning language changes to meet the changing needs of the community.

Adopting a Parking Mission Statement

The development of a mission statement for the parking program in the City of Groton is highly recommended. This allows all involved with parking, including the public, to gain a clear understanding of the purpose of the parking program and to obtain agency support of future redevelopment.

A well-crafted Mission Statement should be supported by clear goals. The suggested mission statement is based on information imparted by SCCOG, the City of Groton project representatives, and on observations of the existing parking system and experience in other cities throughout the nation. It is recommended that the parking program's mission statement read as follows:

> *"The City of Groton's on- and off-street parking system shall support existing land use, assist the City's economic development initiatives, and preserve parking for its residents, business owners, employees, and visitors by providing adequate and high-quality parking resources and related services for all user groups that rely on public parking in the City of Groton."*

This is just a sample of what the initial mission statement should convey. Over time, and with redevelopment in the City of Groton, the initial statement may be required to be adjusted to meet changing needs.

GOALS TO SUPPORT THE MISSION STATEMENT

Parking management is an interrelated network of strategies and tactics that are formulated to meet certain goals for the parking system. The logical starting point is to set goals to support the mission statement and to clarify the vision of the parking system. Based on interviews with stakeholders, the City of Groton's Mayor and staff, and based on best industry practices, the following goals for the parking system are recommended for adoption:

- Provide sufficient parking to service existing land uses
- Promote turnover of on-street downtown parking spaces
- Promote quality of life for residents
- Promote easy access to parking destinations
- Employ efficient and understandable parking management strategies
- Recognize that parking is a business and a service and, as such, should follow a business model
- View parking as necessary infrastructure to spur economic development
- Deliver on-street parking services from a single source responsibility center
- Preserve the most convenient and proximate parking spaces for short-term parking patrons
- Encourage long-term parking patrons—presumably employees—to park in spaces that are less proximate to their destinations
- Promote a consistent look (branding) so that public parking can be easily identified

Potential for Future Restructuring of Parking Management

During conversations with the City of Groton staff, different forms of parking management were discussed. City staff inquired about the different options that are available to manage parking in the study area. As noted above, the City of Groton does not currently generate sufficient revenues through parking activity to support a standalone parking agency. However, with the successful redevelopment of the study area in the future, this may change. As such, it is important to identify the different parking management options that would be available as the activity and vibrancy of the study area changes and the potential for the development of a self-funding parking agency is possible.

The following sections present parking management options and their operational advantages and disadvantages. These management alternatives include:

- A conventional parking department approach
- A parking authority management approach
- A parking enterprise fund approach

CONVENTIONAL PARKING DEPARTMENT APPROACH

Not unlike other municipal departments, a parking department can manage its special charge from a single consolidated base. Although parking departments can succeed in managing on- and off-street parking facilities, certain inherent problems prevent parking departments from delivering the highest level of service that is best suited for a municipality like the City of Groton.

The primary problem is that parking departments cannot control all the variables associated with the delivery of parking services. Parking departments are most often created to be reliant on other departments that have cooperation with a parking department as a secondary or tertiary responsibility. Is a meter pole broken? Call the Public Works Department. Parking income is suspect? Call the Finance Department. Have a problem with a parking contract? Call the Law Department. Parking departments find it difficult to divest themselves of reliance on other departments, thus maintaining a fatal parking flaw: fragmentation of critical support services and the absence of a true business model.

Another problem is that parking departments which do not operate as an Enterprise Fund must compete for funding in the municipal budget environment and cannot operate as a business. An Enterprise Fund is a separate accounting and financial reporting mechanism for which revenues and expenditures are segregated into a fund with financial statements separate from all other governmental activities. It is difficult to explain to a municipality's elected officials and the public why a parking structure's restoration needs are more important than other competing interests. Unfortunately, a frequent byproduct of parking-department-managed facilities is poor structural maintenance and a Class B appearance of parking facilities.

Lastly, parking divisions organized under other departments (e.g., Public Works, Engineering, etc.) are most often used in situations where a city charter limits and defines the number and nature of individual departments. Parking divisions have similar, but diminished, powers and abilities compared to parking departments. However, a parking division has two more liabilities. They must:

1. Seek permission to perform actions from a subordinate position within the department in which they reside.
2. They must not only compete for funds with other departments but also within the department that they reside as the subordinate entity.

Parking divisions are generally weak and find it difficult, if not impossible, to bring about significant change.

ESTABLISHING A PARKING AUTHORITY

A parking authority is generally defined as a city-affiliated arm of government charged with managing the parking found within its designated boundaries. Charged with the overall responsibility for parking operations and planning in its respective municipality, a parking authority is a semi-autonomous agency that is fully dependent on the parking revenues it generates. Parking authorities receive no property tax support for use in their operation.

The necessity to create a parking authority is most often driven by the need to increase service levels and essentially lessen the bureaucracy associated with the daily operation of a municipally run department—the Parking Department.

A parking authority is defined as an independent body of a municipality enabled under state legislation and created by a municipal ordinance or resolution. In Connecticut, parking authorities are created under *Connecticut General Statutes (CGS) Section 7-203 — Creation of Parking Authorities*. This code states:

> *"Any municipality may provide parking facilities and may, by ordinance, create a parking authority or designate a parking division for the purposes of creating and establishing off-street parking facilities. A parking authority created under the provisions of this section shall consist of five members, appointed by the chief executive officer of the municipality, not more than three of whom shall be of the same political party. Those first appointed shall be designated to serve for one, two, three, four and five years respectively and thereafter a member shall be appointed annually to serve for five years, except that any vacancy shall be filled for the unexpired portion of the term. Such authority shall select from among its members a chairman and may employ necessary personnel. The members of the authority shall serve without compensation but may be reimbursed for necessary expenses. No action of such authority shall be valid unless authorized by a vote of the majority of its members. Such authority shall maintain proper accounting and financial records and shall make an annual report to the chief executive officer of the municipality."*

A parking authority has the following powers and characteristics:

- It can acquire real property either through negotiation or its vested powers of eminent domain
- It has a five-member Board of Directors (sometimes seven); the Board is appointed by the mayor with the consent of the City Council
- The Board is empowered to hire a director and any other employees that it deems necessary to manage and operate parking facilities, processes, and functions under its jurisdiction
- It is empowered to operate all public off-street parking within its city limit
- It has the power to set rates for on- and off-street parking, thus removing the rate-setting process from the political arena
- It has the power to create and approve its own budget; the budgets are generally intended to be revenue neutral
- It may keep excess revenues from its operation; this permits a parking authority to create reserves for future expansion and renewal/replacement
- It has the power to issue bonds; however, because of much more favorable interest rates, parking authorities commonly work with the municipality in which they reside and seek its financial secondary backing

In Connecticut, CGS Section 7-204 states that:

> *"Such parking authority or parking division shall have the power, in the name of the municipality, to (1) create, establish, and expand wherever built by such municipality, off-street parking facilities; (2) acquire by purchase, gift, devise, lease or condemnation, subject to the provisions of section 48-6, real property or any interest therein necessary for or incidental to the construction, maintenance, operation, or expansion of off-street parking facilities, provided such authority shall not be empowered to take by eminent domain any property from a corporation which has the right of eminent domain, and this chapter shall not affect the powers of eminent domain of any such corporation; prepare necessary plans and drawings; (3) construct or cause to be constructed parking facilities; (4) maintain and operate parking facilities; (5) establish and collect reasonable off-street parking fees; (6) give, grant or sell any real property owned by such parking authority to the municipality; dedicate any real property owned by such parking authority to the public purposes for a street or highway; (7) lease parking facilities or such expanded parking facilities as may be provided, and already subject to lease, to any public agency, individual, firm, corporation or hospital, as defined by subsection (b) of section 19a-490, upon such terms and conditions as the public interest may warrant; and (8) enforce parking regulations in a municipality that has adopted an ordinance under section 7-204a in accordance with the terms of such ordinance."*

State statutes governing the establishment of a parking authority in the State of Connecticut charge a parking authority with all common powers given parking authorities nationally.

PARKING AUTHORITY DEVELOPMENT ISSUES

Parking authorities are often established to allow a parking agency to lessen the bureaucratic red tape and time associated with everyday procedures such as public procurement. It also allows for greater latitude in meeting the overall parking needs of the geographic area it is intended to serve. Generally, an agency designed for the sole purpose of supplying parking services provides a greater level of service in a true private-sector business model. As these agencies are developed as an arm of municipal government, they do maintain tax-exempt status and commonly pay an annual payment to the General Fund in lieu of property taxes. This payment usually equates to some acceptable percentage of its annual revenues. However, this does not apply to the City of Groton, as all the off-street assets in the study area are owned and operated by the private sector. Conversely, the Parking Authority will not realize parking revenues from an important off-street division.

STAFFING

Normally, board members are recruited from the local business and residential community and appointed by a mayor or council to govern parking authorities. Most parking authority boards consist of five members. Board members are required to reside in or have their principal place of business within the respective municipality the parking authority resides. Individual board members serve as chairperson, treasurer, and secretary, with the remaining members serving as general board members. Appointments to these board positions are usually staggered to allow for continuity as terms expire. Board meetings are held on a regularly scheduled basis and are open to the public for input.

An executive director is responsible for managing the daily operation of a parking authority and reports to the chairman. It is important to note that under this operating scenario, the executive director reports directly to the chairperson of the board and not directly to the mayor or city administrator. Parking policy—both internally and externally—is set by board members upon operational recommendations made by the executive director.

Staffing required under this management approach can be addressed using the same methods available under a municipal department approach to management. Based on market conditions, the authority may decide to maintain essential personnel as direct parking authority employees or may decide to privatize certain positions using private-sector personnel (or may decide a combination of both methods may work best). However, when a municipality decides to establish a parking authority, staffing issues may not be simple and straightforward.

Since it may be necessary to create new or additional positions under a parking authority operation, new positions may not fall under civil service guidelines. This can sometimes mean the appointment of employees based on their political connections or affiliations. Although this may be advantageous in allowing the parking authority to fill vacant positions in an expedient manner, the result may be personnel being hired to perform or manage critical tasks who are not necessarily the best fit for the position. For this reason, the executive director should possess all hiring and firing powers.

FINANCE

Under a parking authority approach, a financial officer would be hired to directly oversee all the department's financial matters. Normally, City of Groton personnel would be removed from all financial matters. A highly experienced financial officer would report directly to the executive director and both individuals would be responsible for ensuring the financial solvency of the agency. The development of any new parking facility—if underwritten by the parking authority—would require the parking authority to secure bonding to finance the project. The parking authority would become the first line of support for the funding of any debt service generated through parking revenues. The City would be required to guarantee new debt on a secondary basis using tax dollars. Since a parking authority is a not-for-profit agency, excess revenues would be pledged to normal system improvements or a capital improvement program that may include the future acquisition of land for long-term facility development planning.

Recommended Parking Program Revenue and Cost Projections

Kimley-Horn has made several recommendations for changes to the existing parking program based on the need to better manage the approximately 2,500 new EB employees that will likely seek parking options in the study area. As with most recommendations, there are associated capital and operating costs. Although there are no changes to the management structure of parking currently recommended, there are recommendations for the addition of one full-time and one-part-time civilian (non-sworn) parking enforcement officers to be added to the Police Department as well as enhancements to the technology currently employed by the City to enforce parking regulations. Additionally, there are recommendations for improving residential parking signage and for the need to install and maintain commuter employee parking program signage.

The recommendations have been made in line with the occupants of the goals for operational program enhancement which includes ensuring that the parking management program is, at a minimum, financially self-sufficient and that no undue burden is placed on City services without appropriate parking planning and financial compensation.

Table 18, **Table 19**, and **Table 20** identify the projected costs and revenues associated with the operation of the recommended employee parking permit program. Certain assumptions have been made in these projections including the potential for a parking garage(s) being built that would accommodate the greater number of the estimated 2,500 new EB employees in this parking garage(s) most likely not owned or operated by the City. It is anticipated that with the development of a parking garage(s), an on-street commuter employee parking program would either be financially negatively impacted or deemed unneeded. For this reason, our financial projections are reduced in year five when a parking garage could possibly come online.

Based on these assumptions and on the initial monthly cost of a permit as well as the projected participation level by EB employees, and accounting for capital costs, the parking program will run a financial surplus of $48,401 in the first year, $76,029 in the second year, and $57,134 in the third year. In the fourth year of operation the program nets $24,974 with the fifth year generating a deficit of

approximately $72,339. As stated earlier, we accounted for worst case scenario with demand for the commuter employee parking program becoming less popular with EB employees in year five with the opening of a parking structure(s) and a free parking option available to them.

Table 18: 5-Year Revenue Projections

	Year 1	Year 2	Year 3	Year 4	Year 5
Commercial District Revenues					
Number of Spaces (330±)[1]	281	215	198	165	83
Monthly Rate	$85	$88	$90	$93	$96
Total Commercial Gross Revenue	$286,110	$225,354	$214,259	$183,906	$94,712
Total 5-Year Gross Revenue	**$1,004,341**				

[1]Assumes Year 1/85%, Year 2/65%, Year 3/60%, Year 4/50%, and Year 5/25% participation levels

The recommendations for program changes also have several capital start-up costs associated with them. These costs include the purchase of an LPR system to be added to a new motor vehicle to control parking enforcement costs by increasing the efficiency of the limited staff required to conduct effective patrols. The projected capital improvement costs related to each of the program recommendations are identified in **Table 19.**

Table 19: Project Capital Start-Up Costs

Capital Cost Projections - Year 1					
Item	**Description**	**Unit**	**Unit Cost**	**QTY**	**Projected Cost**
	Capital Program Costs				
1	18X24 regulatory sign and pole with installation	Each	$250	100	$25,000
2	License Plate Recognition System (Hardware/Software)	Each	$35,000	1	$35,000
3	Enforcement Vehicle	Each	$30,000	1	$30,000
Total					**$90,000**

Table 20 below identifies the annual costs associated with the program as well as the revenues generated from the permit program and the new revenues that could be realized by this program.

