

Community and Environmental Assessment
10 Commerce Boulevard
Wrentham, MA

Submitted by Proponent:

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June 6, 2023

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June 6, 2023

Mr. Michael McKnight, Chairman
Wrentham Planning Board
79 South Street
Wrentham, MA 02093

RE: 10 Commerce Boulevard Wrentham, MA

Dear Mr. McKnight:

Pursuant to Article 8 of the Wrentham Zoning Bylaws we are submitting herewith a Community and Environmental Assessment (CEA) for the construction of a 4,500 convenience store and fueling facility at 10 Commerce Boulevard.

This submittal is the third phase of the development of the Wrentham Business Center, with the first phase being the Supercharged Racing recreation facility, which has already been completed, and Phase 2 being the construction of a 180,000+/- sf warehouse on Lot 3, which is currently under appeal.

The CEA has been prepared to conform to the general guidance for outline and content contained in Article 8 of the Wrentham Zoning Bylaws and describes the impacts and proposed mitigation measures for the Project at the level of detail possible given the present state of planning and design. Much of the documentation can be found in the Final Environmental Impact Report filed with the MEPA unit for the Wrentham Business Center.

Very truly yours,

Bay Colony Group, Inc.



William R. Buckley, Jr., P.E.
Project Manager

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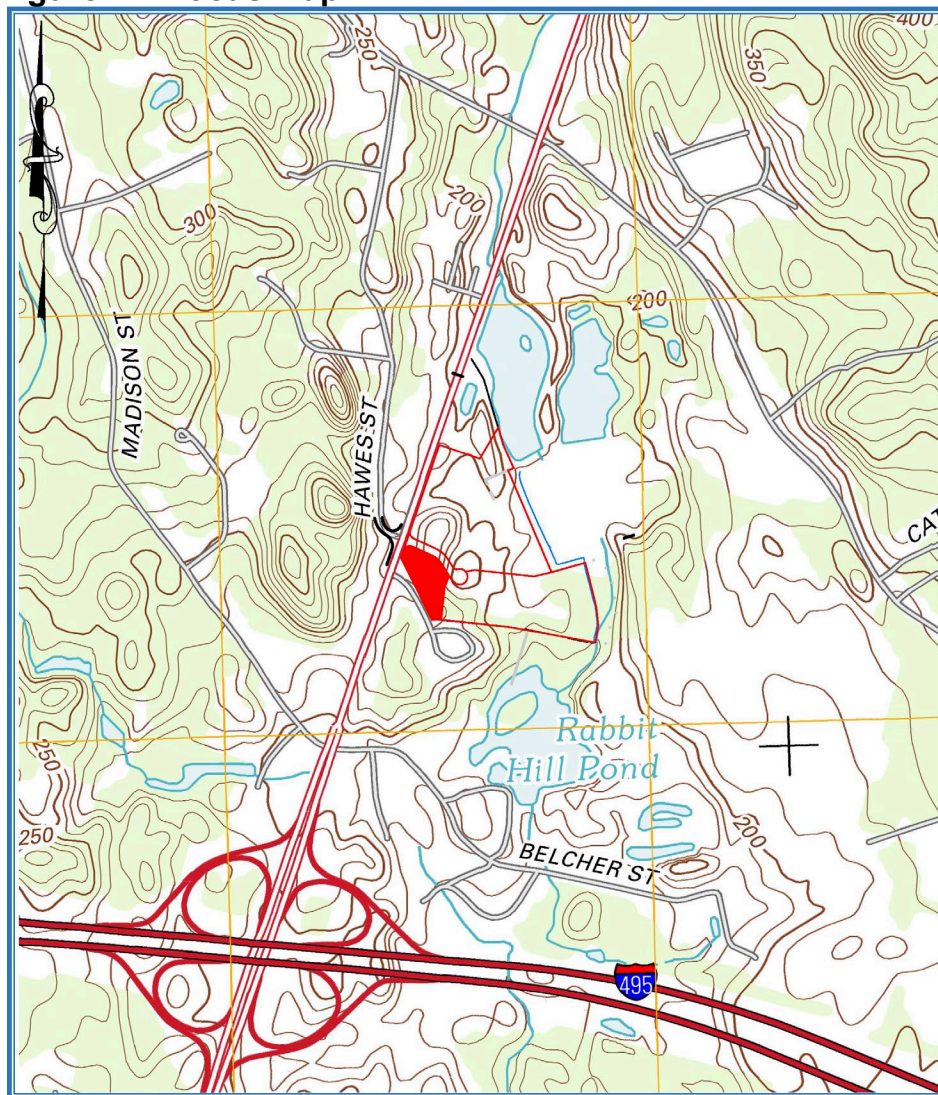
ENCLOSURE

