

TECHNICAL MEMORANDUM

DATE: *Wednesday, June 11, 2025*

TO: *Brian McGown, Beaver Brook Holdings, LLC*

CC: *Chris Broyles P.E., Greenman-Pedersen, Inc.*

FROM: *Andrew S. Hill, Director of Consulting Services*

PROJECT: *Beaver Brook Mill Development* **PROJECT #:** *20-25133.00-3*

RE: *Shared Parking Analysis*

Disclaimer: The following document is considered a working draft, intended to facilitate a review of observations, findings, and proposed action from the project team only. This is not a draft or final work product and therefore not subject to FOIA requests for disclosure. It should not be issued for public review or consumption without the express authorization of the client and prior approval by the DESMAN project manager. Additionally, nothing within this working document may be used to seek or support financing from an outside party; bid solicitations from vendors; purchase approval from individuals or groups tasked with official oversight; and/or any form of official permitting without the express authorization of the client AND the DESMAN project manager.

Introduction

Beaver Brook Holdings LLC ("Owner") has retained DESMAN Inc. ("Consultant") to prepare a Shared Parking Analysis to support the Beaver Brook Mill Development in its pursuit of a Special Permit. The following memorandum details the Consultant's field observations, applied methodology, and findings.

Project Description

The existing project is a former mill building redeveloped into a mixed-use project containing roughly 74,500 square feet of commercial space and 47 residential units. This project was completed under a special permit allowing for up to 100,700 square feet of commercial space and 50 residential units granted within the Town of Dracut's Mill Conversion Overlay District. The existing development is supported by a total of 363 parking spaces spread across nine surface parking lots surrounding the core structure.

Existing tenants within the project include a number of smaller soft goods and services retail establishments, seven office tenants, one medical practice, a large restaurant and function hall, both dance and gymnastics studios, and a fitness club. Roughly one-third of existing commercial space is occupied by some form of manufacturing, construction services, or landscaping business and/or a non-profit agency.

The proposed development will convert roughly 20,000 square feet of currently occupied commercial space into residential uses, as well as over 11,000 square feet of space currently used for storage by the existing residential units. Approximately 103 existing surface parking spaces will also be eliminated to make way for a new multi-story residential building. However, 182 new parking spaces are planned for

beneath of the new residential buildings, resulting in a future parking supply of 442 spaces. When complete, the new program will feature a total of 173 residential units (47 existing + 126 new) and roughly 61,500 square feet of commercial space including a new café and conversion of the former residential storage space over to commercial uses.

Town of Dracut Regulations

Per the Town of Dracut Zoning By-Laws (amended through June 3, 2024), the Town reserves the right to issue special permits through the Board of Selectmen or Planning Board. The subject property falls within the town's Mill Conversion Overlay District, which mandates any project occurring within the parcel must submit for site plan review and special permit approval. Specific to parking, proposed projects in the Mill Conversion Overlay District "shall provide adequate parking to serve all anticipated uses on the property, with information detailing the method of computation of parking spaces." The by-laws further state that basis of computation must include the minimum parking requirements listed in Section 6.1.6 of the by-laws, but the total number of required parking spaces may be reduced by Board approval if the applicant can demonstrate the smaller supply will be adequate to serve the project.

Town of Dracut Parking Requirements

Section 6.1.6 (*Table of Off-Street Parking Requirements*) of the town's by-laws list a total of twenty-three different land uses and their associated minimum parking requirement, commonly expressed as a ratio of the number of parking spaces needed for some increment of the land use that drives parking demand. In many cases this is expressed as "X spaces for every Y square-feet of gross leasable or gross floor space" although some uses tie parking to the number of employees, seats, guest rooms, etc.

The Consultant identified seven requirements within the by-laws that appeared to be germane to some existing and/or future land use within the project as shown in *Table 1*.

Table 1: Applicable Minimum Parking Requirements per Town By-Laws

| Land Use | Town of Dracut Code Requirement ¹ |
|--------------------------------|---|
| Retail (Soft Goods & Services) | 1.00 space/200 SF GLA |
| General Office | 1.00 space/200 SF GFA |
| Medical Office | 1.00 space/200 SF GFA |
| Restaurants/Function Rooms | 1.00 space/3 seats |
| Fast Food | 1.00 spaces/50 SF GFA |
| Industrial/Warehouse | 1.00 space/1.40 employees |
| Active/Fitness | 1.00 space/200 SF GLA ² |
| Residential Dwelling | 2.00 spaces/unit |

Notes:

1. Town of Dracut Zoning Bylaw, pg. 58, Table 6.1.6
2. The Town does not have a corresponding requirement for this use, so the requirement for *Retail* was applied.

It was noted that there did not appear to be any requirement specific to the existing dance studio, gymnastics studio, or fitness club on site, so the Consultant applied the requirement specific to retail uses.

No source for these requirements was provided in the by-laws, but based on comparison with parking demand ratios developed through empirical observations for the planning and parking industries, it would appear that code required substantially more parking for some land uses and less for others than it actually needed. This conclusion was based on parking demand ratios presented in the Urban Land Institute's **Shared Parking: 3rd Edition** and the International Transportation Engineer's **Parking Generation: 5th Edition**. A comparison between applicable parking industry standards and town parking requirements is included as *Table 2*.