Table 20: Parking Permit Program Annual Costs

Program Year	Year 1	Year 2	Year 3	Year 4	Year 5
Wages[1]	$45,760	$47,133	$48,547	$50,003	$51,503
Wages[2]	$28,288	$29,137	$30,011	$30,911	$31,838
Payroll Taxes/Benefits[3]	$55,661	$57,331	$59,051	$60,822	$62,647
Total Payroll	**$129,709**	**$133,600**	**$137,608**	**$141,736**	**$145,988**
Vehicle Repairs & Maintenance	$5,000	$5,150	$5,305	$5,464	$5,628
Printing and Tickets	$2,500	$2,575	$2,652	$2,732	$2,814
Uniforms	$3,000	$0	$3,060	$0	$3,121
Miscellaneous Administrative[4]	$7,500	$8,000	$8,500	$9,000	$9,500
Capital Start-up Costs[5]	$90,000	$0	$0	$0	$0
Total Expenses	**$237,709**	**$149,325**	**$157,125**	**$158,932**	**$167,051**
NET OPERATING INCOME	$286,110	$225,354	$214,259	$183,906	$94,712
NET CASH FLOW	**$48,401**	**$76,029**	**$57,134**	**$24,974**	**$(72,338.91)**

Footnotes:
[1] Assumes $22.00 per hour X 40 hours per week X 52 weeks
[2] Assumes $17.00 per hour X 32 hours per week X 52 weeks
[3] Assumes 35% of gross salaries
[4] Internal Service Charges
[5] Year 1 Only

As evidenced in the tables above, the program is not a large generator of parking income, but it does cover operational and capital start-up costs during the first 4 years. Kimley-Horn projects that demand for the commuter employee program could fall off with the opening of a parking garage(s), but it is possible that the program could remain popular with EB employees depending on user costs and policies associated with any new parking supply. There is no way of knowing the acceptable price point for this convenience, as there is no empirical data to base what EB employees would deem an acceptable rate for the convenience of this close proximity parking.

It is important to note that the projections provided for this program have been developed in a very conceptual manner and are for preliminary planning purposes only. It is possible that the projected income and expenses can vary significantly, higher or lower, than identified above based on several factors that impact the performance of any parking program such as insufficient levels of parking enforcement; long periods of inclement weather; price and demand fluctuations in the market; managerial decisions made by City of Groton or EB; other political decisions made by local, state, and national government officials; and more.

IV. Zoning Regulations and Municipal Ordinances Review and Recommendations

Background and Introduction

The two major themes that form the foundation of the Parking Management Alternatives just presented are the protection of the residential neighborhoods from large numbers of Electric Boat (EB) workers and their vehicles and discouraging rampant overdevelopment of surface parking lots to support this same group of commuters. The City of Groton has a residential parking permit program, but the program will need to be expanded and streamlined to respond to additional demands for parking in residential areas, fit the needs of the residential community, and minimize the expense and bureaucracy that can come from expanding public parking management responsibilities. With regards to surface parking lots, many of the existing surface lots within walking distance of EB were created in response to past increased EB staffing levels and parking demand. Based on research documented in the Joint Land Use Study (JLUS), through the 1980s EB employment hovered around 25,000, distributed between Groton and Quonset Point—but still heavily concentrated in Groton. During this time, it was common for homeowners in the City near the shipyard to rent out their backyards—and in some cases their front yards—as parking space for EB commuters.

Figure 7: Examples of Private Surface Lot

The proliferation of surface parking lots in this manner is undesirable from a variety of perspectives; therefore, regulations, ordinances, site plan conditions, design standards, and best parking management practices can be implemented to guide and control the creation of additional surface lots without necessarily raising the frustration of property owners.

With an understanding of future parking supply, demand, development, and management responsibility, Kimley-Horn reviewed, evaluated, and summarized the City of Groton's Zoning Regulations as it relates to parking planning, design, and management requirements and their ability to support positive changes to that environment. If they are a hindrance to positive change, this section of the report identities why and how that regulation should be corrected. Additionally, Kimley-Horn reviewed the City of Groton's existing and parking related codes and ordinances which are separate but in parallel with the more comprehensive Zoning Regulations. To avoid confusion when discussing the pros and cons of zoning regulations and codes, the following is subdivided into two separate sections.

Note that while Kimley-Horn's evaluation of zoning and code of ordinance-based parking regulations is comprehensive and examines all references to parking in that document, the focus in this report is on those standards that address the strategies and recommendations contained in the Parking Management Alternatives recommendations. Existing parking regulations and/or codes that do not impact the management recommendations will remain unchanged. In parallel with the Parking Management Alternatives section of the report this chapter is further organized using the following headings:

- Overview of Current Parking Related Zoning Regulations
- Parking Committees, Administration, and Management
- Parking Enforcement and Adjudication
- Enforcement and License Plate Recognition (LPR) Technology
- Fines for Violations
- Residential Parking Permit Program
- On-Street Commuter Parking Permit Program
- Parking Lot Design and Management Standards
- Parking and Mixed-Use Development District

A municipality's codes, ordinances, and administrative regulations regulate how public infrastructure, like streets and parking, are managed and dictate to a significant degree how private facilities—in this case parking lots and parking structures—are designed, constructed, maintained, and operated. Because of this regulatory reach into the provision and management of private parking, input to be received from residential and commercial stakeholders, property owners, City staff, and elected officials is paramount as it will provide valuable support (or opposition) to the suggested changes well before any changes in the parking regulations are approved. Therefore, the recommendations that follow do not represent the final language, as the Mayor, City Attorney, City Council, Planning and Zoning Commission, and the public need to review and comment on this material.

Parking-Related Zoning Regulations

OVERVIEW OF CURRENT PARKING RELATED ZONING REGULATIONS

The City of Groton Planning and Zoning Commission, in accordance with Chapter 124 of the Connecticut General Statutes, adopted and established the current Zoning Regulations in December 2016 and amended those regulations in September 2020. Organized under nine chapters, the document includes but is not limited to regulatory basics, resident zones, business and industrial zones, standards, and administrative provisions. There are hundreds of references to parking throughout the document which address such issues as special permits in the Waterfront Business Resident District to reduce parking requirements, payment of a fee-in-lieu of parking within the Five Corners District, parking garages as a principal land use in Industrial/Technology (IT) Zones, additional building setback requirements for parking lots in the Coastal Area Management Overlay Zone, and the prohibition of fill to be used as structural support for a parking facility in the Flood Protection Overlay Zone. However, these and other references to parking are generally unrelated to the recommendations outlined in the Alternative Parking Management section of the report which address residential permit parking programs, regulatory signage, parking enforcement, a commuter curbside permit program, levels of staffing, and organizational roles and responsibilities.

Section 3.0 Resident Zones

PARKING AS A PRINCIPAL OR ACCESSORY USE IN RESIDENTIAL ZONES

Given the concern that homeowners and property owners in residential neighborhoods will convert their driveways and yards into EB commuter parking spaces, Kimley-Horn reviewed Section 3.2 of the Zoning Regulations which defines the types of buildings and uses allowed in in residentially zoned areas. Approval for different land use activities within residential zoned areas in the City falls into four categories: no permit required, zoning/building permit required by City staff, site plan approval required by the Planning & Zoning Commission and uses that would require both special permit approval and site plan approval by the Commission. For example, parks and playground uses are allowed in all residentially zoned areas without a permit while a nursing home is permitted in only a multi-family residential zone if a special permit and site plan approval have been granted. Parking is not listed as a permitted principal use in section 3.2 so therefore is not allowed in the five residential zones except as an accessory use, as detailed in Section 3.3.

Section 3.3 allows private garages as accessory uses. The definition of accessory use is “a use of land, building, or structure which is clearly incidental to, and customarily in connection with and located on the same lot with the principal building or use.” Parameters for being considered “accessory” are as follows:

- Customary – Something commonly practiced, used, or observed such that it is considered conventional and typical rather than unusual
- Incidental – Something likely to ensue as a minor consequence of another activity or something that happens as a minor part or result of something else
- Subordinate – Something inferior, smaller, fewer, and of less importance or impact or something placed in or occupying a lower class, rank, or position

Furthermore, an accessory building/structure is defined as "a building or structure which is customarily incidental and clearly subordinate to the principal building and/or use on the same property." Therefore, any provided parking on a residential lot should have a clear relationship to the residential use on the lot. A homeowner who wished to build a parking garage on their property to serve EB commuters would therefore not be permitted to do so under this language.

Surface parking lots are not referenced in Section 3.2 or 3.3 and are therefore prohibited in any residential zone under any condition.

Section 4.0 Business and Industrial Zones

PARKING AS A PRINCIPAL AND ACCESSORY USE IN BUSINESS AND INDUSTRIAL ZONES

Section 4 – Business and Industrial Zones, is organized in a similar fashion to Section 3.2 and 3.3 in that it addresses principal uses permitted by site plan approval, principal uses permitted by special permit and site plan approval, and permitted accessory buildings, structures, and uses. This section is further divided by business and/or industrial district: Waterfront Business Residence District (WBR), the Five Corners District (FCD), General Commercial (GC), IT Zone, and Technology Campus Zone (TC). In all subsection and zones the regulations reference Section 7.1 – Parking and Loading Regulations which are discussed elsewhere in this document. In the WBR, a parking lot or parking garage is only permitted as an accessory building, structure, or use (see Section 4.1.E.1), while they are permitted as principal and accessory uses in FCD (see Section 4.2.D.2) and GC (Section 4.3.D.9) following special permit and site plan approval. Parking lots and structures are permitted in the IT Zone and TC Zone with site plan approval (4.4.B.11 and 4.5.B.4).

Given the FCD and GC zones' proximity to EB, there is concern that EB commuters will create demand for new surface and structured parking facilities to meet their needs and that property owners will choose to convert properties to surface parking for EB commuters. Property owners may be under the impression that there is a considerable return on their investment if they build a parking lot or garage on their property for EB commuters. From a purely financial perspective this is not the case, particularly if the additional surface lot parking design and management standards recommended later in this report (Section 7.1) are adopted. Excluding land value, surface parking lots can cost an average of $5,500 per space while structured parking facilities could cost as much as $40,000 per space to develop. Depending on loan terms, that could equate to an annual debt service payment of $440 per space, per year for each lot space and $3,200 per space in a parking structure. Annual per space operating and maintenance costs for a surface and structured space could equal $100 to $600 per space respectively depending on staffing levels, hours of operation, and environmental conditions. Therefore, to develop, operate, and maintain a surface or structured parking space could cost $540 per year for the lot and $3,800 per for a parking structure. Given these costs, parking operators would need to generate $45 per space per month for a surface lot space and $317 per month for a structured parking space simply to break even. Although financial barriers will discourage the conversion of properties to parking, it is recommended the Planning and Zoning Commission consider prohibiting parking lots and garages as principal uses in the FCD and GC zones.

Section 7.1 Parking and Loading Regulations

Section 7-1 of the City of Groton Zoning Regulations – Parking and Loading Regulations, which is referenced throughout the Zoning Regulations, does address many of the parking management recommendations as it includes number of off-street spaces required for new development, location of parking, size of spaces, and surface, lighting, and landscaping requirements. The following offers Kimley-Horn's assessment of these regulations.

7.1.A – GENERAL

This subsection reinforces the goals and objectives of the parking regulations that follow and defines the expectations of the property owners, developer, and design professional. Of particular interest is Section 7.1.A.6 which talks about the *"collective provision of off-street parking facilities in two or more structures or uses."* This established *"shared parking"* as a codified goal. Shared parking will be discussed in greater detail elsewhere in this report.

7.1.B – NUMBER OF PARKING SPACES

This subsection lists the number of off-street parking spaces required as a minimum to accompany different types of land uses in the City as they are developed. The regulations do not state a limit on the number of parking spaces that can be provided. Leasing agents and prospective tenants often pressure a developer to provide a certain number of spaces that is above what is typically required by the regulations to ensure that parking is not a limiting factor when marketing to prospective tenants. Some municipalities are choosing to regulate parking maximums, instead of requiring a minimum amount of parking, to discourage over/building of parking infrastructure as part of an overall transportation demand management (TDM) strategy. No recommendations were made as to minimum or maximum parking requirements in the Alternative Parking Management section of this report; therefore, Kimley-Horn is not recommending changes to parking minimums/maximums at this time, with the possible exception of requirements for manufacturing, discussed below.

Some consideration should be given to revisiting off-street parking requirements in anticipation of future expansions to EB's operations. The main EB campus is located in the IT Zone, and per Section 4.4.B.11, developments must follow the regulations defined in Section 7.1.B. Pursuant to the Manufacturing and Industrial establishment parking space requirements in 7.1.B, EB must provide one parking space for each three employees on the maximum work shift. Based on discussions with project stakeholders, it is understood that EB has been able to receive zoning approvals for recent expansions in compliance with existing zoning regulations, without providing additional parking to accommodate additional staff, because EB's existing parking inventory provides for the required 0.33 parking spaces per first-shift employee.

Kimley-Horn's EB parking demand analysis that was presented earlier in this report noted that 98 percent of first-shift employees drive and that the number of EB employees per parked vehicle was 1.03—meaning that only three or four EB employees out of every 100 travels to work via carpool, transit, or some alternative means. This equates to an actual first-shift employee parking demand ratio of 0.97 spaces per employee.

Section 7.1.B also requires that an official of the firm shall submit a semi-annual affidavit certifying the number of employees on each work shift and that the parking requirements may be met/reduced in part by the provision of alternative transportation for employees. Section 7.1.B allows a reduction of minimum parking when carpooling exists: three occupied seats in a van or bus that makes repeated trips from outlying areas outside the City limits to EB shall substitute for one parking space. EB does operate a shuttle/carpool program but no information from EB or the City was provided that documents semi-annual shift volumes or shuttle ridership data being reported.

It is recommended that the City revisit the current off-street parking requirement for manufacturing and industrial establishments to include, potentially, a new land use category specific to EB and increase the minimum parking required for manufacturing and industrial uses in line with actual demand. That category would reference a higher-per-employee parking ratio and an equally higher reduction in required parking for employees that do shuttle from outside of the City limits. Additionally, the semi-annual report from EB to the City should include parking occupancy data in addition to staffing volumes and shuttle/carpool data. Parking occupancy data could/should be collected monthly and focus on the peak daily volume of parked vehicles in EB and private lots that satisfy EB parking demand.