Site Development Plan of Land 10 Commerce Boulevard Wrentham, MA dated
April 19, 2023 by Bay Colony Group, Inc.

1.0 Site Description

The Project is a 2.6 acre parcel of land located at the intersection of Route One and Commerce Boulevard (Figure 1). The majority of the site has been cleared and generally leveled which is the result of previous gravel extraction activities, use of the site as truck parking and as a commercial rental facility, and then site preparation in anticipation of development from permits received in 2002/2003 for the development of a 1,000,000-sf commercial center. The topography slopes gently from west to east toward the Rabbit Hill Stream. Abutters include a salvage yard and indoor recreation facility. On the west side of Route One across from the site is a family-style restaurant and a truck stop. The site has approximately 103 feet of frontage along Route One and 400' along Commerce Boulevard and is currently zoned C-2. An Existing Conditions Plan is included as Sheet 2 of the site plan.

Figure 1 – Locus Map



2.0 Project Summary

The Project will consist of a 4,500+/- gsf convenience store with a 6-pump refueling facility and 25 parking spaces. The Project will require a Special Permit and Site Plan from the Wrentham Planning Board, a Disposal Works Construction Permit from the Wrentham Board of Health, and a MassDOT Vehicular Access Permit and Signal Permit for the construction of the proposed intersection improvements at Commerce Boulevard and Washington Street. The Project will require a NPDES permit from the USEPA under the Construction General Permit. No financial assistance or land transfers are proposed.

3.0 Existing Conditions

3.1 Topography

Figure 1 shows the local topography from the USGS 1985 Franklin Quadrangle Map. An Existing Conditions Plan is included in Sheet 2.0 of the site plan. The Locus is generally flat, sloping from Route One easterly toward the Supercharged Racing on the easterly property line where there is a significant slope. Almost all of the developable portions of the site were cleared in 2003-2004 in anticipation of implementing the previously approved development plan.

3.2 Soils

An extract from the NRCS maps the soils on site as Udorthents (disturbed A soils), Hinckley, Merrimac, and gravel pits, which are all Class A soils. Approximately seven deep-hole soil evaluations were conducted on Lot 1 and the subsoils were found to be almost exclusively outwash, consisting of gravelly, medium to coarse sand with little silt, which is consistent with the soil logs from landfill drilling conducted in 1980s and 1990s.

3.3 Geology & Groundwater

Bedrock under the entire project site is Dedham Granite of the Proterozoic Z period. This type of bedrock is light grayish-pink to greenish-gray in color, equigranular to slightly porphyritic, variably altered granite found south and west of Boston. Depth to bedrock varies from less than 25 feet to the west, including Lot 1 and east to slightly more than 50 feet in the center, beneath Rabbit Hill Brook that flows through the site.

An extensive evaluation of the geology and ground water was conducted in 2000 in anticipation of the construction of a wastewater treatment plant to serve the facility proposed at that time. It found that the groundwater generally flows from west to east towards Rabbit Hill Brook. The westernmost part of the site has a groundwater gradient of 1.2%, which covers a 500-foot strip of land adjacent to Route 1. The central-western part has a very mild groundwater gradient of 0.26%.

According to USGS groundwater records, the groundwater peaked on March 30, 2000. Groundwater fluctuations between March 22 and April 10, 2000 are within 0.5 feet except for Monitoring Well 3, which is located close to a surface drainage area. According to

USGS groundwater records, the groundwater table at the end of March in the Wrentham and Foxborough areas was above the normal water table (0.24 feet higher than normal at Foxborough FXW 3). The high groundwater table is also within a couple of inches of the available on-site record. Historic records show groundwater fluctuation between high and low groundwater season varying from 2 to 3 feet in the upper land area and less than one foot near Rabbit Hill Brook due to the impoundment for the man-made ponds along the brook. Based on this analysis the estimated high ground water in the area of the proposed storm water infiltration basin is at elevation 193' which is also the highest estimated ground water on Lot 1. High ground water will not be an issue with the construction of the project.