Table 2: Comparison of Industry Standards for Peak Demand to Town Requirements per By-Laws

| Land Use | Parking Industry Standards | | Dracut Code Equivalent |
|--------------------------------|--|---|---------------------------|
| | Weekday | Weekend | |
| Retail (Soft Goods & Services) | 3.60 spaces/1,000 SF GLA ³ | 4.00 spaces/1,000 SF GLA ³ | 5.00 spaces/1,000 SF GLA |
| General Office | 3.80 spaces/1,000 SF GFA ⁴ | 0.38 spaces/1,000 SF GFA ⁴ | 5.00 spaces/1,000 SF GLA |
| Medical Office | 4.60 spaces/1,000 SF GFA ⁵ | 1.12 spaces/1,000 SF GFA ⁶ | 5.00 spaces/1,000 SF GLA |
| Restaurants/Function Rooms | 0.53 spaces/seat ⁷ | 0.55 spaces/seat ⁸ | 0.33 spaces/seat |
| Fast Food | 13.78 spaces/1,000 SF GLA ⁹ | 14.20 spaces/1,000 SF GLA ¹⁰ | 20.00 spaces/1,000 SF GFA |
| Industrial/Warehouse | 1.39 spaces/employee ¹¹ | 1.13 spaces/employee ¹² | 0.72 spaces/employee |
| Active/Fitness | 7.00 spaces/1,000 SF GLA ¹³ | 5.75 spaces/1,000 SF GLA ¹³ | 5.00 spaces/1,000 SF GLA |
| Residential Dwelling | 1.00-2.60 spaces/unit ¹⁴ | 1.00-2.60 spaces/unit ¹⁴ | 2.00 spaces/unit |

Notes:

3. **Shared Parking: 3rd Edition**, Urban Land Institute, pg.16, **Table 2-1**, Retail < 400KSF

4. **Shared Parking: 3rd Edition**, Urban Land Institute, pg.16, **Table 2-1**, Office < 25KSF

5. **Shared Parking: 3rd Edition**, Urban Land Institute, pg.16, **Table 2-1**, Medical/Dental Office

6. **Parking Generation: 5th Edition**, Institute of Transportation Engineers, pg. 497

7. **Parking Generation: 5th Edition**, Institute of Transportation Engineers, pg. 733

8. **Parking Generation: 5th Edition**, Institute of Transportation Engineers, pg. 735

9. **Parking Generation: 5th Edition**, Institute of Transportation Engineers, pg. 759

10. **Parking Generation: 5th Edition**, Institute of Transportation Engineers, pg. 761

11. **Parking Generation: 5th Edition**, Institute of Transportation Engineers, pg. 39

12. **Parking Generation: 5th Edition**, Institute of Transportation Engineers, pg. 52

13. **Shared Parking: 3rd Edition**, Urban Land Institute, pg.16, **Table 2-1**, Health Club

14. **Shared Parking: 3rd Edition**, Urban Land Institute, pg.16, **Table 2-1**, Residential for 1, 2 & 3 Bedroom units including guest parking allocations

Both publications are technical manuals used by planning professionals to project parking need for a project at the busiest hour of the busiest day of the year (e.g. "peak demand") in order to confirm that the planned parking supply it will be adequate under all reasonable conditions when construction is complete and all land uses are fully occupied. Planning professionals use these publications because they are based on, in some cases, thousands of case studies of existing land uses under peak demand conditions.

This empirical basis for projecting parking demand assures that the planned supply is assuredly accurate without being excessively overbuilt. The recommended standards arising from these consolidated case studies are designed to reflect real-world conditions for the subject development at peak demand so that the developer can provide enough parking to service the development without building dozens, hundreds, and sometime thousands of parking spaces that are never needed. This type of overbuilding not only adds to the project's total cost, which is in turn passed onto project tenants within their rental rate or sale price, but also impacts customers and visitors in the form of inflated costs for goods and services and/or parking fees. Exclusive of cost factors, building excess amounts of parking that is not needed also has

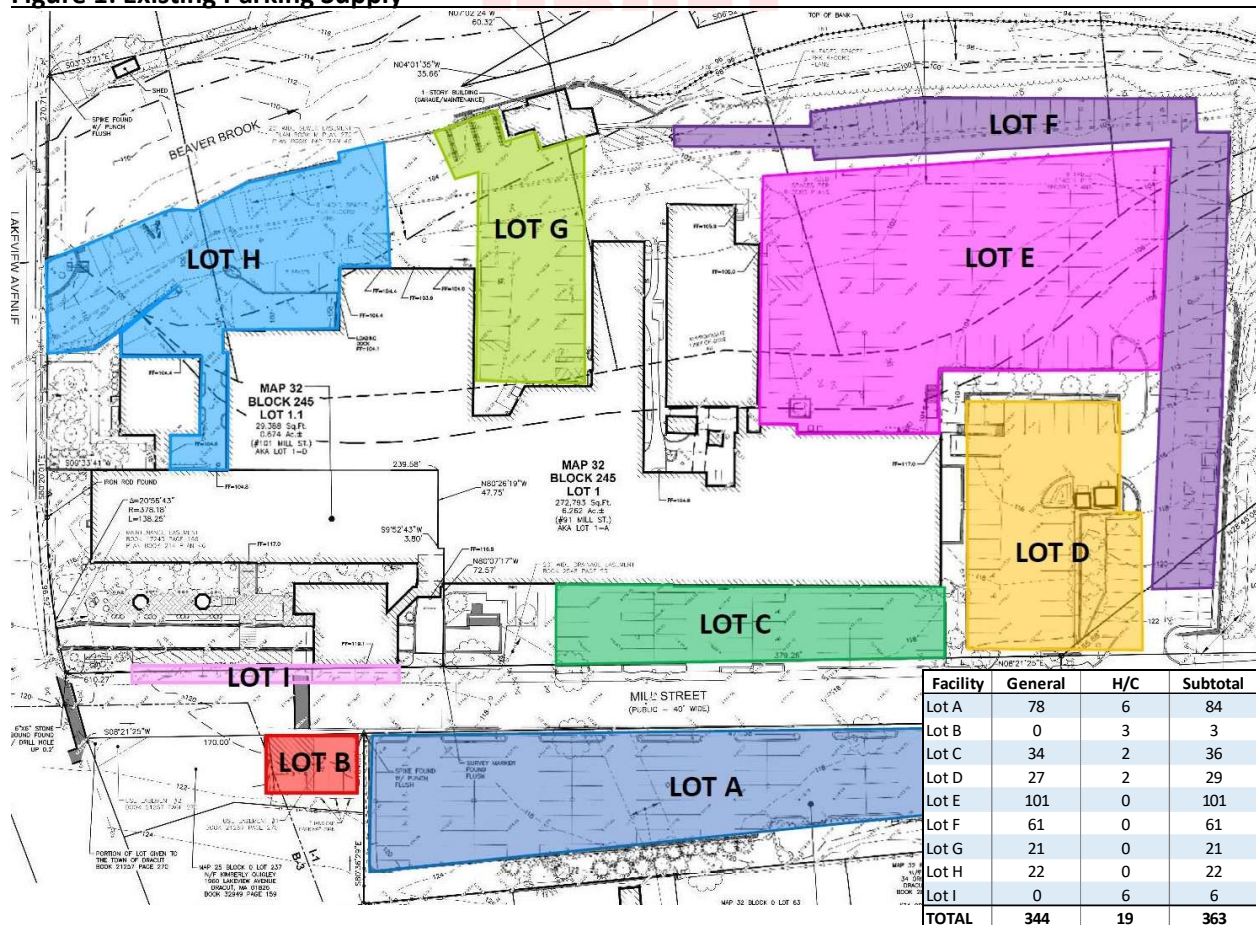
lasting environmental impacts including increasing the amount of impervious surface collecting dirt, debris, and chemicals from passing vehicles and discharging that into ground water during periods of precipitation. Excess parking development also leads to 'heat pooling' when exposed asphalt or concrete gathers solar radiation during the day and discharges is back into the surround atmosphere. A long-term study of heat pooling in Pheonix, Arizona has shown that the difference in median air temperature in an urban area can be as much as 20° higher than a suburban or rural area just miles away at the same time due to this phenomenon.