7.1.C – POSSIBLE MODIFICATION OF PARKING REQUIREMENTS

This subsection provide direction on how the above space requirements could be reduced for single and multiple property development scenarios. As noted under Section 7.1.A General, the key language in this regulation relates to shared parking: *"Where in a mixed-use development on a single property, there are two or more land uses which have differences in their principal operation hours or dissimilarities in their clientele, thereby allowing utilization of the same parking spaces."*

However, there are no published metrics in the regulations that guide the applicant or City staff in how shared parking reductions can be calculated. The Urban Land Institute (ULI), National Parking Association (NPA), and National Association of Industrial and Office Parks (NAIOP) have, for many years, published recommendations on how parking activity patterns and demand for different land use categories can be calculated during the course of a typical weekday and weekend day. Recommendations on shared parking, parking accumulation patterns, and parking management plans (PMPs) are covered later in this report.

7.1.D – LOCATION OF PARKING

This subsection provides direction on the location of residential, non-residential, and industrial zone off-street parking. Residential parking must be provided on the same lot as the dwelling; parking for non-residential uses shall be on the same lot, or within 500 feet of the principal use; and if provided within 500 feet of the principal use, evidence that the off-site parking facilities are on land related to the principal use and/or is bound by a covenant must be provided, is approved by the Commission, and is recorded with the Town Clerk. As it relates to the concern that thousands of EB workers/commuters will inundate the residential neighborhoods and create an underground economy where homeowners are renting their parking garages, driveways, and front/side/rear yards for parking, this regulation would appear to prohibit residents from taking that action. However, Kimley-Horn must defer to the City of Groton's Planning and Zoning Commission, Zoning Official, and City Attorney on the interpretation of Section 7.1.D.

7.1.E THROUGH 7.1.G – SIZE OF SPACES, DIMENSIONS, AND GENERAL LAYOUT REQUIREMENTS

Subsections 7.1.E, 7.1.F and 7.1.G identify the depth and width of parking spaces, including off-street loading, percentage of acceptable compact car spaces, and prohibition on front yard setback placement. As it relates to the concern that homeowners are going to create parking lots in the front yard, this regulation also appears to prohibit that possibility. Additional design and construction specifications are presented later in this report.

7.1.H AND 7.1.I – LOADING SPACES AND TRUCK/TRAILER PARKING

These two subsections address the need to provide space for outside delivery and/or dispatch of materials, goods, and services to commercial and institutional uses, and the parking restrictions for tractors, trailers, and trucks loaded with merchandise. Kimley-Horn found no issues with this regulatory language as it relates to the Alternative Parking Management recommendations.

7.1.J – SURFACE/LIGHTING/LANDSCAPING REQUIREMENTS

Paragraph 1 of Subsection 7.1.J states that *"Off-street parking and loading areas, including driveways, shall include an all-weather surface to the satisfaction of the Planning and Zoning Commission, or the Zoning and Building Official in cases where the Zoning and Building Official has final authority."* There are a handful of statistical measures which presumably "satisfies" the Commission's and/or zoning officials requirement including 24 spaces shall be permitted in a single parking area without being interrupted by landscaping, a 10-foot-wide buffer strip when adjacent to any Residential Zone, and 3- foot planting area requirements along the property's setback line. While these are valuable regulations, there are dozens of other numerical standards which define best planning and zoning practices, and which should be incorporated into the City of Groton's regulations. These numerical standards will provide metrics for the applicant, Commission, and City staff to follow to ensure that any new parking lot adheres to the larger goals of the community. Detailed recommendations on surface treatment, lighting, and landscaping are offered later in this report.

Parking Lot Design and Management Standards

As the demand for parking and the fees that parking consumers are willing to pay increases, so does the proliferation of privately-owned but publicly-available parking lots. During previous surges in EB production and staffing levels, private property owners located within walking distance to EB have in the past installed "Public Parking Here" signs and installed an honor box or some other rudimentary form of revenue collection device in an effort to generate parking revenue from EB workers. Given the dramatic increase in EB parking demand in the very near future, there is great concern that the creation of parking lots in this manner in Groton will be in conflict with a number of initiatives outlined in the JLUS, most specifically, encouraging creative economic development and redevelopment opportunities and enhancing the quality of life for Groton's residents. Therefore, careful attention must be paid to the design and construction standards that permit the creation of these surface parking lots.

Expanding the design requirements will introduce costs that previously were not incurred by a property owner wishing to enter into the public parking for profit business and by doing so these recommendations would cause an owner to carefully consider the decision before committing to this endeavor. Additionally,

given the City of Groton's desire to have all publicly-accessible parking facilities—both publicly owned and privately owned/operated—functioning in a unified manner, these standards will ensure that the parking user's experience is fair and consistent. The following recommendations cover a variety of design standard guidelines.

EXISTING GENERAL PARKING LAYOUT AND SURFACE, LIGHTING, AND LANDSCAPING REQUIREMENTS

Section 7.1 of the City of Groton's Zoning Regulations address parking and loading requirements. Specifically related to parking, the standards address the number of spaces required by land use category, possible modifications/reductions in the number provided, location of parking that is provided, parking sizes and dimensions, general layout requirements, loading spaces, truck/trailer parking, and surface/lighting/landscaping requirements. As a one of the guiding principles of the parking management plan is to control the development of additional surface parking to meet increase EB parking demand, Kimley-Horn's focus on this section of the plan is the review of existing site plan conditions and design standards regarding parking lot layout requirements as well as surface, lighting, and landscaping requirements. The following focuses only on the design of surface parking. Standards for loading, unloading, and truck parking have been omitted.

General Layout Requirements

- No parking lot is to be in any required front yard setback
- The general layout and traffic circulation of parking and loading areas shall be designed to avoid unsafe conditions and traffic congestion in the streets upon which the area has access and to provide for the safety and adequacy of access for vehicles and pedestrians using the area
- All proposed curb cuts and access drives shall comply with all applicable requirements of the State Department of Transportation when accessing a State highway, and the City's Highway Department when accessing a City street
- Where vehicles will be located adjacent to sidewalks, fences, walls, required buffer strips, trees, landscaping, or similar constructions a suitable bumper or curb shall be provided in such a location that the vehicle cannot overhang or otherwise damage said area

Surface/Lighting/Landscaping Requirements

- Off-street parking and loading areas, including driveways, shall include an all-weather surface to the satisfaction of the Planning and Zoning Commission, or the Zoning and Building Official in cases where the Zoning and Building Official has final authority
- Such all-weather surfaces shall be stable, durable, dustless, and graded and drained as to dispose of all surface water accumulation in the area
- Where the proposed grade exceeds 10 percent, all such areas and driveways shall be paved in those areas
- Any lighting used shall be in accordance with Section 7.6 and shall be shielded and so arranged as to direct the light away from adjoining premises and public rights-of-way
- All parking areas shall be landscaped in accordance with the requirements below:

- Except in the IT or TC zones, not more than 12 at-grade parking spaces shall be permitted in a continuous row, and not more than 24 spaces shall be permitted in a single parking area without being interrupted by landscaping
- All parking areas with more than five spaces that abut or are across the street from, the boundary of, or any property within any Residential Zone shall be bordered on all sides with a 10-foot-wide buffer strip
- A planting area with a minimum width of three feet shall be provided between the parking area and the required setback line on any parcel, except in the IT or TC zones

While brief, the various requirements do include some best parking planning and design language including prohibition on front yard parking, residential zone buffer strips, and planting area width. However, the layout, surface, lighting, and landscaping standard are generally void of definite area calculations and metrics and the approval or rejection of site plan conditions under these standards if left to the discretion of the City Planner and Planning and Zoning Commission. In fact, that approach is referenced on the City's website as its "philosophy." However, to discourage the proliferation of surface parking lots for EB commuters, the following recommended standards do provide design metrics and specifications.

RECOMMENDED DESIGN REQUIREMENTS FOR PARKING LOTS

Parking Lot Circulation

Off-street parking lots should be designed to accommodate traffic volumes and pedestrian circulation based on the land use served. The use of islands, medians, curbing, and landscaping is encouraged to separate parking spaces from traffic and pedestrian circulation areas.

Drainage

Stormwater runoff from parking lots serving other than single- and two-family dwellings should not be discharged directly into the street; such runoff should be collected internally or discharged to an adjacent drainage way. After providing detention, when required, the collected stormwater may be discharged to the public storm sewer, ditch, or other conveyance. Stormwater runoff discharged to the street over the back of the curb or through a parking lot entrance, should be minimized. Pavement slopes of 1.5 percent should be provided to ensure proper drainage and eliminate standing water and icy conditions. Minimum pavement slopes of 0.6 percent may be used. However, since the potential for flat areas is greater, additional measures to address drainage, such as slotted drains or pervious pavement, may be necessary. Slopes greater than 2 percent in areas between the parking lot destination and the accessible parking stalls should be avoided as they create a situation where constructing an accessible route is difficult. Slopes greater than 5 percent are discouraged.

Pavement Design

Any off-street parking area should be surfaced with a flexible or rigid pavement. The pavement thickness for parking areas occupied by cars and small trucks for rigid and flexible pavements should be designed according to the following tables. Parking lots should be designed for a minimum 20-year design life. The

portions of the parking facility serving truck traffic such as entrances, perimeter travel lanes, trash dumpster sites, and delivery truck routes must be designed to accommodate heavier loads.

Table 21: Pavement Thickness for Moderate Loads

Subgrade CBR	Surface Material	On 12" of Prepared Subgrade		On 12" of Prepared Subgrade with 4" Granular Subbase	
		Minimum (Inches)	Desirable (Inches)	Minimum (Inches)	Desirable (Inches)
9	Rigid	5	6	4	5
	Flexible	5	6	4	5
6	Rigid	5	6	4.5	5
	Flexible	5	6	5	5
3	Rigid	5.5	6	5	5
	Flexible	6	7	6	6

Setback Requirements

As background, setbacks are building restrictions imposed on property owners by local governments through regulations and building codes to promote safety, privacy, and environmental protection. **Table 22** below presents setback requirements in feet based on a number of definitions for commercially zoned property.

Table 22: Commercial/Industrial Parking Lot Setbacks

Commercial/Industrial Parking Lot Location Setback (feet)	Setback (feet)
Along alley lines bordering a residential district	5
Commercial or industrial districts abutting a residential district	10
Commercial or industrial districts abutting a residential district parking lot	5
Adjacent to a commercial or industrial district property line	0
Office and commercial districts	15
Light industrial and general industrial districts	10
Business park and professional commerce park district	20

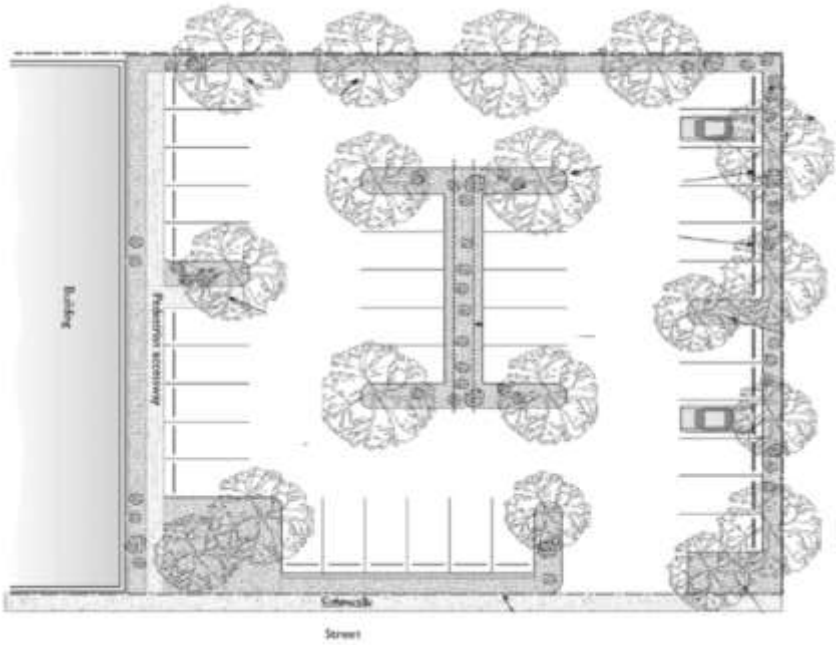
It is recommended that all parking lots should provide a barrier around the entire perimeter, unless a walkway or border is provided. When adjacent to required setback and adjoining property lines, barriers should be located 2 feet from the edge of property lines, public sidewalks, and adjacent parking lots to prevent vehicle encroachment into the setback area.

Landscaping and Screening

It is desired that all parking areas be aesthetically improved to reduce obtrusive characteristics that are inherent to their use. Therefore, wherever practical, such parking areas should be effectively screened from public view by incorporating the natural landscape and topography. All parking areas should include

landscape areas, islands, screens, etc., equal to not less than 15 percent of the total paved area. Landscaped islands within the parking area should be ground cover of grass (i.e., sod), shrubs, or other acceptable living plant life, unless an alternate ground cover is specifically approved as part of the site plan review by the City. Landscape islands should not be less than a minimum of 8 feet in width from back of curb to back of curb, landscape planters a minimum 6 feet in diameter, and no parking space should be greater than 75 feet from a landscaped open space. Parking spaces should be separated from any adjoining roadway, by a landscaped island or elevated separation (i.e., sidewalk), of a minimum of 9 feet in width except along the roadway or parking bay aisle that provides the direct access. Earthen berms should be a minimum of 3 feet above the top of curb of the adjoining parking lot, if applicable, or public thoroughfare should be designed to not affect the drainage and sight distance of the surrounding area and should be aesthetically pleasing to the general public. Berms may be required to be higher if the minimum height is identified during the development review process as being inadequate to provide effective screening and buffering.

Figure 8: Parking Lot Landscaping and Setbacks



Screening may consist of one or any combination of the following:

- Wood or masonry walls or fences.
- Landscaped earthen berms.
- Plant materials of such size, branching density, spacing, and quantity to provide a minimum of 60 percent opacity while dormant. Such materials should provide screening function within three growing seasons after the initial planting. Failure to accomplish such function, whether due to slow growth, death, or other reason, may be grounds for requiring the addition of wood or masonry walls or fences. In some jurisdictions, a published list of approved materials may be available. Any changes to this list must be made by a certified landscape architect.