Soil evaluations, percolation tests, and permeability testing conducted throughout the site found the average permeability of the soil to be about 42 inches/hour. The soils are acceptable for the construction of subsurface and above-ground storm water infiltration systems, as well as on-site sewage disposal systems.

3.4 Surface Water and Flood Plains

The surface water system in the study area consists of Rabbit Hill Pond, Rabbit Hill Brook, two dammed reservoirs, and a cranberry bog. The water system contains two man-made dams across the Brook to regulate water levels in the two ponds and the cranberry bogs. Downstream of the cranberry bogs, there is an existing access road across Rabbit Hill Brook.

In 1982, the Federal Emergency Management Agency (FEMA) conducted a flood insurance study of Rabbit Hill Brook. A Firmette was developed from the Flood Insurance Rate Map shows the base flood elevation adjacent to Lot 3 is elevation 185' which does not extend on to the property with the lowest point on the lot being about elevation 188' (Sheet 2).

Rabbit Hill Brook has been designated as an Outstanding Resource Water (ORW) as a tributary to a surface water supply. As such, it will require enhanced storm water management under 310 CMR 10.0 and the MassDEP Stormwater Standards. Lot 1 is not located within the Zone A of Rabbit Hill Brook.

3.5 Public Water Supplies

According to the Town of Wrentham Aquifer Protection District Map, no public water supplies are located on or adjacent to the Project and the site does not lie within a mapped Zone 2 of any municipal water supply.

3.6 Drainage Systems

As noted earlier, the general drainage pattern of the site is easterly from Route 1 toward Rabbit Hill Brook and Rabbit Hill Pond. There are two (2) existing storm water management basins (fully vegetated) on the site located on Lot 2 and Lot 3. The basins were constructed in 2003 as part of the anticipated development that was not advanced. The drainage system on Commerce Blvd was also

constructed at that time and conveys runoff into the basin on Lot 2. The indoor recreation facility on Lot 2 also conveys runoff into that basin and the proposed construction on Lot 1 will also contribute runoff to the Lot 2 basin.

3.7 Vegetation

The site is home to several different types of general vegetative types to include disturbed forest habitats. The site was formerly gravel pits that have grown over with a mixture of oaks, maples and pines. The scrub-shrub areas are generally adjacent to the cranberry bogs and they contain red maple and highbush blueberry. A small portion of Lot 1 adjacent to the south lot line contains sparse woodlands. The remainder is pavement and gravel surfaces.

3.8 Wetlands

The Wrentham Business Center site contains resource area that are subject to protection under federal, state and local regulations and bylaws. An Abbreviated Notice of Resource Area Delineation (ANRAD) was filed with the Wrentham Conservation Commission on March 29, 2021 (DEP No. SE 351-1164). Public hearings were held on July 22, 2021 and August 17, 2021. The Commission agreed with the delineation and the order was issued on August 17, 2021. None of the work on Lot 1 falls under the Wetlands Protection Act.

3.9 Wildlife

The Massachusetts Natural Heritage data layer on MassGIS does not list Estimated Habitats of Rare Wildlife, Certified Vernal Pools and Priority Habitats of Rare Species on or near the site. The following entities were contacted for the initial EIR prepared for the site. Correspondence from Commonwealth of Massachusetts Division of Fisheries and Wildlife Natural Heritage and Endangered Species Program states that they are not aware of any rare plants or animals or exemplary natural communities in the area of this site. The U.S. Department of the Interior Fish and Wildlife Service, acting under the provisions of Endangered Species Act of 1973, was also contacted and stated that they are also unaware of any species or critical habitat within the project area.