The Consultant offers this comparison for the reader's consideration because overbuilding of parking supply in response to minimum parking requirements that have no basis in actual fact is a common occurrence in municipalities across the United States and has been identified as a key contributor to climate change as well as the rising cost of housing. In addition, observed conditions specific to this project site suggest that the current parking supply supporting the existing land uses is substantially larger than it needs to be in all practicality.

Field Observations

To establish a baseline for existing conditions, the Consultant executed a series of field observations. On Monday, May 12, 2025, personnel conducted an on-site parking supply inventory to confirm that accuracy of the figures listed on the existing site plan. A total of 363 parking spaces across nine different lots were inventoried as shown in *Figure 1*.

Figure 1: Existing Parking Supply



The Consultant conducted hourly occupancy counts between 10:00 AM and 8:00 PM across the existing supply on Friday, May 16, 2025 to establish representative conditions on a weekday. At the busiest observed hour (7:00 PM) there were 189 total vehicles parked on the site, utilizing 52% of the total supply and leaving 174 spaces available as shown in *Table 3*.

Table 3: Weekday Occupancy Observations

| Facility | Supply | Friday - May 16, 2025 | | | | | | | | | | |
|--------------------|------------|-----------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | | 10:00 AM | 11:00 AM | 12:00 PM | 1:00 PM | 2:00 PM | 3:00 PM | 4:00 PM | 5:00 PM | 6:00 PM | 7:00 PM | 8:00 PM |
| Lot A | 84 | 31 | 24 | 21 | 25 | 22 | 28 | 30 | 37 | 38 | 38 | 44 |
| Lot B | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 |
| Lot C | 36 | 15 | 21 | 21 | 23 | 29 | 26 | 19 | 21 | 35 | 34 | 20 |
| Lot D | 29 | 7 | 5 | 11 | 11 | 18 | 18 | 22 | 23 | 29 | 28 | 16 |
| Lot E | 101 | 25 | 25 | 24 | 25 | 18 | 18 | 20 | 14 | 40 | 42 | 34 |
| Lot F | 61 | 3 | 7 | 8 | 9 | 6 | 4 | 11 | 12 | 23 | 23 | 19 |
| Lot G | 21 | 4 | 4 | 4 | 2 | 0 | 3 | 15 | 11 | 10 | 13 | 3 |
| Lot H | 22 | 5 | 8 | 5 | 6 | 2 | 1 | 5 | 4 | 4 | 4 | 1 |
| Lot I | 6 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 4 | 5 | 6 | 5 |
| TOTAL | 363 | 95 | 99 | 99 | 106 | 100 | 103 | 127 | 128 | 186 | 189 | 143 |
| Utilization | | 26% | 27% | 27% | 29% | 28% | 28% | 35% | 35% | 51% | 52% | 39% |
| Adequacy | | 268 | 264 | 264 | 257 | 263 | 260 | 236 | 235 | 177 | 174 | 220 |

The Consultant conducted hourly occupancy counts between 10:00 AM and 8:00 PM across the existing supply on Saturday, May 17, 2025 to establish representative conditions on a weekend day. At the busiest observed hour (6:00 PM) there were 162 total vehicles parked on the site, utilizing 45% of the total supply and leaving 201 spaces available as shown in *Table 4*.