Lighting

Parking areas for civic, commercial, and industrial uses that will be used outside of daylight hours shall be provided with illumination. All parking lot lighting shall be designed and installed such that illumination will be directed away from any neighboring residential properties and shall be directed downward by

using full cutoff or fully shielded fixtures. **Table 23** below illustrates the recommended illuminance values and uniformity ratios.

Table 23: Recommended Maintained Illuminance Value and Uniformity Ratios

	Basic	Enhanced Security
Minimum horizontal illuminate on surface	0.2 footcandles	0.5 footcandles
Minimum vertical illuminance at 5 feet above surface	0.1 footcandles	0.25 footcandles
Uniformity ratio (max. to min.)	20:01	15:01

Parking Access and Revenue Control Equipment

In addition to unifying design standards, it is recommended that the City be authorized also to review and approve the type of parking access and revenue control equipment that is used in the management of commercial parking lots. While the regulation must not specify a particular equipment vendor, the parking access and revenue control system equipment must have consistent and unifying performance specifications that relate to setting and changing rate structures, hours of operation, validation programs, space availability counters/sensors, and reporting that is used in the management of commercial parking facilities.

Parking and Mixed-Use Development District

BACKGROUND

As part of Kimley-Horn's examination of parking and the City's Zoning Regulations, Kimley-Horn also examined the current language codifying the creation and definition of Planned Development Districts and, specifically, Mixed Use Development Districts, or "MUDD." Section 5.4.A notes the following:

The Planning and Zoning Commission recognizes that areas exist within the City of Groton which present unique opportunities for development and re-development in an urban setting in order to develop a "sense of place," provide population densities which will promote a pedestrian friendly environment, create a walkable environment to major regional employers and enhance the economic diversity of the City of Groton.

The MUDD will be a floating zone governed by the master plan and would remain subject to review and approval by the Planning and Zoning Commission as a zone change. The goal of the MUDD is to 1) encourage urban development in close proximity to major employment areas, 2) incorporate commercial and residential uses under unified and comprehensive design standards, 3) increase residential development density near centers of employment, 4) expand the property tax base and employment opportunities, and 5) achieve health, safety, and welfare goals outlined in the Plan of Conversation and Development

Regarding parking, there are eight subsections within the MUDD that reference residential uses and incorporation of first floor parking accommodation as well as the location, circulation, and required number of parking spaces. Of particular interest is Section 5.4.A.5.2, which codifies the requirement for a parking analysis and plan to be prepared by a licensed professional engineer specializing in parking needs

and design. The intent of the parking plan is to work with City staff and the Planning and Zoning Commission to minimize the construction of parking spaces through mass transit ridership support/subsidy, improved pedestrian connectivity, and encourage the use of shared parking.

CODIFIED SHARED PARKING AND THE PARKING MANAGEMENT PLAN

The language in the MUDD does not provide any direction on how the parking analysis/plan would be prepared or any background for staff review and approval. Additionally, it does not require evidence that the parking facility would be managed in such a way to achieve shared, and therefore, reduced parking. To address this need, numerous municipalities have codified the requirements of a shared parking analysis which justify the want/need to minimize the number of parking spaces that the mixed-use development is required to provide.

The key element ensuring that privately developed parking in the City of Groton meets the needs of its occupants while also providing potential parking relief for existing and adjacent land use activity is evidence that the developer will operate their parking facility in a unified and public manner. Therefore, as opposed to a parking analysis which presumably only examines the number of spaces provided, a Parking Management Plan (PMP) identifies not only the supply of spaces and the demand for these spaces, but also how the parking facility would be managed to ensure shared parking is achieved.

As part of the MUDD and site plan review process, it is recommended that the City of Groton require developers to submit a PMP for review with the Final Site Plan Submission for approval by the City's Planning and Zoning Department. PMPs are intended to promote thoughtful and effective parking management practices and to confirm that new developments are managed in a way that is consistent with the transportation, mobility, and land use goals of the City.

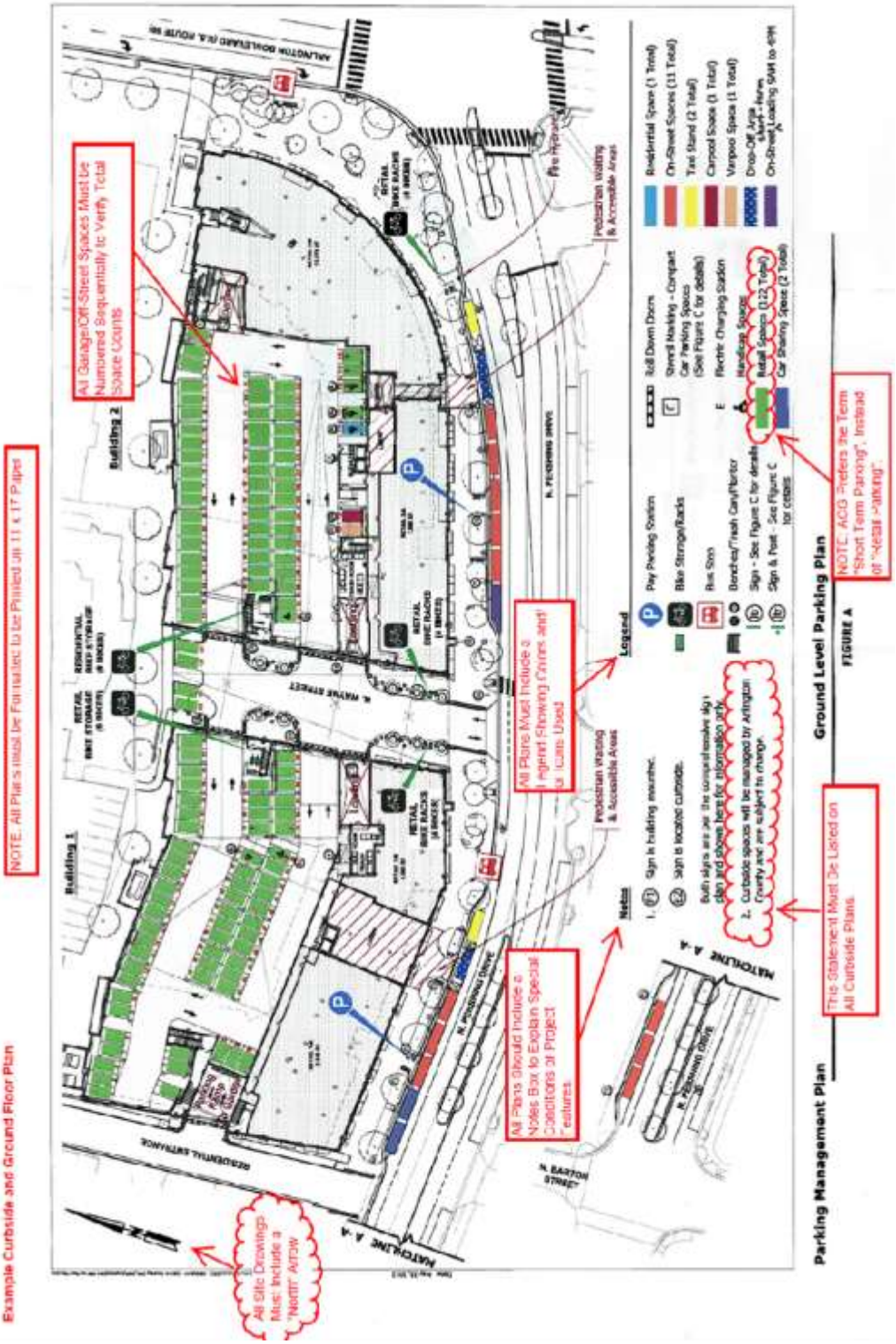
It is recommended that the PMP include the following items:

1. Cover Page – Name of project, site plan number, date, name of report preparer
2. Narrative – Provide a general project summary and a narrative with descriptions of the proposed development and parking facilities
3. Site Plans – Provide on-site architectural floor plans or surface lot plans on which vehicle parking and/or parking access are located. Include the following graphical elements where applicable:
    a. Parking space dimensions and labeled as compact or standard
    b. Distribution of compact/standard/accessible spaces
    c. Parking space allocation (i.e., employee parking, resident parking, short term/visitor parking, carpool/vanpool parking, electric vehicle parking)
    d. Drive aisle width dimensions
    e. Pedestrian access points and walkways
    f. Bicycle access points and bicycle parking locations
    g. Traffic flow arrows
    h. Vehicle queuing lanes
    i. Location of access/control gates at entry points
    j. Location of access/control gates at internal entry points (e.g., between retail and residential level)

   k. Location of overhead doors
   l. Location of pay stations and any other access, revenue control, or automated parking control equipment
   m. Outline of wayfinding signage plan for all users of all modes of transportation
4. Management Details – Provide a written explanation of how the parking facility is anticipated to be managed, operated, and enforced, including but not limited to:
   a. Facility staffing needs for peak, non-peak, and overnight hours
   b. Access and accommodation for various user groups
   c. Permit issuing
   d. Enforcement
   e. Hours of operation
5. Pricing and Payment Details – Provide an explanation and summary of the anticipated approach to parking pricing/rate structure as well as payment and validation options

The space allocation and assignment plan, provision for electric vehicle charging stations, bicycle parking, the location and type of parking access and revenue control equipment, and how spaces will be managed and shared between the different parking groups is defined and submitted for City review and approval. A tabular and graphic illustration of a PMP for a multi-level parking structure serving a mixed-use medical office, retail, restaurant, and residential development is illustrated on the following page. Note that the PMP illustration includes a depiction of how curbside space would be managed along the property's frontage. As parking along the public right-of-way falls under City management, the PMP could nonetheless require that the developer fund the fabrication and installation of parking regulatory signage (2-hour meters, loading/unloading zone, taxi stand, etc.) and, where appropriate, the acquisition and installation of parking meters. City staff would review the draft PMP curbside planning, provide cost estimates for the required parking signage and/or equipment, and the developer would pay a fee equal to those costs to be retained by the City for the purchase and installation of the signs/equipment prior to release of a certification of occupancy.

Exhibit 26: PMP for Multi-Level Parking Structure for Mixed-Use

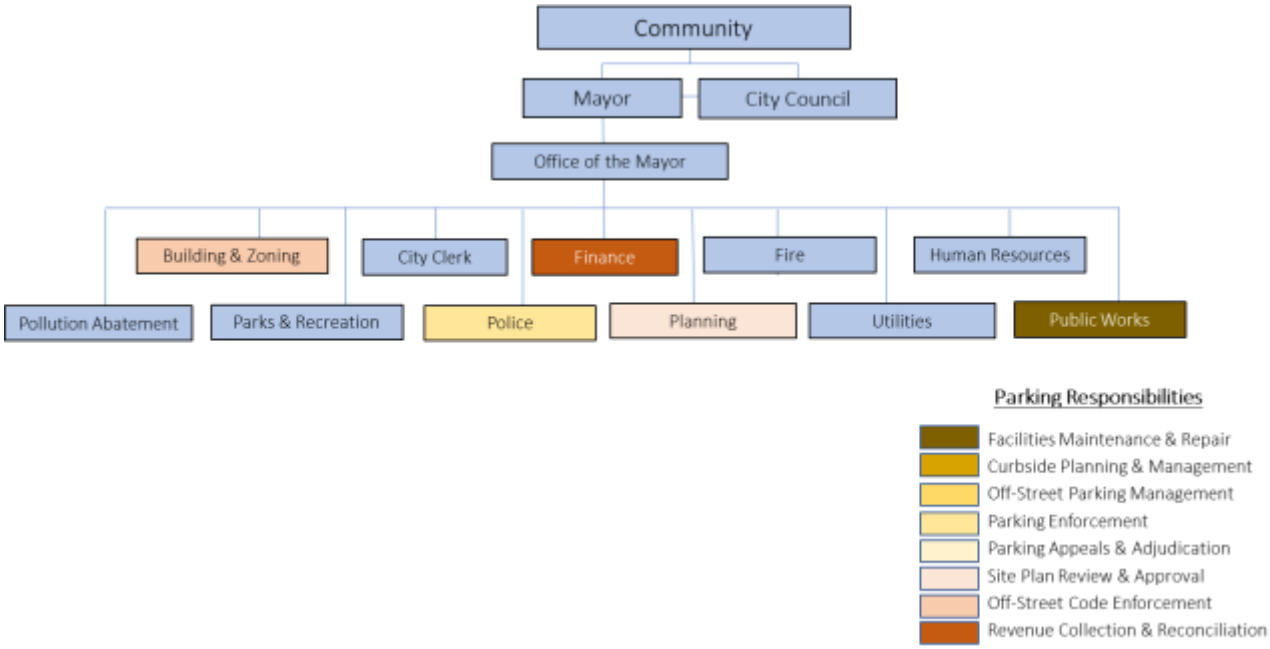


Parking Management and Relevant Statutes and Ordinances

PARKING COMMITTEES, ADMINISTRATION, AND MANAGEMENT

A public parking program includes planning, zoning, management, maintenance, finance, enforcement, and adjudication and the effectiveness of these responsibilities is only as good as is the organizational structure that supports these functions. Presently, the City of Groton's Public Works Department is responsible for curbside maintenance, snow removal, and the fabrication and installation of curbside regulatory signage; the Police Department is responsible for curbside parking enforcement including the residential parking permit program; the Planning Department ensures that new development provides the required number of off-street parking spaces; Building and Zoning ensures that buildings in Groton are constructed and maintained in compliance with the community's best planning and design requirements; and the Mayor and City Council set and approve parking policy. **Figure 9** presents a simplified version of what is a complicated parking organizational structure as parking related roles and responsibilities are decentralized.

Figure 9: City of Groton Organizational Structure and Parking Roles/Responsibilities



The following examines existing regulations, ordinances, and administrative directives that relate to the form and function of the City's parking responsibilities and offers recommendations to improve the performance of public parking through centralization and coordination of these activities.