3.10 Transportation

The Proponent has retained McMahon Associates (MA) to prepare a comprehensive Traffic Impact and Access Study (TIAS) assessing the anticipated impacts of the proposed project on the adjacent transportation infrastructure and to develop measures that are designed to off-set the impacts associated with the project, address existing and potential future deficiencies identified in conjunction with the study, and to ensure that safe and efficient access is provided to the proposed mixed-use development. The proposed redevelopment project will require a State Highway Access Permit from MassDOT for indirect access to Washington Street (Route One), as well as for construction activities related to improvements along Washington Street associated with the project. MA has met with the Town of Wrentham Town Planner, Police Department and Fire Department in order to obtain their input in to the project. They have also met

with the MassDOT Public Private Partnership Unit, the MassDOT Traffic Engineer, and the MassDOT District 5 Traffic Engineer to discuss preliminary designs.

Section 4.9 includes an abridged traffic assessment that was prepared using standards presented by the Massachusetts Department of Transportation's (MassDOT) Transportation Impact Assessment Guidelines.

3.11 Noise and Air Quality

3.11.1 Noise

Noise is limited to that produced by the traffic on Route 1 and local roadways. Gillette Stadium is located about 3 miles north of the property and, during stadium events, the project area is impacted by noise. The proposed uses, except for traffic impacts, are not expected to produce noise.

3.11.2 Air Quality

Air quality impacts from the site are again limited to the traffic that is generated by Route 1 and local roadways as well as the proposed buildings. Motor vehicles are the predominant source of CO₂ in a suburban area such as Wrentham. A greenhouse gas (GHG) analysis was performed to calculate the potential air quality effect of the proposed project, using as a measure the total daily emissions of CO₂ in the study area. The analysis procedure followed the latest Massachusetts DEP guidance, and is consistent with the EEA "Greenhouse Gas Emissions Policy and Protocol" dated May 5, 2010. Further discussion of the existing condition is included in Section 4.10.2.

3.12 Water Supply

The site is currently supplied by the Town of Wrentham's municipal water supply system. The municipal system currently provides water to the site for potable, fire protection, irrigation and HVAC uses from a 12" main on Commerce Blvd that connects to the 12" main on Route One that was installed in 2018. Commerce Blvd contains 3 hydrants.

3.13 Wastewater

The wastewater on the site will be handled through on-site sewage disposal systems for each lot. Each of the lots will be in separate ownership, with Lot 1 currently owned by WBH, LLC, Lot 2 owned by Supercharged Racing of Wrentham, LLC, and Lot 3 under agreement to ND Acquisitions, LLC. All of the lots are subject to regulation by the local Board of Health under Title 5, State Sanitary Code since none of the systems will create more than 10,000 gpd of flow on an individual lot.

3.14 Electric And Gas Service

The site is currently serviced by National Grid and there is no gas service. When Commerce Blvd was constructed, the electric utilities were designed to accommodate this growth and we do not anticipate any issues. It is anticipated that electric will be used to heat the proposed convenience store.

3.15 Solid And Hazardous Waste

In May, 2021 Sanborn Head performed a Phase I Environmental Site Assessment for ND Acquisitions in conformance with the scope and limitations of ASTM Practice E 1527-13 at 591 Washington Street. The assessment has revealed no evidence of Recognized Environmental Conditions (REC) in connection with the Site except for the following:

- A MCP release identified by RTN 4-14575 is associated with elevated concentrations of petroleum constituents in soil and groundwater, as well as NAPL located at what was previously identified as the Travel Center West Parking Lot to the north of the Site property. The boundary of RTN 4-14575 includes the northern portion of the Site, and the presence of NAPL was previously documented in monitoring wells located within the subject Site boundary. RTN 4-14575 has achieved a Temporary Solution under the MCP. Therefore, the presence of a portion of an MCP site that has not achieved a Permanent Solution in the northern portion of the Site is considered a REC; and

Sanborn Head also identified one Historical REC associated with the Site.

- The subject Site is also the location of RTN 4-19074, which is related to the presence of petroleum hydrocarbons previously identified on the Site. The source of the release was identified as the upgradient Mike's Truck Stop, located across Washington Street to the west. A DPS was filed for the release in 2005. RTN 4-19074 is considered an HREC because it has reached a closure endpoint under the MCP. However, future redevelopment will need to plan for and properly manage petroleum hydrocarbon contamination present at the Site. In addition, a DPS Modification will be required after the Site is purchased so that DPS status can be achieved.