Table 4: Weekend Occupancy Observations

| Facility | Supply | Saturday - May 17, 2025 | | | | | | | | | | |
|--------------------|------------|-------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | | 10:00 AM | 11:00 AM | 12:00 PM | 1:00 PM | 2:00 PM | 3:00 PM | 4:00 PM | 5:00 PM | 6:00 PM | 7:00 PM | 8:00 PM |
| Lot A | 84 | 44 | 37 | 38 | 35 | 36 | 37 | 39 | 41 | 41 | 39 | 39 |
| Lot B | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 |
| Lot C | 36 | 3 | 11 | 11 | 10 | 9 | 10 | 11 | 28 | 32 | 26 | 15 |
| Lot D | 29 | 4 | 7 | 10 | 15 | 16 | 22 | 27 | 29 | 26 | 25 | 17 |
| Lot E | 101 | 33 | 27 | 15 | 9 | 17 | 12 | 8 | 21 | 33 | 15 | 10 |
| Lot F | 61 | 4 | 6 | 4 | 4 | 4 | 9 | 11 | 22 | 22 | 22 | 9 |
| Lot G | 21 | 25 | 17 | 5 | 4 | 2 | 0 | 0 | 1 | 2 | 4 | 5 |
| Lot H | 22 | 22 | 13 | 20 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 2 |
| Lot I | 6 | 3 | 4 | 5 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 |
| TOTAL | 363 | 140 | 124 | 110 | 83 | 90 | 95 | 101 | 149 | 162 | 137 | 101 |
| Utilization | | 39% | 34% | 30% | 23% | 25% | 26% | 28% | 41% | 45% | 38% | 28% |
| Adequacy | | 223 | 239 | 253 | 280 | 273 | 268 | 262 | 214 | 201 | 226 | 262 |

For the reader's reference, the existing minimum parking requirements per town by-law would require 427 total parking spaces to support the existing land uses as shown in *Table 5* on the following page. This is more than double the highest number of vehicles observed.

Table 5: Minimum Parking Requirements for the Existing Development per Dracut By-Laws

| Land Use | | Existing Land Use | Gross Demand |
|-----------------------------------|------------------------------------|------------------------|--------------|
| Retail (Soft Goods & Services) | 1.00 space/200 SF GLA | 6,796 sf GLA | 34 |
| General Office | 1.00 space/200 SF GFA | 9,423 sf GFA | 47 |
| Medical Office | 1.00 space/200 SF GFA | 1,076 sf GFA | 5 |
| Restaurants/Function Rooms | 1.00 space/3 seats | 335 seats ¹ | 112 |
| Fast Food | 1.00 spaces/50 SF GFA | 0 sf GFA | 0 |
| Industrial/Warehouse ² | 1.00 space/1.40 employees | 36 Employees | 26 |
| Active/Fitness | 1.00 space/200 SF GLA ³ | 21,735 sf GLA | 109 |
| Residential Dwelling | 2.00 spaces/unit | 47 units | 94 |
| Subtotal | | | 427 |

Notes:

1. Based 200 inside seats and 45 outside seats for the pub and 90 seats in the function space.
2. Also applied to storage and non-office public agency spaces, assuming one employee for every 750 SF.
3. Dracut code does not have a requirement specific to this land use, so the requirement for retail was applied.

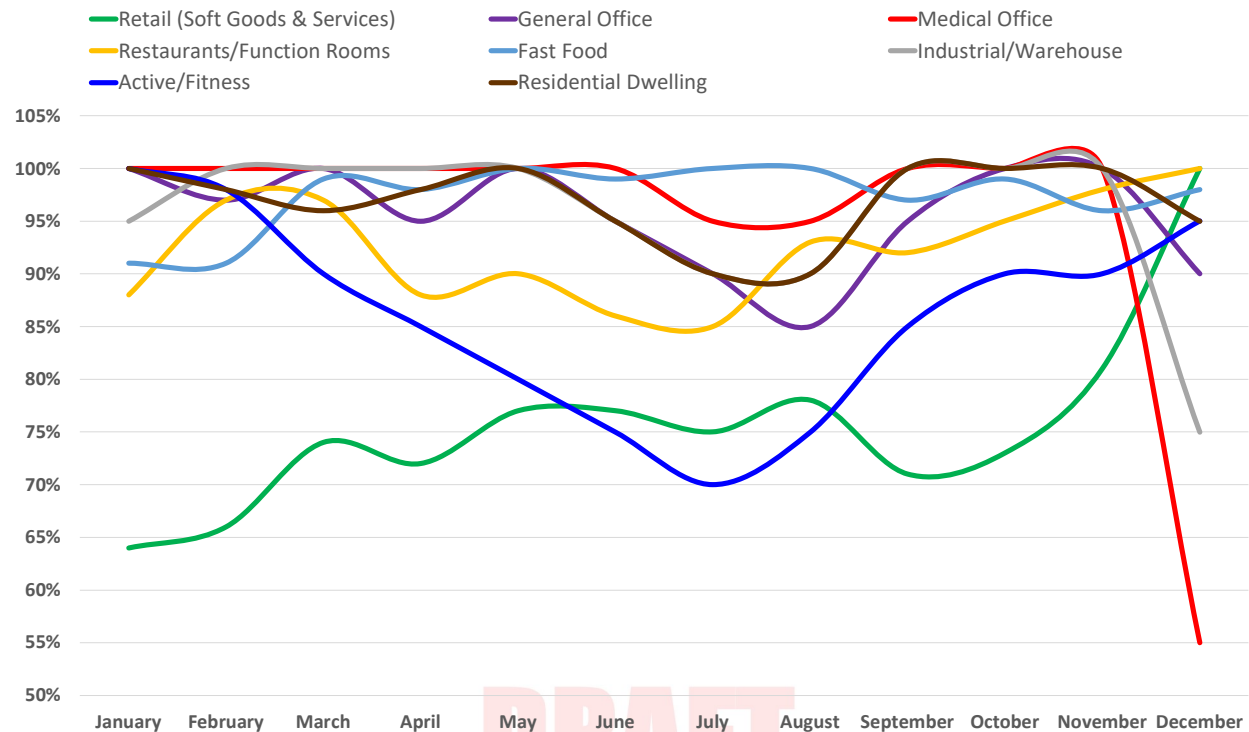
Applied Methodology

For this engagement, the Consultant developed a parking demand model utilizing the minimum parking requirements mandated by town by-laws in lieu of industry standard parking demand ratios and adjusted projections by three factors. This approach is endorsed by the Urban Land Institute in ***Shared Parking: 3rd Edition***, which is widely considered to be the authoritative work on executing shared parking analyses among professional planners.