CREATION OF A PARKING ADVISORY COMMITTEE

Connecticut General Statutes (CGS) Section 14-307 covers parking restrictions and regulations and states that *"the traffic authority of any city, town or borough shall have power to prohibit, limit or restrict the*

parking of vehicles and to erect and maintain (and remove) signs in each block designating the time or terms of such prohibition or restriction on any highway or thoroughfare coming under the jurisdiction of such city, town or borough." In the City of Groton, Ordinance 215 - Section 1.2 states that "the Mayor of the City shall constitute the Traffic Authority of the City and shall be vested with the full power and authority granted such Traffic Authority as such may from time to time be amended."

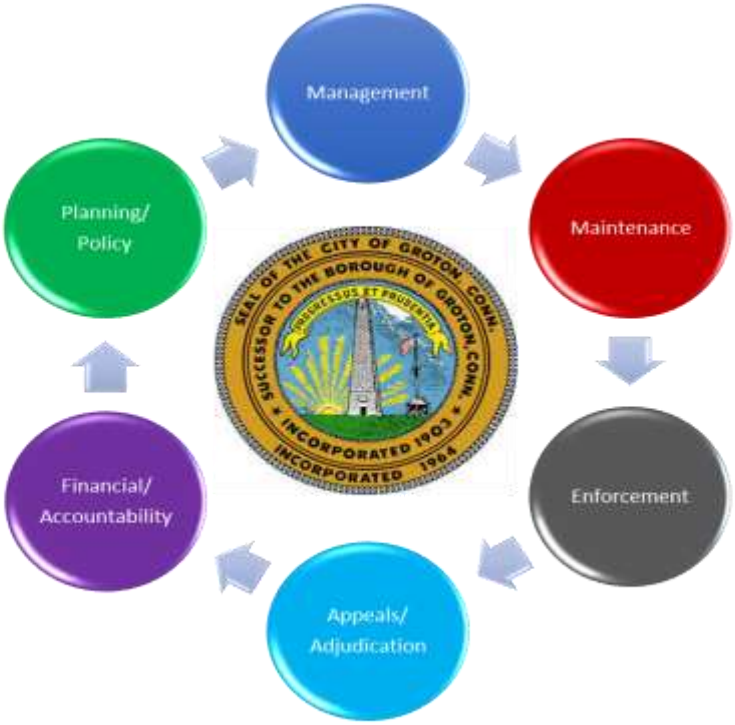
Based on this language, it would appear that a great deal of day-to-day parking policy and management responsibility falls on one individual, the Mayor. And while Ordinance 215-Section 1.3 authorizes the Mayor of the City of Groton to *"appoint one or more parking violation hearing officers to conduct hearings"* as authorized under CGS 14-307 statute, this appointment appears to address only the issuance of parking citations, fines for violations, and assessment of fines imposed during the enforcement of posted parking regulations for parking spaces in the public right-of-way. Therefore, it is recommended that the City of Groton, through the Mayor's traffic authority powers, create a parking advisory committee to assist the Mayor in the identification of parking challenges, researching potential solutions, vetting of challenges and solutions through public engagement, and prioritization of solutions. A parking advisory committee, with members appointed by the Mayor and with the approval of City Council, should be established to advise the Mayor and Council on matters regarding on- and off-street parking. The parking committee members could be appointed for 3-year terms and may be reappointed.

CENTRALIZED PARKING MANAGEMENT AND ADMINISTRATION

Under the supervision of the Mayor and his/her/their traffic authority powers, the operations of on- and off-street parking should remain unchanged with the Police Department being responsible for parking enforcement and the residential permit program. The Department of Public Works (DPW) would handle parking regulatory signage and shall advise and seek the advice of the Parking Advisory Committee concerning parking policy. Through the Mayor and with advisement from the Parking Advisory Committee, the DPW would be responsible for on-street and public off-street parking operations, management, and, to a certain degree, adjudication to ensure a coordinated effort. Off-street parking policy would remain under the jurisdiction of the Planning Department and Building and Zoning Department given the impact generated by existing and new commercial and residential activity development, but the DPW needs to be aware of these off-street impacts as they do affect the demand and management of on-street parking.

This responsibility would also extend to posted parking limits or restrictions to include but not be limited to timed durations, loading zones, curbside vending, and the residential parking permit program. Presently, the DPW fabricates and installs all parking regulatory signage.

Figure 10: Municipal Parking Responsibilities



Parking Enforcement and Adjudication

As noted earlier, and where feasible, parking enforcement and adjudication responsibilities must be coordinated closely with parking management. For example, the installation of 2-hour time limits on a commercial street or residential permit restrictions in a residential neighborhood are only as effective as are the enforcement and adjudication of those management strategies. Given the fact that enforcement is required for most of the parking-related ordinances, there are several that will require attention.

Under Ordinance 151 – Section 2.3 *"members of the Police Department, and special police assigned to traffic duty, are hereby authorized to direct all traffic in accordance with the provisions of this Ordinance and the statutes of the State of Connecticut, or in emergencies as public safety or convenience may require."* From the Mayor's traffic authority, the Mayor also can empower other City staff/departments with that same ability. Focusing strictly on parking enforcement, this responsibility should remain with the Police Department. Section 4.2 of the Code of Ordinances does offer as an alternative to a police officer authority for a "traffic safety assistant" who may issue parking citations. The traffic safety assistant position could remain under the Police Department and be reclassified as a parking enforcement aid.

Figure 11: Handheld Ticket Issuance Device

If a vehicle in the City of Groton is found to be in violation of posted parking restrictions and a citation has been issued, the fines for violation are defined in 151-2.3 and 151-2.4. *"The penalty to be paid pursuant to Sections 4.1 and 4.2 above for the violation of any provision of this Ordinance shall be the sum of fifteen dollars ($15.00) per violation" and "any motor vehicle found parked in violation of any State Statute, or City of Groton Ordinance shall be towed, or immobilized, if such vehicle has parking liens against it in the amount of seventy-five dollars ($75.00) or more that have not been paid.* It is Kimley-Horn's recommendation that the City of Groton Police Department would continue to have this responsibility. However, the $15.00 fine for violating parking regulations may be insufficient to encourage compliance and a graduated scale is recommended to act as a deterrence to repeat offenders. For example, the first violation could result in a warning as a friendly reminder, while the second violation within 2 years equals $50.00, the second $75.00, the third $100.00, and the fourth citation resulting in the vehicle being booted or towed.

Finally, with regards to the issuance of overdue payment of fines (151-5.1), collection of past due fines (151-5.2), and scheduling of hearings (151-5.3) and appeals (151-5.3 and 151-5.4) these responsibilities presently reside within the Police Department and should remain in place. Regardless of where the responsibility for adjudication and fine collection rests, Kimley-Horn recommends that a third-party web-based solution be introduced to shift much of the administrative costs associated with these responsibilities.

ENFORCEMENT AND LICENSE PLATE RECOGNITION (LPR) TECHNOLOGY

From a legal perspective, the use of a license plate reader to enhance a police or parking enforcement officer's observation would likely not cause the observation to become a search for purposes of the Fourth Amendment. An observation made by a police officer without a physical intrusion into a constitutionally protected area does not implicate the Fourth Amendment or require a search warrant (see, Hester v. United States, 265 US 57 [1924]). Furthermore, a police officer who is lawfully present in an area may investigate the windows of a parked car (see, United States v. Martin, 806 F.2d 204[1986]). But while numerous states and their law enforcement agencies support these interpretations of state and federal law, the use of a license plate reader by law enforcement even in the enforcement of parking restrictions remains to be a topic of discussion.

Figure 12: Parking Enforcement Vehicle with Mounted LPR Cameras

Residential Parking Permit Program

The effectiveness of the City's residential parking permit program to discourage out-of-area commuters—namely EB workers—from storing their vehicles on residential streets in Groton is one of the two key elements in the parking management plan. The following presents an overview of the current program and recommendations on how the program needs to be modified to mitigate the potential impact of some additional 2,500 employee vehicles traveling to the City of Groton.

BACKGROUND/HISTORY

Residential parking permit programs or districts were being created in the late 1960s and early 1970s in various cities across the country as bans on commuter parking in residential neighborhoods. In 1972, Arlington County, VA, adopted restrictions on commuter parking to reduce congestion in the Aurora-Highlands neighborhood near Crystal City—at that time a recently developed complex of office buildings and hotels along US Route 1. Legal challenges immediately followed, noting that curbside parking in a residential neighborhood, or any neighborhood for that matter, falls within the public right-of-way and belongs to commuters and residents alike. Arlington's parking ordinance was revised in 1974 to fend off additional legal challenges, but a unanimous ruling by the Virginia Supreme Court stated that the ordinance was a violation of commuters' constitutionally guaranteed right to equal protection under the law. The US Justice Department joined Arlington County in an appeal to the US Supreme Court, noting that Arlington's ordinance sets goals for measures that include protection of residential neighborhoods from air and noise pollution, the preservation on the value of property, and the protection of the personal safety of children and other pedestrians. In Arlington County v. Richards (1977) the Court said, "the

Constitution does not outlaw these social and environmental objectives," Virginia's Supreme Court Decision was overruled, Arlington's residential parking permit program in Aurora-Highlands was implemented, and cities across the nation followed suit.

Today, there are thousands of residential parking permit program districts or zones throughout the nation, and they can be found in both our smallest and largest cities. They address the need to mitigate outside of area parking activity that is generated by rail stations, bus stops, colleges/universities, large employment centers, and vibrant bars and restaurants. The language used to justify the creation of a residential parking permit program district/zone can vary just as the size of the city varies. Some codes and administrative policies are simplistic, and some are complex. In Newark, DE, the ordinance only requires a majority of residents to complete a petition that is reviewed and approved by the City Manager, Traffic Commission, and City Council. In Fredericksburg, VA, the application process also includes a requirement that 75 percent of the parking spaces available on such areas are occupied during any hours of any 7 days in a 15-day period. Fredericksburg City staff, therefore, are required to conduct a field survey of parking activity. In Fairfax County, VA, their Residential Parking Permit District program also includes a requirement that 50 percent of those parked vehicles are determined by the County's Department of Transportation to be non-resident vehicles. In Arlington County, VA, the US Supreme Court ruled in 1977, that non-resident vehicles are defined as those that are registered outside the "affected zone." When an application process is started, county staff define the boundary of the new or expanded zone based on a variety of codified criteria and if 25 percent or more of the vehicles parked during the specific time of impact within a new/expanded zone are registered to vehicles outside the zone, then the application and petition is approved.

OVERVIEW OF THE CURRENT PROGRAM AND PRELIMINARY RECOMMENDATIONS

City of Groton Ordinance #215 approved July 5, 2016 states the following:

Residents of certain streets within the City of Groton are allowed to park in posted areas by displaying a residential parking sticker on the vehicle. Parking stickers are valid during the calendar year and are renewable by January 1st each year by providing the Police Department with an updated Application for Resident Parking form.

Section 6.0 of the City of Groton's Code of Ordinances addresses residential districts and is subdivided in the following sections:

- 6.1 – Definitions
- 6.2 – Designation of Residential Parking Permit Areas
- 6.3 – Withdrawal of Designation of Residential Parking Permit Area
- 6.4 – Posting of Residential Parking Permit Signs
- 6.5 – Issuance of Residential Parking Permits
- 6.6 – Renewals and Transfer of Permits
- 6.7 – Use of Residential Parking Permits
- 6.8 – Penalties

6.9 – Separability
6.10 – Statement of Purpose

Statement of Purpose

The last subsection referenced, Section 6.10 - Statement of Purpose, is the most important element as it defines the purpose and, ultimately, parameters of the program. Goals of the program include reduction of hazardous traffic conditions in residential neighborhoods by restricted parking in those districts to residents, the projection of polluted air, excessive noise and waste caused by the entry of non-residential vehicles, preservation of the character of these districts, and promotion of the "peace, comfort, convenience and welfare of all inhabitants of the City." With the US Supreme Court's 1977 decision as background, the language that the City of Groton used to justify its residential parking permit program is worded perfectly and it needs to be referenced on the City's parking webpage and other public documents to remind residents and non-residents alike of the importance of the program.

Definitions

A residential district's definition includes "public highways or parts thereof primarily abutted by residential property or residential and non-business property such as schools, parks, churches, hospitals, and nursing homes." It is unclear why non-residentially-zoned properties such as schools, parks, churches, and hospitals are included, as these land uses are not directly associated with residents. Furthermore, individuals who drive to frequent these institutions are likely to include individuals who do not live in the neighborhood. By installing Residential Parking Permit Program restrictions on curbside space that fronts these non-residential land use activities, visitors to these destinations would be prohibited. As opposed to a residential parking permit, non-residential parking regulations such as 2-hour parking durations, could be employed as an alternative to discourage long-term storage of parked vehicles at these locations.

Definitions also define the residential parking permit area as a "district where curbside parking on public highways is limited to not more than two consecutive hours between 7:00 AM and 10:00 PM on weekdays, except holidays, unless the vehicle properly displays a parking permit authorized by this Ordinance." Kimley-Horn supports this definition as it does provide limited flexibility for residential visitors and contractors. An alternative is the provision of visitor parking passes whereby the resident provides a temporary dashboard pass or registers the visiting vehicle's license plate to ensure that the parked vehicle is not issued a citation.

Designation of Residential Parking Permit Area

Under Section 6.2 - Designation of Residential Parking Permit Area, the code notes that "upon receipt of a request for designation of a street or streets as a residential parking permit area, the Mayor and Council may designate by resolution a residential district or portion thereof a residential parking permit area". In considering whether or not to designate an area, the Mayor and Council shall consider parking demand, the proportion of residential parking and nonresidential parking, widths of streets in the area, traffic flow in the area, general availability of off-street parking; and "other criteria as set forth in Section 10 of this Ordinance."

While these are valid criteria for consideration, no measures or metrics are used to determine acceptability or rejection of the residents' request. Nor is there any definition regarding the size of the residential parking permit program area. Regardless of the type of residential dwelling, whether single-family or multi-family, it is recommended that residents requesting permit parking on their street and block (defined as both sides of a street between two intersections or an intersection and the end of the street) must submit a petition to the appropriate department. To standardize criteria for establishment of Residential Parking Permit Program zones, the following steps for creating and/or expanding a Residential Parking Permit Program zone are recommended

Step 1: A resident or group of residents living on the same block must contact the appropriate City department to request a petition form and designate an individual as a point-of-contact for the petition.