This Historical REC did not rise to the level of a REC in their opinion, but the review of historical geological information for the Site, including boring and test pit logs, indicated that fill containing construction debris and solid waste exists at the Site. In addition, litter was observed on the ground surface throughout the Site. These materials will be managed appropriately during future construction or excavation activities.

4.0 Proposed Impacts & Mitigation

4.1 Topography, Soils & Geology

The impacts associated with the construction are expected to be concentrated in the construction phase. The construction of the building, parking and infrastructure are expected to disturb about 1.5 acres of land of which about 0.9 acres of the land will be impervious, to include 0.1 acres of building and 0.8 acres of parking/driveway. Approximately 4,000 cy of material will be required to be moved on the site to accommodate this phase. It is estimated that there will be no import or export of material from the site and that all material required for the construction of the facilities will be found on the site. A Construction Pollution Prevention Plan and Storm Water Management Plan will be implemented to ensure that both short-term and long-term erosion and sedimentation control is implemented.

Key elements of this plan include the use of the following components:

- use of temporary and permanent seeding of disturbed areas
- maintenance and development of vegetated buffer strips
- use of erosion control barriers, sediment traps and check dams to reduce storm water velocity and sediment loads
- use of water quality basins and swales to treat storm water
- deep sump catch basins with elbows
- use of on-site infiltration to recharge clean roof runoff
- designation of control areas for equipment maintenance and repair

4.2 Groundwater

For proposed land use conditions as discussed above, water budgets will be calculated in order to ensure that land development at the proposed site will not significantly alter the overall water resource distribution of the area. A combination of low impact design measures, such as vegetated basins (off-site) and subsurface leaching facilities will be used to balance the project. When the existing water budget is compared to the proposed water budget, the goal will be to ensure that total available water will be approximately the same; groundwater recharge will be increased or remain the same, and surface runoff will be held below the existing peaks. To mitigate the impact to groundwater recharge and surface water runoff, a storm water management system will be designed to consist of off-site open basins, roof recharge trenches, pretreatment catch basins and water quality inlets. The goals of the system design will be to reduce on-site runoff discharge to the receiving waters, and to fully compensate the groundwater recharge as required under the MADEP Stormwater Management Standards.

For the proposed conditions, an on-site storm water management system will be designed to meet all nine storm water management standards. The existing man-made pond on Lot 2 will be used for surface water management and roof runoff will be used to compensate groundwater recharge. Pretreated surface runoff from parking lots and roadways will also be partially used to recharge groundwater.

4.3 Surface Water and Flood Plains

Short term impacts to surface waters should be limited to sedimentation and erosion during construction and prior to full vegetation being established. Mitigation of impacts during this phase will be through the use of a Construction Pollution Prevention Plan (CPPP) and Storm Water Management Plan (SWMP). The plans will be prepared in compliance with the EPA NPDES Permit regulations and the MADEP Storm Water Management Standards. The on-site design will be a multi-stage system with redundant capabilities to ensure that if one component fails there will be a back-up. Methods to be used will include:

- deep sump and hooded catch basins
- water quality inlets
- infiltration trenches

All of these structures will result in the control of the sediment load being deposited into the receiving waters. The CPPP will address the short-term impacts and the SWMP will be geared toward the long-term impacts of the project.

Further discussion of the storm water system that will exceed the standards outlined in the DEP Stormwater Standards will be discussed in section 4.5.

4.4 Public Water Supplies

No public water supplies are located on or adjacent to the project and the site does not lie within a mapped Zone 2 of any municipal water supply. Impacts to groundwater are discussed in section 5.2.

4.5 Drainage Systems

Lot 1 does not contain any drainage structures. The Lot 1 design will include a separate piping system that will capture roof runoff and convey it directly to a subsurface infiltration system. The design is an LID element to ensure that roof runoff will not mix with the parking lot runoff. Parking lot runoff will discharge to the surface basin on Lot 2 through a conventional catch basin/drain manhole that will also use water quality inlets for enhanced water quality prior to discharge to the surface infiltration basin. This system will exceed the TSS removal and recharge standards outlined in 310 CMR 10.000 and MA DEP Stormwater Management Standards which requires the highest and best practical method of treatment when near an ORW (Sheet 4).