The first applied factor was a series of adjustments to reflect fluctuations in parking demand by land use according to time of year. Parking demand is not a static and fixed phenomena, but rather a dynamic force that changes month-to-month, day-to-day, and even hour-to-hour. These changes are referred to as *presence*. The traditional approach to zoning requirements assumes that all land uses experience the highest presence of patrons, employees, etc. at the same time on the same day of the year. In reality, most people know what presence in retail stores is generally higher on weekends than weekdays and peaks in the weeks between Thanksgiving and Christmas, falling off significantly in January and February before beginning to recover. Fitness clubs have their largest member and employee presence in January in response to New Year's resolutions and the lowest presence in the summer months, when exercising outside is preferred. Presence in office space tends to dip around school vacation periods and fall during the summer months.

The Urban Land Institute quantified these trends in a set of adjustments to gross demand by land use based on empirical studies. These adjustments, applied to the gross demand projected by land use as shown in Table 5 on the prior page, are shown in *Figure 2*, next page.

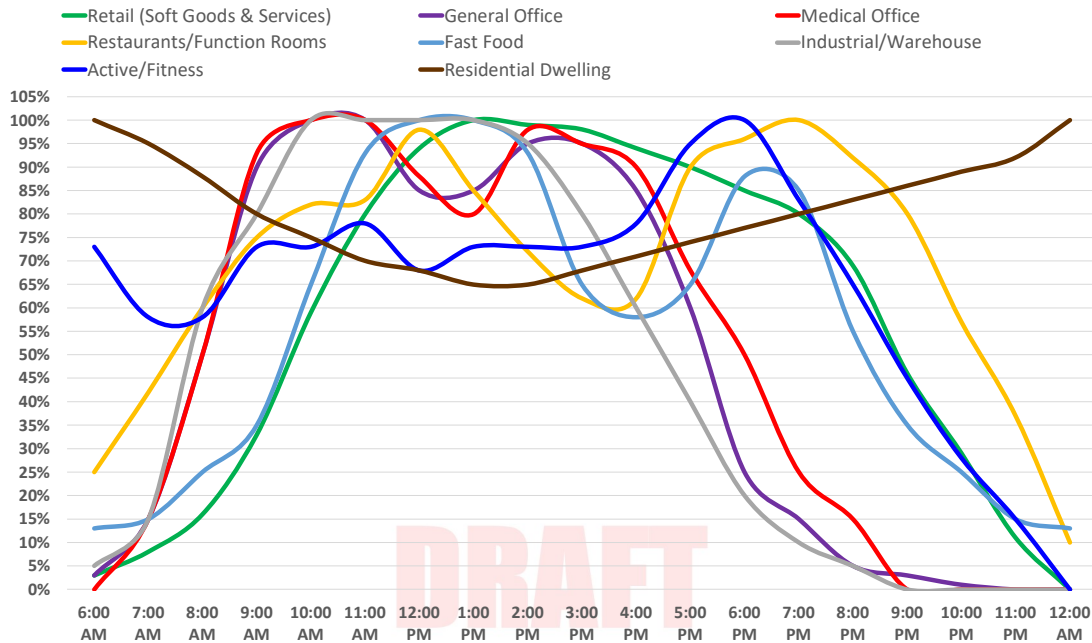
Figure 2: Presence by Land Use According to Time of Year



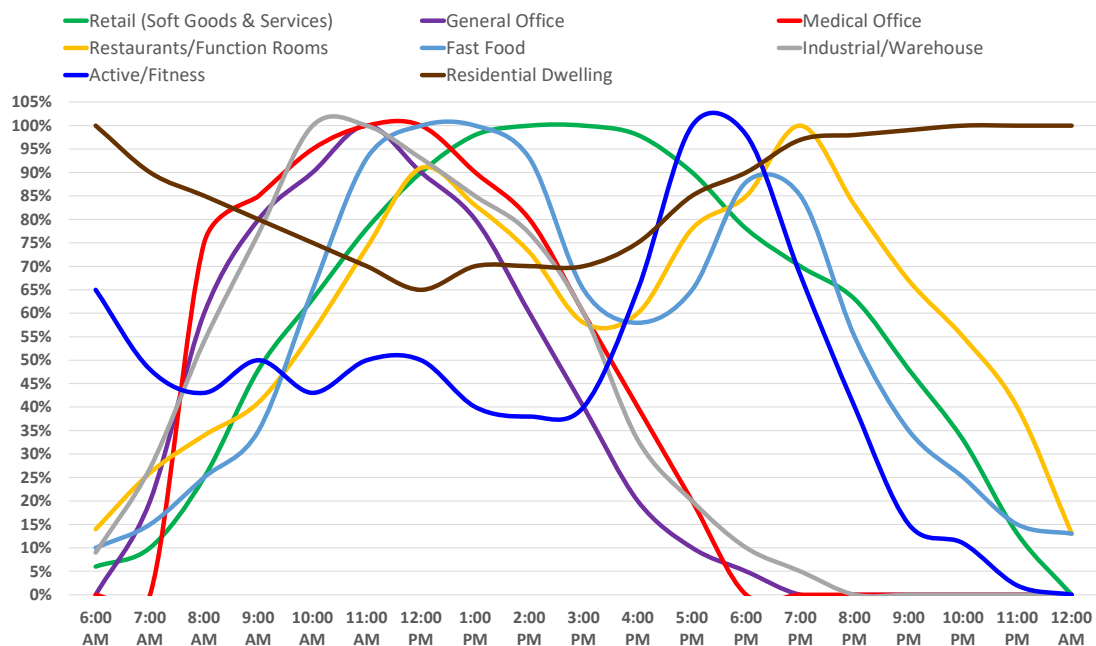
Just as parking demand can fluctuate according seasonal trends, it can also vary according to the time of day. Presence in residential units tend to fall during the course of the day, even as it increases in offices and medical practices. Retail stores are not fully staffed or heavily patronized until around lunch time, after which parking demand begins to slowly trail off. Fitness clubs see a minor spike in activity in the early morning, but generally experience their highest demand right after work ends. Restaurants experience lunch and dinner rushes, with lulls in activity before and after, as shown in *Figure 3* on the following page.