Step 2: The point of contact must circulate the City of Groton provided petition form to all households on both sides of the petitioned street block. The petition form includes street block information, proposed residential parking permit enforcement times and signature lines for each household. Parking restriction hours are fixed on a block-by-block basis. The permit parking zone hours of restriction would complement the commuter parking permit program but should generally fall within one or more of the following categories to avoid the temptation for overly complicated and variable hours of operation/enforcement:

8:00 AM – 5:00 PM Monday – Friday
8:00 AM – 5:00 PM Saturday/Sunday
5:00 PM – 1:00 AM Monday – Friday
5:00 PM – 1:00 AM Saturday/Sunday

Step 3: At least 80 percent of the households on the street block must be in favor of establishing or changing residential permit parking. Petitions may be signed by only one member of a household.

Step 4: Once the petition has been endorsed by 80 percent of the affected households on each street block, the City conducts field surveys to determine if the area under investigation warrants permit parking. At least two parking surveys are taken to determine if more than 85 percent of the total parking spaces on each street block are consistently occupied. Together, this constitutes the 80/85 percent rule used to determine if permit parking is warranted.

Step 5: The City considers the following factors when determining whether a new permitted block should be annexed to an existing zone or start a new zone: size (eventual zones no larger than ½ mile in any direction), land use characteristics excluding housing density, location of major or minor arterials, location of physical and natural boundaries, location of a traffic generator, parking capacity of the street, and civic association boundaries.

Step 6: If the qualifications are met, the establishment of a new zone is effective the following July. Petitions for permit parking may be submitted to the City throughout the year but must be received by December 31 to establish permit parking by the following July. Petitions received during the annual residential parking permit renewal period will be considered after the renewal period ends. Permit parking on street blocks that are added within existing zones is effective immediately.

Step 7: The City sends notifications to each address within the newly approved zone or added block with the following information

- Boundaries of the new zone
- The effective date of the zone
- The specific rules and regulations for the zone, to include the hours when parking will be restricted
- The procedures for obtaining parking permits

Step 8: The City then posts signs restricting parking to vehicles displaying a City of Groton residential parking permit or pass with the appropriate zone indicator. Along boundary street blocks where two zones meet, the City posts signs allowing permit holders of either zone to park.

Step 9: After applying the 80/85 percent rule—if the qualifications are not met—the residents must wait one calendar year before requesting again for a residential parking program on those blocks.

Withdrawal of Designation of Residential Parking Permit Area

Section 6.3 covers the withdrawal of designation of the residential parking permit area and all authority in this regard resides with elected officials; "The Mayor and Council may, at any time, withdraw the designation of an existing residential parking permit area or portions thereof by a majority vote of those members present and voting." Like the recommendations to create and/or expand a residential parking permit program zone, Kimley-Horn recommends that that power rest with the residents themselves. Using the 80 percent of households required to create the program rule, it is recommended that a similar percentage and signed petition be submitted to the DPW to have the program eliminated along the effected neighborhood.

Issuance of Residential Parking Permits

Once the residential parking permit program zone has been petitioned and approved, Section 6.5 of the code addresses the issuance of residential parking permits. Subsection 6.5.b notes that "no residential parking permit shall be issued to a person who has exclusive access to off-street parking space within the residential parking permit area." It is unclear if this restriction applies to multifamily residents who have access to a parking lot or a single-family homeowner with a driveway and it is recommended that this language be removed from the existing ordinance. Additionally, Subsection 6.5.d notes that once the zone has been approved and the permit is issued, the "permit shall be affixed by a member of the Police Department to the vehicle in a conspicuous location." It is recommended that the resident be responsible for placing the permit decal onto the vehicles and it be located on the right side of the back bumper.

Renewals and Transfer of Permits

Section 6.6 covers renewals and transfer of permits; "Upon submission of evidence to the chief of police that he is still qualified for a residential parking permit, a holder of a valid permit for the previous year shall be entitled to a new residential parking permit for the current year." Additionally, "upon surrender of his existing residential parking permit and completion of a new application, the holder of a valid residential parking permit shall receive a new parking permit to be transferred to another qualifying vehicle." Given the administrative effort on both the City and the residents who are part of an approved

and existing residential parking permit program, it is recommended that the application and renewal period for permits extend from 1 year, as presently configured, to 2 years. Permits are valid for 2 years, or the period between July 1 and June 30 of the following year. For residents to have their permits and passes in advance of the new year, a renewal period begins on April 1 of each year depending on the year in which the permit was granted (odd versus even year renewal frequency).

Furthermore, a maximum of two vehicle-specific permits for households with off-street parking appurtenant to the household (e.g., driveway, garage, carport, or parking lot/garage) and four residential permits per household without off-street parking is allowed. The applicant's vehicles need to be registered with the vehicle tax registration office to receive the vehicles specific permit.

Use of Residential Parking Permits

Section 6.7 – Use of Residential Parking Permits notes that a parking permit shall not guarantee or reserve a parking space, it shall not excuse the observance of any traffic or parking regulation other than the time limit on parking, and it shall be a violation to use a permit in any residential parking permit area other than the one for which the permit was issued. Additionally, this ordinance notes that it is a violation to represent that a vehicle is entitled to a parking permit when it is not so entitled and it is a violation for any person to duplicate or attempt to duplicate a residential parking permit or to display on any vehicle such a duplicate parking permit. This is sound language and no changes are warranted at this time.

Residential Parking Permit Program Penalties

Section 6.8 – Penalties states that "any person who shall violate any of the provisions of this ordinance shall, upon conviction, be fined not more than one hundred dollars ($100.00) or imprisoned not more than thirty (30) days or both and his permit may be revoked." This fine amount is appropriate if the City is going to employ proactive enforcement where an LPR-mounted vehicle routinely patrols the area. However, if the City chooses instead to rely upon residents to report potential vehicles in violation of the Residential Parking Permit Program ordinances (i.e., reactive enforcement), then the penalty should be greater, and a $250 fine is recommended.

Residential Parking Permit Program Administrative Fees

Given the cost to administer the program and to discourage overuse and abuse, an administrative fee will be required under the following schedule:

- No charge for the first vehicle-specific permit
- $50 per year for the second vehicle-specific permit
- $75 per year for the third vehicle-specific permit
- $100 per year for the fourth vehicle-specific permit
- $50 for the Landlord Pass (non-resident property owners)

While the fees for renewal would apply to all existing residential parking permit program zones, the recommendations continued herein for the creation of the zones does not, as those areas are grandfathered into the program. However, as new/additional zones are added to existing zones, the City

reserves the right to modify zone boundaries at its discretion and follow the boundary definitions referenced under Step 6.

On-Street Commuter Parking Permit Program

There are approximately 330 curbside parking spaces within the study area that are within a two-block (6 to 8-minute) maximum walking distance from EB and are not in residential neighborhoods. These include existing 15-minute parking in front of a barber shop, 2-hour limit parking, Americans with Disabilities Act (ADA)-accessible spaces and loading and unloading zones. As noted in the chapter on parking management and policy, given the value of these spaces to EB workers, the need to provide some parking relief as EB staffing levels increase, and prior to the development of a large parking structure, it is recommended that the City's Code of Ordinances include on-street commuter parking permits.

The commuter permit allows vehicles to park for longer than the posted 1-hour or 2-hour restriction in designated commuter areas. The permit is only valid in areas signed for "Commuter Permit" parking and would only be valid during 6:00 AM to 6:00 PM Monday through Friday, or as EB production levels dictate. A commuter permit does NOT grant overnight parking. Permit billing cycles could begin on the first of each month and end on the last day of the month and payment would be accepted online with a credit card or debit card or by check/money order in person or by mail. If payment is not received by the first of the month, parking permit privileges will be revoked. Residential parking permits and commuter permits would be sold and managed via an online portal.

Figure 13: Example of Curbside Commuter Permit Parking

Appendix A – Parking Market Rate Analysis

NEW LONDON, CT							
TIME	LIMIT	DAYS	TIME OF DAY	HOURLY ON-STREET PARKING	HOURLY OFF-STREET PARKING		ON-STREET PERMITS
Daily		Monday - Sunday			Cornish Garage	$10	$60/month
Daily		Monday - Sunday			Union Street Garage	$10	$150/quarter
96 Hours		Friday - Monday			Union Street Garage	$25	$240/6 months
Daily		Monday - Friday			Water Street Garage	$10	$320/year
		Saturday -Sunday - Holidays				$15	

NORWICH, CT							
TIME	LIMIT	DAYS	TIME OF DAY	HOURLY ON-STREET PARKING	HOURLY OFF-STREET PARKING	PERMITS	
Monthly		Monday - Sunday	6:00AM - 10:00PM			Lots	$38
						Garages	$48

OLD LYME, CT							
TIME	LIMIT	DAYS	TIME OF DAY	HOURLY ON-STREET PARKING	HOURLY OFF-STREET PARKING	PERMITS	
		Monday - Friday	9:00AM - 6:00PM			Town Lot/Hartford Avenue 2 hr block	$6
		Saturday - Sunday - Holiday				Town Lot/Hartford Avenue 2 hr block	$10
		Monday - Sunday	12:00AM - 11:59PM			Beach Parking Pass	$30
						Beach Parking Pass (x2)	$75

PORTSMOUTH, RI								
TIME	LIMIT	DAYS	TIME OF DAY	HOURLY ON-STREET PARKING		HOURLY OFF-STREET PARKING		PERMITS	
Hourly	N/A	Monday-Saturday Sundays	9:00AM - 8:00PM 12:00PM - 8:00PM	A-Red Zone first 3 hours	$2				
Hourly	N/A			A-Red Zone hour 4 and beyond	$5				
Hourly	N/A			B-Blue Zone first 3 hours	$1.50				
Hourly	N/A			B-Blue Zone hour 4 and beyond	$3				
Hourly	15 min			D-Black Zone	$1.50				
Hourly	15 min			D-Red Zone	$2				
Hourly	20 hrs	Monday - Sunday	12:00AM - 11:59PM			Hanover Garage per hour	$2		
Hourly						Hanover Garage per hour	$5		
Daily	N/A	Sunday	12:00AM - 11:59PM			For Portsmouth Residents	$5		
Monthly		Monday - Sunday	12:00AM - 11:59PM					RESIDENTS	$200
								NON-RESIDENTS	$275
Hourly	20 hrs	Monday - Sunday	12:00AM - 11:59PM			Foundry Place Garage per hour	$1		
Monthly		Monday - Sunday	12:00AM - 11:59PM					RESIDENTS	$100
								NON-RESIDENTS	$125

NARRAGANSETT, RI						
TIME	LIMIT	DAYS	TIME OF DAY	HOURLY ON-STREET PARKING	HOURLY OFF-STREET PARKING	PERMITS
Daily	N/A	Monday - Sunday	12:00AM - 11:59PM		Galilee Parking Co $10	
Daily	N/A	Monday - Sunday	12:00AM - 11:59PM		State Parking Lot G $10	
Daily	N/A	Monday - Sunday	12:00AM - 11:59PM		ProPark America $8	

WEST HARTFORD, CT						
TIME	LIMIT	DAYS	TIME OF DAY	HOURLY ON-STREET PARKING	HOURLY OFF-STREET PARKING	PERMITS
Hourly	N/A	Monday - Sunday	12:00AM - 11:59PM		Isham Garage per hour $1.75	
Daily	N/A	Monday - Sunday	12:00AM - 11:59PM		Isham Garage 24 hours $7.45	
Hourly	N/A	Monday - Friday	9:00AM - 2:00AM		Farmington Road Lot $1.75	
		Saturday - Sunday	11:00AM - 2:00AM			
Hourly	N/A	Monday - Friday	9:00AM - 2:00AM		Brace Road Lot $1.75	
		Saturday - Sunday	11:00AM - 2:00AM			
Hourly	N/A	Monday - Sunday	12:00AM - 11:59PM		Memorial Garage per hour $1.75	
Daily	N/A	Monday - Sunday	12:00AM - 11:59PM		Memorial Garage 24 hours $7.45	

NEW BRITAIN, CT						
TIME	LIMIT	DAYS	TIME OF DAY	HOURLY ON-STREET PARKING	HOURLY OFF-STREET PARKING	PERMITS
Daily	48 hrs	Monday - Friday	12:00AM - 11:59PM		Berlin Station Garage 24 hours $2	
					Berlin Station Garage Month $20	

NEW HAVEN, CT						
TIME	LIMIT	DAYS	TIME OF DAY	HOURLY ON-STREET PARKING	HOURLY OFF-STREET PARKING	PERMITS
Hourly	N/A	Monday - Sunday	12:00AM - 11:59PM		60 Wall Street Garage per hour $5	
Daily					60 Wall Street Garage 24 hour $20	
Hourly	4 hrs	Monday - Friday	8:00AM - 5:00PM		35 Wall Street Garage $6	
Hourly	24 hrs	Monday - Sunday	12:00AM - 11:59PM		Orange/Elm Lot per hour $4	
					Orange/Elm Lot 24 hours $24	
					Orange/Elm Lot Early Bird $14	
Hourly	N/A	Monday - Sunday	12:00AM - 11:59PM		201 Orange Street Garage $5	
Monthly					201 Orange Street Garage $165	
Hourly	N/A	Monday - Sunday	12:00AM - 11:59PM		Chapel Square Garage Hourly $6.40	
Daytime					Chapel Square Garage 3AM-6PM $21.25	
Evening					Chapel Square Garage 6PM-3AM $12.75	

Monthly						Chapel Square Garage Monthly	$178	
Daily						Chapel Square Garage 24 hours	$23	
Hourly	3 hrs	Monday - Sunday	12:00AM - 11:59PM			834-846 Chapel St Garage	$5	
Evening	N/A						$8	
Monthly							$149	
Hourly	2 hrs	Monday - Saturday	8:00AM - 5:00PM	128 Elm Street	$1.50			
	N/A		5:00PM - 9:00PM					
Hourly	2 hrs	Monday - Saturday	8:00AM - 5:00PM	174 Church Street	$1.50			
	N/A		5:00PM - 9:00PM					
Hourly	2 hrs	Monday - Saturday	8:00AM - 5:00PM	56 Grove Street	$1.50			
	N/A		5:00PM - 9:00PM					
Hourly	9 hrs	Monday - Sunday	12:00AM - 11:59PM			Union Station Garage Hourly Rate	$2	
Monthly (Off-Peak)	N/A					Monthly by permit only – off-peak	$48.50	
Monthly						Monthly by permit only	$97	
16 hr			6:00AM - 10:00PM			16 Hours between 6AM - 10PM	$14	
Hourly	4.5 hrs	Monday - Sunday	12:00AM - 11:59PM			Temple Street Garage Hourly	$4	
Monthly	N/A					Monthly by permit only	$145	
Special Events						Special Events	$8	
First Hour	N/A	Monday - Sunday	12:00AM - 11:59PM			Crown Street Garage Hourly	$4	
Subsequent Hours						Subsequent Hours	$3	
Monthly						Monthly by permit only	$145	
Special Events						Special Events	$9	
Monthly		Monday - Sunday	12:00AM - 11:59PM			360 State Street Garage Monthly	$159	
Monthly		Monday - Sunday	12:00AM - 11:59PM			State Street Garage Monthly	$125	
Monthly		Monday - Sunday	12:00AM - 11:59PM			George Street Garage	$132.94	
Monthly		Monday - Sunday	12:00AM - 11:59PM			Chapel-York Garage	$128.68	

Appendix B – Referenced Parking Statutes, Code of Ordinances, and Zoning Regulations

Referenced Connecticut General Statutes

Title 14 - Motor Vehicles. Use of the Highway By Vehicles. Gasoline
Chapter 249 - Traffic Control and Highway Safety
Section 14-307 - Parking restrictions. Regulations.
Universal Citation: CT Gen Stat § 14-307 (2014)

(a) The traffic authority of any city, town or borough shall have power to prohibit, limit or restrict the parking of vehicles and to erect and maintain signs in each block designating the time or terms of such prohibition or restriction on any highway or thoroughfare coming under the jurisdiction of such city, town or borough and such traffic authority may remove from state highways, except limited access highways, within the territorial limits of such city, town or borough any vehicles parked in violation of any regulation of the Office of the State Traffic Administration established in accordance with subsection (b) of this section and of any rule, regulation, order or ordinance of any such city, town or borough relative to or in connection with parking on such highway. Such removal shall be undertaken in accordance with the procedures employed by the city, town or borough in the removal of vehicles from any highway or thoroughfare coming under the jurisdiction of such city, town or borough. The Commissioner of Motor Vehicles shall adopt regulations in accordance with the provisions of chapter 54 to establish procedures for the removal of such vehicles by such traffic authority and for the storage of such vehicles. The regulations shall, at a minimum, (1) require that such traffic authority provide written notice by certified mail to the owner of any vehicle removed, (2) provide any such owner with an opportunity for a hearing before a hearing officer appointed by the chief executive officer of each city, town or borough and specify procedures for the holding of such hearing, (3) provide that the owner or keeper of any garage or other place where any such vehicle is stored shall have a lien on the vehicle for his storage charges, and (4) specify procedures for the sale at public auction of any vehicle placed in storage which is not claimed within a specified period of time by the owner thereof.

(b) The Office of the State Traffic Administration shall have power to prohibit, limit or restrict the parking of vehicles on any portion of any state highway or on any bridge on any such highway and to erect and maintain signs designating the terms of such prohibition or restriction.

(c) No person shall park any vehicle in any place where parking is prohibited or park any vehicle for a longer period than that indicated as lawful by any sign erected and maintained in accordance with the provisions of this chapter, except: (1) A person operating an armored car vehicle may, while in the performance of such person's duties, park for a period not to exceed ten minutes in a place where parking is prohibited, provided such vehicle does not obstruct or impede the normal and reasonable movement of traffic, or (2) a vehicle displaying a special license plate or a removable windshield placard issued pursuant to section 14-253a or by authorities of other states or countries for the purpose of identifying vehicles permitted to utilize parking spaces reserved for persons with disabilities which limit or impair their ability to walk or blind persons, may park in an area where parking is legally permissible, for an unlimited period of time without penalty, notwithstanding the

period of time indicated as lawful by any (A) parking meter, or (B) sign erected and maintained in accordance with the provisions of this chapter.

Referenced City of Groton Code of Ordinances

Ordinance 151 Section 2.3

Members of the police department, and special police assigned to traffic duty, are hereby authorized to direct all traffic in accordance with the provisions of this Ordinance and the statutes of the State of Connecticut, or in emergencies as public safety or convenience may require, and it shall be unlawful for any person to fail or refuse to comply with any lawful order, signal or direction of a policeman. Except in case of emergency it shall be unlawful for any person not authorized by law to direct or attempt to direct traffic.

Ordinance 151 Section 4.1

Any person, firm or corporation violating any provision of this Ordinance shall be fined in accordance with Section 4.3. A separate offense shall be deemed committed on each day during or on which a violation occurs or continues unless the violation involves a posted time limit, then in such event, a separate offense shall be deemed committed for each multiple of time so posted during which said violation continues. The fact that an automobile, which is illegally parked, is registered in the name of a person shall be considered prima facie proof that such person was in control of the automobile at the time of such parking except to the extent the liability of a lessee under Section 14-107 of the Connecticut General Statutes shall apply.

Ordinance 151 Section 4.2

Any police officer or traffic safety assistant may attach to any vehicle found in violation of this parking Ordinance, a notice to the owner or operator that such a vehicle has been parked in violation of law, which notice shall indicate the nature of the violation and instruct such owner or operator to pay the penalty for such violation at the City of Groton Police Headquarters in person or by mailing such notice of violation, with the amount of the penalty, to the Traffic Division of the City of Groton Police Department.

Ordinance 151 Section 4.3

The penalty to be paid pursuant to Sections 4.1 and 4.2 above for the violation of any provision of this Ordinance shall be the sum of fifteen dollars ($15.00) per violation, provided however, that such payment is received by the specified City authority no later than one hundred twenty (120) hours from the time and date of the violation specified in said notice. If such payment is not received in such one hundred-

twenty (120) hour period, the penalty shall increase to the sum of twenty-five dollars ($25.00) per violation.

Ordinance 151 Section 5.1

Within twelve (12) months after the expiration of the final period for the uncontested payment of fines, penalties, costs, or fees for any alleged violation of any parking ordinance duly adopted by the City of Groton pursuant to the General Statutes, the Traffic Sergeant or police officer in charge of traffic enforcement, shall send notice to the motor vehicle operator, if known, or the registered owner of the vehicle, by first class mail, at his address, according to the registration records of the State of Connecticut Department of Motor Vehicles. Such notice shall inform the operator or owner: (a) of the allegation against him and the amount of the fines, penalties, costs or fees due; (b) that he may contest his liability before a parking violations hearing officer by delivering in person or by mail written notice within ten days of the date thereof, (c) that if he does not demand such a hearing an assessment and judgment shall enter against him; and (d) that such a judgment may issue without further notice.

Ordinance 151 Section 5.2

If the person receiving the notice required pursuant to Section 5.1 hereof does not either (a) pay the full amount of the fines, penalties, costs or fees without requesting a hearing, or (b) request a hearing as provided herein, within ten (10) days after the date of such notice, such person shall be deemed to have admitted liability and the tax collector shall certify such person's failure to respond to the chief hearing officer. The chief hearing officer shall thereupon enter and assess the fines, penalties, costs or fees provided for by this ordinance and shall follow the procedure set forth herein below.

Ordinance 151 Section 5.3

Any person receiving a notice pursuant to Section 5.2 of this Ordinance may request a hearing by mailing or delivering such request in writing to the chief hearing officer at the place designated within ten (10) days after the date of such notice. The chief hearing officer shall promptly schedule a hearing and give notice of the date, time and place of such hearing to the person requesting it. Such hearing shall be held not less than fifteen (15) nor more than thirty (30) days from the date of the mailing of notice, provided the chief hearing officer shall grant reasonable request by any interested party for postponement or continuance upon good cause shown. The presence of the policeman or issuing officer shall be required at the hearing if the person requesting the hearing so requests. If such person fails to appear at a hearing for which correct notice has been duly sent, the

presiding hearing officer may enter an assessment or default against him, in the amount of the fines, penalties, costs or fees provided for by the applicable parking ordinance section.

Ordinance 151 Section 5.4

The hearing officer presiding at any hearing convened in accordance with the provisions of this section shall announce his decision at the end of the hearing. If he determines the person is not liable, he shall dismiss the matter and enter his determination in writing accordingly. If he determines the person is liable for the violation, he shall forthwith enter and assess the fines, penalties, costs or fees against such person as provided by this Ordinance. If such assessment is not paid on date of its entry, the chief hearing officer shall send by first class mail a notice of assessment to the person found liable and shall file, not less than thirty (30) days nor more than twelve (12) months after such mailing, a certified copy of the notice of assessment with the Clerk of the Superior Court for the tenth geographical area, together with an entry fee of eight dollars ($8.00), or such other amount as may from time to time be required by law, and the request that said clerk enter judgment against such person in favor of the City of Groton as provided for in Section 7-152b of the Connecticut General Statutes.

Ordinance 151 Section 5.5

The person against whom an assessment has been entered in accordance with this Ordinance shall have such rights of appeal as may from time to time be granted by Section 7-152b of the Connecticut General Statutes, by Section 546a of the Rules of Practice for the Superior Court, or by other applicable law or regulation.

Ordinance 215 - Section 1.3

Pursuant to Section 7-152b of the Connecticut General Statutes, the Mayor of the City of Groton is hereby authorized to appoint one or more parking violation hearing officers to conduct hearings as authorized hereunder and under the statute. One such hearing officer shall be designated as chief hearing officer. No such hearing officer shall be a police officer, a person working in a police department or a person authorized to issue parking tickets, but any other municipal employee may be appointed a parking violation hearing officer in addition to his or her other duties. No such hearing officer or person working under the direction of such hearing officer may otherwise directly or indirectly engage in the private business of collecting the fines, assessments or judgments imposed hereunder.

Ordinance 215- Section 4.2

Any police officer or traffic safety assistant may attach to any vehicle found in violation of this parking Ordinance, a notice to the owner or operator that such a vehicle has been parked in violation of law, which notice shall indicate the nature of the violation and instruct such owner or operator to pay the penalty for such violation at the City of Groton Police Headquarters in person or by mailing such notice of violation, with the amount of the penalty, to the Traffic Division of the City of Groton Police Department.

Ordinance 215 - Section 4.4

Any motor vehicle found parked in violation of any State Statute, or City of Groton Ordinance shall be towed, or immobilized, if such vehicle has parking liens against it in the amount of seventy-five dollars ($75.00) or more that have not been paid. Such vehicle may be immobilized in such a manner as to prevent its operation, except that no such vehicle shall be immobilized by any means other than by use of a device or other mechanism, which will cause no damage to such vehicle unless it is moved when such device or mechanism is attached. In any case wherein a vehicle is immobilized pursuant to this section, the person immobilizing said vehicle shall cause to be placed upon such vehicle, in a conspicuous manner, notice sufficient to warn any individual to the effect that any attempt to move such vehicle with the device or mechanism in place will result in damage to the vehicle. The vehicle, if towed, shall be towed under the direction of a member of the City of Groton Police Department, to a public garage in the City of Groton, or if this is not possible to the next nearest public garage. Before the vehicle is released to the owner, towing storage charges shall be paid, and all parking tickets owed to the City of Groton shall be paid. Any attempt to remove any immobilization device attached to a vehicle pursuant to this section shall be a violation of this section punishable by a fine of one hundred dollars ($100.00).

ORDINANCE 215 SECTION 6.0 RESIDENTIAL DISTRICT

Ordinance 215 - Section 6.1

Definitions As used in this Ordinance,

a. Residential District shall mean a contiguous or nearly contiguous area containing public highways or parts thereof primarily abutted by residential property or residential and non-business property such as schools, parks, churches, hospitals and nursing homes; b. Residential Parking Permit Area shall mean a residential district where curbside parking on public highways is limited to not more than two (2) consecutive hours between 7 a.m. and 10 p.m. on weekdays, excepting holidays, unless the vehicle properly displays a parking permit authorized by this Ordinance; and c. Curbside Parking Space

shall mean twenty (20) linear feet of curb, exclusive of those portions of the curb where parking, apart from the provisions of this Ordinance, is not presently permitted.

Ordinance 215 - Section 6.2 Designation of Residential Parking Permit Area a. Upon receipt of a request for designation of a street or streets as a residential parking permit area, the Mayor and Council may designate by resolution a residential district or portion thereof a residential parking permit area. In considering whether or not so to designate an area, the Mayor and Council shall consider the following criteria: 11 REPEALED BY ORDINANCE #215 151. AN ORDINANCE ESTABLISHING PARKING REGULATIONS IN THE CITY OF GROTON (INITIALLY APPROVED MARCH 3, 2004 AND FINALLY APPROVED APRIL 5, 2004) (1) Parking demand; (2) The proportion of residential parking and nonresidential parking; (3) Widths of streets in the area; (4) Traffic flow in the area; (5) General availability of off-street parking; and (6) Other criteria as set forth in Section 10 of this Ordinance.

Ordinance 215 - Section 6.3 Withdrawal of Designation of Residential Parking Permit Area - The Mayor and Council may, at any time, withdraw the designation of an existing residential parking permit area or portions thereof by a majority vote of those members present and voting. Such withdrawal shall become effective thirty (30) days after such vote. Notice of such action shall be mailed to all holders of residential parking permits within the area affected.

Ordinance 215 – Section 6.4 Following the City Council's affirmative vote to designate a resident only parking permit area, parking signs shall be erected in the designated area at the beginning of each street and of such character as to inform readily an ordinarily observant person travelling in each direction that curbside parking on public highways in the designated area is limited to resident only permit holders.