Figure 3: Presence by Land Use According to Time of Day

| Land Use | WEEKDAYS | | | | | | | | | | | | | | | |
|--------------------------------|----------|---------|---------|---------|----------|----------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | 6:00 AM | 7:00 AM | 8:00 AM | 9:00 AM | 10:00 AM | 11:00 AM | 12:00 PM | 1:00 PM | 2:00 PM | 3:00 PM | 4:00 PM | 5:00 PM | 6:00 PM | 7:00 PM | 8:00 PM | 9:00 PM |
| Retail (Soft Goods & Services) | 3% | 8% | 16% | 33% | 59% | 80% | 94% | 100% | 99% | 98% | 94% | 90% | 85% | 80% | 69% | 46% |
| General Office | 3% | 15% | 50% | 90% | 100% | 100% | 85% | 85% | 95% | 95% | 85% | 60% | 25% | 15% | 5% | 3% |
| Medical Office | 0% | 15% | 50% | 93% | 100% | 100% | 88% | 80% | 98% | 95% | 90% | 68% | 50% | 25% | 15% | 0% |
| Restaurants/Function Rooms | 25% | 42% | 60% | 75% | 82% | 83% | 98% | 85% | 72% | 62% | 62% | 90% | 96% | 100% | 92% | 80% |
| Fast Food | 13% | 15% | 25% | 35% | 65% | 93% | 100% | 100% | 93% | 65% | 58% | 65% | 88% | 85% | 55% | 35% |
| Industrial/Warehouse | 5% | 15% | 60% | 80% | 100% | 100% | 100% | 100% | 95% | 80% | 60% | 40% | 20% | 10% | 5% | 0% |
| Active/Fitness | 73% | 58% | 58% | 73% | 73% | 78% | 68% | 73% | 73% | 73% | 78% | 95% | 100% | 83% | 65% | 45% |
| Residential Dwelling | 100% | 95% | 88% | 80% | 75% | 70% | 68% | 65% | 65% | 68% | 71% | 74% | 77% | 80% | 83% | 86% |



| Land Use | WEEKENDS | | | | | | | | | | | | | | | |
|--------------------------------|----------|---------|---------|---------|----------|----------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | 6:00 AM | 7:00 AM | 8:00 AM | 9:00 AM | 10:00 AM | 11:00 AM | 12:00 PM | 1:00 PM | 2:00 PM | 3:00 PM | 4:00 PM | 5:00 PM | 6:00 PM | 7:00 PM | 8:00 PM | 9:00 PM |
| Retail (Soft Goods & Services) | 6% | 10% | 25% | 48% | 63% | 78% | 90% | 98% | 100% | 100% | 98% | 90% | 78% | 70% | 63% | 48% |
| General Office | 0% | 20% | 60% | 80% | 90% | 100% | 90% | 80% | 60% | 40% | 20% | 10% | 5% | 0% | 0% | 0% |
| Medical Office | 0% | 0% | 75% | 85% | 95% | 100% | 100% | 90% | 80% | 60% | 40% | 20% | 0% | 0% | 0% | 0% |
| Restaurants/Function Rooms | 14% | 26% | 34% | 41% | 56% | 74% | 91% | 83% | 73% | 58% | 60% | 78% | 85% | 100% | 83% | 67% |
| Fast Food | 10% | 15% | 25% | 35% | 65% | 93% | 100% | 100% | 93% | 65% | 58% | 65% | 88% | 85% | 55% | 35% |
| Industrial/Warehouse | 9% | 27% | 54% | 77% | 100% | 100% | 93% | 85% | 77% | 60% | 33% | 20% | 10% | 5% | 0% | 0% |
| Active/Fitness | 65% | 48% | 43% | 50% | 43% | 50% | 50% | 40% | 38% | 40% | 65% | 100% | 98% | 68% | 40% | 15% |
| Residential Dwelling | 100% | 90% | 85% | 80% | 75% | 70% | 65% | 70% | 70% | 70% | 75% | 85% | 90% | 97% | 98% | 99% |



These applied presence factors, reflective of real-life behaviors of parkers attracted by various land uses, resulted in reductions in the number of spaces needed. As shown in *Table 6*, at the busiest hour of the busiest weekday, a maximum of 335 vehicles would be parked under current conditions, 22% less than 427 required by local code. Similarly, at the busiest hour of the busiest weekend day, only 307 vehicles would be parked, 28% less than code requirements.