Ordinance 215 - Section 6.5 Issuance of Residential Parking Permits - a. Any person over the age of sixteen (16) who resides within the residential parking permit area may apply for a residential parking permit by completing and signing an application designed to provide the following information: (1) The name and residential address of the owner of the vehicle; (2) The name, residential address and driver's license number of the principal operator of the vehicle; (3) The make, model, color and registration number of the vehicle; (4) The number of vehicles whose owners or principal operators reside at the applicant's residence and the number

of off-street parking spaces available for such vehicles within the residential parking permit area. b. No residential parking permit shall be issued to a person who has exclusive access to off-street parking space within the residential parking permit area. c. No residential parking permit shall be issued for a vehicle whose owner or principal operator does not reside within the residential parking permit area or which is not registered in the State of Connecticut unless such registration is not required. d. Whenever the chief of police or his designee shall find that the applicant qualifies under the provisions of this Ordinance for a residential parking permit, he shall issue to the one (1) residential parking permit for the vehicle described in the application. The permit shall be affixed by a member of the police department to the vehicle in a conspicuous location and shall contain the following information: (1) The registration number of the vehicle; (2) The designation of the residential parking permit area; (3) The expiration date of the permit, which shall be December 31st of the year in which it is issued.

Ordinance 215 - Section 6.6 Renewals and Transfer of Permits - a. Upon submission of evidence to the chief of police that a holder of a valid permit is still qualified for a residential or resident only parking permit, the holder shall be entitled to a new residential or resident only parking permit for the current year. b. Upon surrender of an existing residential parking permit and the completion of a new application, the holder of a valid residential or resident only parking permit shall receive a new parking permit to be transferred to another qualifying vehicle.

Ordinance 215 -Section 6.7 Use of Residential Parking Permits –

a. A parking permit or guest tag shall not guarantee or reserve a parking space nor shall it excuse the observance of any traffic or parking regulation other than the time limit on parking.
b. It shall be a violation of this Ordinance to use a permit in any residential parking permit area other than the one for which the permit was issued.
c. It shall be a violation of this Ordinance to use a permit or guest tag in any resident only parking permit area other than the one for which the permit or guest tag was issued.
d. It shall be a violation of this Ordinance for the holder of a residential or resident only parking permit to use the permit when the vehicle no longer fulfills one or more of the applicable

provisions of this Ordinance controlling issuance of residential or resident only parking permits.

e. It shall be a violation of this Ordinance for any person to represent in any fashion that a vehicle is entitled to a parking permit or guest tag authorized by this Ordinance when it is not so entitled. The display of a parking permit or guest tag on a vehicle not entitled to such permit or guest tag shall constitute such a representation.
f. It shall be a violation of this Ordinance for any person to duplicate or attempt to duplicate or display a residential parking permit, a resident only parking permit or a guest tag on any vehicle.

Ordinance 215 - Section 6.8 Penalties - Any person who shall violate any of the provisions of this ordinance shall, be fined one hundred dollars ($100.00) or as noted in the fine and fee ordinance. Repeated violations may result in the revocation of the residential or resident only parking permits to such person.

Ordinance 215 - Section 6.9 Separability - The provisions of this Section are separable, and, if any provision, clause, sentence, subsection, word or part thereof is held illegal, invalid or unconstitutional, or inapplicable to any person or circumstance, such illegality, invalidity or unconstitutionality, or inapplicability shall not affect or impair any of the remaining provisions, clauses, sentences, subsections, words, or parts of the regulation or their application to other persons or circumstances. It is hereby declared to be the legislative intent that this Ordinance would have been adopted if such illegal, invalid, or unconstitutional provision, clause, sentence, subsection, word or part had not been included therein, and if such person or circumstance, to which the ordinance or part thereof is held inapplicable, had been specifically exempted therefrom

Ordinance 215 - Section 6.10 Statement of Purpose - The Mayor and Council of the City of Groton finds and declares that the provisions of this Ordinance are enacted for the following reasons:

a. To reduce hazardous traffic conditions resulting from the use of streets within residential districts for vehicles parked by persons not residing within the residential districts;
b. To protect the residential districts from polluted air, excessive noise and refuse caused by the entry of such vehicles;
c. To protect the residents of these residential districts from unreasonable burdens in gaining access to their residences;
d. To preserve the character of these districts as residential districts;

e. To encourage the use of public transportation;
f. To promote efficiency in the maintenance of streets in these residential districts in a clean and safe condition;
g. To preserve the value of the property in these residential districts;
h. To promote traffic safety and the safety of children and other pedestrians in these residential districts;
i. To forestall dangers arising from the blocking of fire lanes, hydrants and other facilities required by emergency vehicles, both in reaching victims and in transporting them to hospitals;
j. To facilitate the movement of traffic in the event of accidents and other disasters; and
k. To promote the peace, comfort, convenience and welfare of all inhabitants of the City.

Referenced Zoning Regulations

Section 3.2.	Residential Zones - Permitted Principal Buildings, Structures and Uses
Section 3.3.	Residential Zones - Permitted Accessory Buildings, Structures and Uses
Section 4.1.I.	Waterfront Business Resident District – Parking and Loading Requirements
Section 4.2.D.	Five Corners District – Principal Uses Permitted by Special Permit Approval and Site Plan Approval
Section 4.3.D.	Business and Industrial Zone - Principal Uses Permitted by Special Permit Approval and site Plan Approval
Section 4.4.B	Industrial/Technology Zone – Principal Uses Permitted by Site Plan Approval
Section 4.5.B	Technology Camus Zone – Principal Uses Permitted by Site Plan Approval
Section 5.4.A.1.d	Mixed Use Development District – Health, Safety, and Welfare; Plan of Conservation and Development. To encourage mixed use development at such degrees of intensity as can be conveniently accommodated by parcel size, available infrastructure and parking demands in a manner which is consistent with the Plan of Conservation and Development of the City of Groton and which promotes the health, safety, economic development and general welfare of the City and its residents.
Section 5.4.A.4.b.xv	Mixed Use Development District – Parking Analysis. A parking plan for the MUDD prepared by a licensed professional engineer specializing in parking needs and design, which analysis shall determine the amount and

location of parking required by the MUDD. The recommendations of the parking analysis shall be incorporated into the Master Plan by the Applicant s consulting civil engineer; and, when approved by the Planning and Zoning Commission, shall supersede any and all parking requirements otherwise contained in these Regulations.

Section 7.1 Standards – Parking and Loading Requirements

Section 7.1.B Number of Parking Spaces - Off-street parking spaces shall be provided for all new uses or buildings constructed, reconstructed, or enlarged after the effective date of these Regulations in accordance with the following schedule of requirements and any calculation resulting in a fraction shall be rounded to the nearest whole number:

Section 7.1.B.7.a Manufacturing and Industrial establishments - 1 space for each 1,000 square feet of gross floor area or 1 space for each three 3 employees on the maximum work shift, whichever is greater provided that for uses with more than 100 employees, an official of the firm or institution shall submit a semi-annual affidavit (beginning within 30 days of the effective date of these Regulations) certifying the number of employees on each work shift.

The parking requirements may be met in part by the provision of alternate transportation for employees in the following manner:

1. Each three occupied seats in a van or bus shall be A bus which makes repeated trips from outlying areas outside City limits to the establishment before the start of the maximum work shift shall be counted once for each trip. Each three occupied seats in a van or bus shall be considered as one parking space.
2. A bus which makes repeated trips from outlying areas outside City limits to the establishment before the start of the maximum work shift shall be counted once for each trip.

Section 7.1.C.1 Permanent Parking Reduction for A Single Property — The Commission may, by Special Permit, modify the cumulative parking requirements of Section 7.18 of these Regulations for a single property in the following situations:

Where in a mixed-use development on a single property, there are two or more land uses which have differences in their principal operating hours or dissimilarities in their clientele, thereby allowing utilization of the same parking spaces.

Where a use is located within 500 feet of another use, such as a church or other pu6lic place of assembly that is not in operation during the same hours or days as the first use, and

where such church or public place of assembly is willing to make its parking available to the first use.

Where the Commission finds that existing on-street parking or on-street parking to be established by the applicant in the vicinity will alleviate the need to provide the full complement of parking on the site.

Section 7.1.C.2 Permanent Parking Reduction For Multiple Properties — The Commission may, by Special Permit, modify the cumulative parking requirements of Section 7.1B of these Regulations for multiple properties where the Commission finds that a functional and interconnected parking arrangement is provided within and between the properties, that an agreement for joint access and parking, in perpetuity, acceptable to the Commission is filed on the land records, and further provided the Commission finds one or more of the following based on information provided by the applicant:

Peak parking demands among uses occur at different hours of the day and this offset results in a lower net peak parking demand; Synergistic relationships among uses allow patrons to park once while accessing multiple locations or allow for multiple purpose trips to occur within the development(s); or the uses are likely to generate transit, bicycle or pedestrian trips and accommodations have been made to support these alternative forms of transportation.

Section 7.1.D Location of Parking - The parking spaces required for all residential dwellings shall be located on the same lot as the dwelling.

The parking spaces required for non-residential uses shall be located on the same lot as the principal use or on a lot which is within 500 feet of the principal use, such distance to be measured along the street lines to the property.

In industrial zones, if there are special and unusual circumstances that make it impractical to provide all required parking within 500 feet of the principal use, other provisions may be made for the location of parking provided parking is a permitted use in the zone in which it is to be located and subject to Special Permit approval and Site Plan approval by the Commission.

When required parking spaces are provided on land other than the lot occupied by the principal use for which they are required: The land occupied by such spaces must be in the same possession as such principal use. Such land must be bound by a covenant, recorded in the office of the Town Clerk binding such owner and his/her heirs and assigns to maintain the required number of parking spaces for the duration of the use served.

Section 7.1.E

Size of Spaces - Off-street parking space shall be 9 feet in width by 20 feet in length except that the Commission may, by Special Permit, permit the following parking space configuration where the location and distribution of spaces and overall circulation is appropriate: At least 60 percent of the spaces shall be 9 feet in width by 18 feet in length; Up to 20 percent of the spaces may be 8 feet in width by 16 feet in length and be marked as "compact spaces"; and Up to 20 percent of the spaces shall be 10 feet in width by 20 feet in length and be marked as "oversized spaces."

An off-street loading space, as used herein, shall be a space of not less than 12 feet in width, 40 feet in length, and 14 feet in height.

Section 7.1.F

Parking Area Dimensions

A. Parking angle (in Degrees)	0	30	45	60	90
B. Curb length	22'	16'6"	12'9"	10'5"	9'
C. Stall depth	8'	18'	19'	19'	18'
D. Driveway width - one way	12'	13'	15'	18'	20'
two way	20'	20'	20'	22'	24'
E. Parking space width	8'	9'	9'	9'	9'
F. Parking space length	22'	18'	18'	18'	18'

Section 7.1.G

General Layout Requirements –

1. No parking lot is to be located in any required front yard setback
2. The general layout and traffic circulation of parking and loading areas shall be designed so as to avoid unsafe conditions and traffic congestion in the streets upon which the area has access and to provide for the safety and adequacy of access for vehicles and pedestrians using the area.
3. All proposed curb cuts and access drives shall comply with all applicable requirements of the State Department of Transportation when accessing a State highway, and the City's Highway Department when accessing a City street.
4. Any enclosed loading spaces shall be located at least 30 feet from any street line, and any open loading space shall be so designed that trucks when loading or unloading will not project over any street line.
5. Individual parking and loading spaces, maneuvering areas, entrances and exits shall be suitably identified with lines and arrows, as deemed necessary by the City Planner.
6. No access drive, aisle or maneuvering area shall have a turning radius of less than 20 feet.
7. Where vehicles will be located adjacent to sidewalks, fences, walls, required buffer strips, trees, landscaping, or similar constructions, a

suitable bumper or curb shall be provided in such a location that the vehicle cannot overhang or otherwise damage said area.

7.1.H Loading Spaces

1. Every hospital, institution, hotel, retail store, office building, wholesale house, warehouse or industrial building, or additions thereto to which or from which outside deliveries of materials or dispatches of materials are to be made by motor vehicles and totaling 8,000 square feet or more in floor area constructed, reconstructed or enlarged after the effective date of these Regulations shall have on the lot one permanently maintained loading space and one additional loading space for each additional 16,000 square feet of floor area or major portion thereof, excluding basements.
2. When such calculation results in the requirement of a fractional space, any fraction up to and including one-half shall be disregarded and fractions over one-half shall require an additional loading space.

7.1.I Truck/Trailer Parking

No tractor, trailer, tractor-trailer combination or any truck loaded with merchandise shall be parked or stored on a lot for a period exceeding seven consecutive days in one calendar month, except in an industrially zoned district.

7.1.J Surface/Lighting/Landscaping Requirements

1. Off-street parking and loading areas, including driveways, shall include an all-weather surface to the satisfaction of the Planning and Zoning Commission, or the Zoning and Building Official in cases where the Zoning and Building Official has final authority.
2. Such all-weather surface shall be stable, durable, dustless and graded and drained as to dispose of all surface water accumulation in the area.
3. Where the proposed grade exceeds 10%, all such areas and driveways shall be paved in those areas.
4. Any lighting used shall be in accordance with Section 7.6 and shall be shielded and so arranged as to direct the light away from adjoining premises and public rights-of-way.
5. All parking areas shall be landscaped in accordance with the requirements below:
    a. Except in the Industrial/Technology (IT) or Technology Campus (TC) zones, not more than twelve (12) at-grade parking spaces shall be permitted in a continuous row, and not more than twenty-four (24) spaces shall be permitted in a single parking area without being interrupted by landscaping.

b. All parking areas with more than 5 spaces that abut or are across the street from, the boundary of, or any property within any Residential Zone shall be bordered on all sides with a 10-foot-wide buffer strip.
c. All loading areas that abut or are across the street from, the boundary of, or any property within any Residential Zone shall be bordered on all sides with a 10-foot-wide buffer strip.
d. A planting area with a minimum width of three (3) feet shall be provided between the parking area and the required setback line on any parcel, except in the Industrial/Technology (IT) or Technology Campus (TC) zones, where: A Site Plan approval or Special Permit is required, and the parking area faces a street or property line.
e. On such buffer strip(s) shall be located and maintained appropriate landscaping and fencing approved by the Commission of suitable type, density, and height to effectively screen the parking area and the lights of motor vehicles adjoining residential areas.