Table 6: Projected Parking Needs Factoring in Presence under Current Conditions

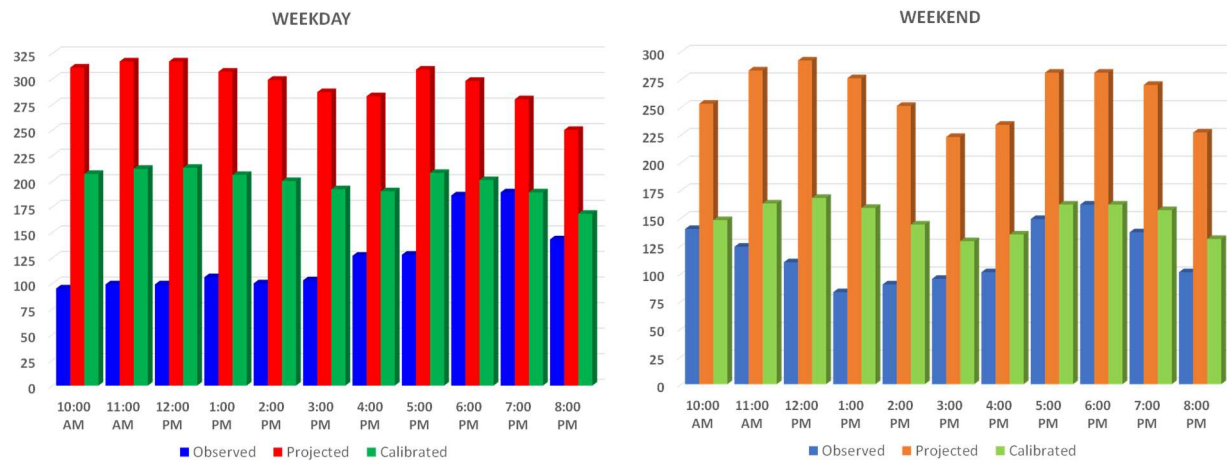
| Land Use | WEEKDAY | | | | | | | | | | | |
|--------------------------------|---------------------|----------------------|-------------------|-------------------|-----------------|------------------|------------------|--------------------|-----------------------|---------------------|----------------------|----------------------|
| | January 11:00 AM | February 11:00 AM | March 11:00 AM | April 11:00 AM | May 11:00 AM | June 11:00 AM | July 12:00 PM | August 12:00 PM | September 11:00 AM | October 11:00 AM | November 12:00 PM | December 12:00 PM |
| Retail (Soft Goods & Services) | 17 | 18 | 20 | 20 | 21 | 21 | 24 | 25 | 19 | 20 | 26 | 32 |
| General Office | 47 | 46 | 47 | 45 | 47 | 45 | 36 | 34 | 45 | 47 | 40 | 36 |
| Medical Office | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 2 |
| Restaurants/Function Rooms | 82 | 90 | 90 | 82 | 84 | 80 | 93 | 102 | 86 | 88 | 108 | 110 |
| Fast Food | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Industrial/Warehouse | 25 | 26 | 26 | 26 | 26 | 25 | 23 | 23 | 26 | 26 | 26 | 20 |
| Active/Fitness | 85 | 83 | 77 | 72 | 68 | 64 | 52 | 56 | 72 | 77 | 67 | 70 |
| Residential Dwelling | 66 | 64 | 63 | 64 | 66 | 63 | 58 | 58 | 66 | 66 | 64 | 61 |
| Subtotal (Demand) | 327 | 332 | 328 | 314 | 317 | 303 | 290 | 302 | 319 | 329 | 335 | 331 |
| Supply | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 |
| Surplus/(Deficit) | 36 | 31 | 35 | 49 | 46 | 60 | 73 | 61 | 44 | 34 | 28 | 32 |

| Land Use | WEEKEND | | | | | | | | | | | |
|--------------------------------|--------------------|---------------------|-------------------|-------------------|-----------------|------------------|------------------|--------------------|-----------------------|---------------------|----------------------|---------------------|
| | January 5:00 PM | February 6:00 PM | March 12:00 PM | April 12:00 PM | May 12:00 PM | June 12:00 PM | July 12:00 PM | August 12:00 PM | September 12:00 PM | October 12:00 PM | November 12:00 PM | December 5:00 PM |
| Retail (Soft Goods & Services) | 20 | 18 | 23 | 22 | 24 | 24 | 23 | 24 | 22 | 22 | 25 | 31 |
| General Office | 5 | 2 | 42 | 40 | 42 | 40 | 38 | 36 | 40 | 42 | 42 | 4 |
| Medical Office | 1 | 0 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 1 |
| Restaurants/Function Rooms | 77 | 92 | 99 | 90 | 92 | 88 | 87 | 95 | 94 | 97 | 100 | 87 |
| Fast Food | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Industrial/Warehouse | 5 | 3 | 24 | 24 | 24 | 23 | 22 | 22 | 24 | 24 | 24 | 4 |
| Active/Fitness | 109 | 105 | 49 | 46 | 44 | 41 | 38 | 41 | 46 | 49 | 49 | 104 |
| Residential Dwelling | 80 | 83 | 59 | 60 | 61 | 58 | 55 | 55 | 61 | 61 | 61 | 76 |
| Subtotal (Demand) | 297 | 303 | 301 | 287 | 292 | 279 | 268 | 278 | 292 | 300 | 306 | 307 |
| Supply | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 |
| Surplus/(Deficit) | 66 | 60 | 62 | 76 | 71 | 84 | 95 | 85 | 71 | 63 | 57 | 56 |

While factoring in presence does reduce the number of parking spaces needed, it does not bring projections of current need in line with observed activity. In point of fact, even when factoring in for presence by land use, projected need is substantially greater than observed usage. For example, the busiest hour on observed weekday had 189 vehicles parked on a May Friday at 7:00 PM; the model projects that 280 cars should be parked at this specific date and time, a full 48% (+91) higher than what was observed. Similarly, the Consultant counted a total of 162 parked vehicles at 6:00 PM on a May Saturday, while the model projects 281 vehicles at the same time on a May Saturday, 73% (+119) more than observed.

When the variance between model outputs and observed conditions is so large, the Urban Land Institute (ULI) recommends the application of a *local adjustment factor* to calibrate the model to reflect conditions specific to the project and community. The ULI endorses this practice because while the recommended ratios and presence factors are based on empirical observation of how existing land uses generate parking demand, the resulting ratios and factors are not universally applicable to all projects and communities. Calibrating the model to reflect observed actual conditions assures that future projections of peak demand are grounded in reality and reflective of the true need for parking when a project is complete. For this study, the Consultant applied a local adjustment factor of 0.671 to weekday parking projections and 0.5775 to weekend projections to bring model results in alignment with observed conditions. The results of this calibration are illustrated on the following page in *Figure 4*.

Figure 4: Model Outputs Without and With Calibration Relative to Observed Conditions



Projected Parking Need and Adequacy

As noted in the Introduction, the proposed changes to the subject development will introduce 126 new residential units, displace 103 existing parking spaces, but add 182 new parking spaces, and reduce total commercial space on the site from 74,500 to 61,500 square feet. This program will require 692 parking spaces according to the minimums presented in the town's by-laws.

Table 6: Minimum Requirements Per Dracut By-Laws under Future Conditions

| Land Use | Existing Land Use | Gross Demand |
|-----------------------------------|------------------------------------|--------------|
| Retail (Soft Goods & Services) | 1.00 space/200 SF GLA | 53 |
| General Office | 1.00 space/200 SF GFA | 37 |
| Medical Office | 1.00 space/200 SF GFA | 5 |
| Restaurants/Function Rooms | 1.00 space/3 seats | 112 |
| Fast Food | 1.00 spaces/50 SF GFA | 20 |
| Industrial/Warehouse ² | 1.00 space/1.40 employees | 10 |
| Active/Fitness | 1.00 space/200 SF GLA ³ | 109 |
| Residential Dwelling | 2.00 spaces/unit | 346 |
| Subtotal | | 692 |

Notes:

1. Based 200 inside seats and 45 outside seats for the pub and 90 seats in the function space.
2. Also applied to storage and non-office public agency spaces, assuming one employee for every 750 SF .
3. Dracut code does not have a requirement specific to this land use, so the requirement for retail was applied.

Adjusting for variations in presence and local factors, the Consultant projects that the project, when complete and fully occupied, will need a maximum of 361 spaces at the busiest hour of the busiest day of the year, as shown in *Table 7* on the following page. Against a planned supply of 442 total parking spaces, there should still be 81 spaces available to other uses.

Table 7: Projected Peak Hour Parking Need and Adequacy Under the Future Program

| | WEEKDAY | | | | | | | | | | | |
|--------------------------------|--------------------|---------------------|------------------|------------------|----------------|-----------------|-----------------|-------------------|----------------------|--------------------|---------------------|---------------------|
| Land Use | January 6:00 PM | February 6:00 PM | March 6:00 PM | April 6:00 PM | May 6:00 PM | June 6:00 PM | July 6:00 PM | August 6:00 PM | September 6:00 PM | October 6:00 PM | November 6:00 PM | December 6:00 PM |
| Retail (Soft Goods & Services) | 19 | 20 | 22 | 22 | 23 | 23 | 23 | 24 | 21 | 22 | 24 | 30 |
| General Office | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 6 | 6 | 6 | 6 |
| Medical Office | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |
| Restaurants/Function Rooms | 63 | 70 | 70 | 63 | 65 | 62 | 61 | 67 | 66 | 69 | 71 | 72 |
| Fast Food | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 | 12 |
| Industrial/Warehouse | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Active/Fitness | 73 | 72 | 66 | 62 | 59 | 55 | 51 | 55 | 62 | 66 | 66 | 69 |
| Residential Dwelling | 179 | 175 | 172 | 175 | 179 | 170 | 161 | 161 | 179 | 179 | 179 | 170 |
| Subtotal (Demand) | 354 | 357 | 351 | 343 | 347 | 331 | 317 | 327 | 348 | 357 | 360 | 361 |
| Supply | 442 | 442 | 442 | 442 | 442 | 442 | 442 | 442 | 442 | 442 | 442 | 442 |
| Surplus/(Deficit) | 88 | 85 | 91 | 99 | 95 | 111 | 125 | 115 | 94 | 85 | 82 | 81 |

| | WEEKEND | | | | | | | | | | | |
|--------------------------------|--------------------|---------------------|------------------|------------------|----------------|-----------------|-----------------|-------------------|----------------------|--------------------|---------------------|---------------------|
| Land Use | January 7:00 PM | February 7:00 PM | March 7:00 PM | April 7:00 PM | May 7:00 PM | June 7:00 PM | July 7:00 PM | August 7:00 PM | September 7:00 PM | October 7:00 PM | November 7:00 PM | December 7:00 PM |
| Retail (Soft Goods & Services) | 14 | 14 | 16 | 15 | 16 | 16 | 16 | 17 | 15 | 16 | 17 | 21 |
| General Office | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Medical Office | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Restaurants/Function Rooms | 57 | 63 | 63 | 57 | 58 | 56 | 55 | 60 | 60 | 61 | 63 | 65 |
| Fast Food | 9 | 9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 |
| Industrial/Warehouse | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Active/Fitness | 43 | 42 | 39 | 36 | 34 | 32 | 30 | 32 | 36 | 39 | 39 | 41 |
| Residential Dwelling | 194 | 190 | 186 | 190 | 194 | 184 | 174 | 174 | 194 | 194 | 194 | 184 |
| Subtotal (Demand) | 317 | 318 | 314 | 308 | 312 | 298 | 285 | 293 | 315 | 320 | 322 | 321 |
| Supply | 442 | 442 | 442 | 442 | 442 | 442 | 442 | 442 | 442 | 442 | 442 | 442 |
| Surplus/(Deficit) | 125 | 124 | 128 | 134 | 130 | 144 | 157 | 149 | 127 | 122 | 120 | 121 |

Conclusion

The preceding analysis has shown that the planned parking supply of 442 total spaces should be more than adequate to meet the need of the proposed project under all anticipated conditions. Based on this, the Consultant believes the Town may grant the development approval to move forward with the planned parking supply and waive the need to provide an additional 250 parking spaces above the planned supply to meet parking requirements per by-laws.

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