4.6 Vegetation

Lot 1 will have 67% green space and there will be no dedicated open space and no conservation restrictions are proposed for the property. No work will take place within any areas subject to the Wetlands Protection Act.

4.7 Wetlands

No activity will take place within a wetland or within 100' of an wetland resource areas. Potential impacts include siltation due to construction activity that will be mitigated through the use of a Storm Water Pollution Prevention Plan (SWPPP) that will be implemented during construction and will be monitored by the Planning Board and Conservation Commission.

4.8 Wildlife

Impacts will be minimal in all phases of the project. No wetland habitat will be impacted and upland habitats will likewise be limited since most of the activity for the project takes place in areas that are already degraded. No impacts on the wetlands habitat will ensure that we will not trigger a wildlife habitat evaluation under 310 CMR 10.00 Wetlands Protection Act.

4.9 Transportation

4.9.1 Study Methodology

This traffic impact study evaluates existing and projected traffic operations within the study area for the weekday morning, weekday afternoon, and Saturday midday peak hour traffic conditions, when the combination of the adjacent roadway volumes and estimated project trips would be expected to be the greatest.

The study was conducted in three steps. The first step consisted of an inventory of existing traffic conditions within the project study area. As part of this inventory, manual turning movement counts were collected at the study intersection during the weekday morning, weekday afternoon, and Saturday midday peak periods. Crash data for the intersection of Washington Street at Hawes Street/Commerce Boulevard was obtained from the Massachusetts Department of Transportation (MassDOT) to determine if the intersection has any existing traffic safety deficiencies.

The second step of the study built upon the data collected in the first step of the study to establish the basis for evaluating potential transportation impacts associated with the projected future conditions. During this second step, the projected traffic demands associated with planned future developments which could influence traffic volumes at the study intersection were assessed. Consistent with MassDOT traffic study guidelines, 2023 Existing traffic volumes were forecasted to the future year 2030 to establish 2030 No Build (without project) conditions and 2030 Build (with project) conditions.

The third step of this study determined if measures were necessary to improve future traffic operations and safety, minimize potential traffic impacts, and provide safe and efficient access to the proposed project site.

4.9.2 Existing Conditions

An accurate assessment of the potential traffic impacts associated with the proposed project requires a comprehensive understanding of the existing traffic conditions within the project study area. The existing conditions assessment included in this study consists of an inventory of intersection and roadway geometries, an inventory of traffic control devices, the collection of peak period traffic volumes, and a review of recent crash data. The existing conditions in the vicinity of the project site are summarized below.

4.9.2.1 Study Area

Washington Street (Route 1)

Washington Street (Route 1) generally travels in a north to south direction through the Town of Wrentham and provides access to primarily commercial land uses in the vicinity of the project site. Washington Street (Route 1) is classified as an urban principal arterial under MassDOT jurisdiction and typically provides two travel lanes in each direction measuring approximately 12 feet wide in the vicinity of the project site. No sidewalks or bicycle facilities are provided along Washington Street (Route 1). A speed

limit of 55 miles per hour (mph) is posted on Washington Street (Route 1) in each direction approaching the project site.

Hawes Street

Hawes Street is classified as a local roadway under Town of Wrentham jurisdiction and generally travels in a north to south direction between Washington Street (Route 1) and Thurston Street. Hawes Street measures between 20 and 24 feet wide and accommodates two-way travel. Travel lanes on Hawes Street are unmarked, and sidewalks are not provided on either side of the roadway. No speed limits are posted on Hawes Street in either direction.

Commerce Boulevard

Commerce Boulevard is a private roadway which extends from Washington Street (Route 1) approximately 450 feet to the east, where it dead ends. Commerce Boulevard was developed as part of the Wrentham Business Center subdivision and serves three separate lots including the Supercharged entertainment center, a proposed warehouse, and the currently proposed gas station and convenience store. Commerce Boulevard is approximately 44 feet wide and allows for two-way vehicle traffic. With the proposed gas station and convenience store project in place, sidewalks would be constructed on both Sides of Commerce Boulevard and no speed limit is posted.

4.9.2.2 Traffic Volumes

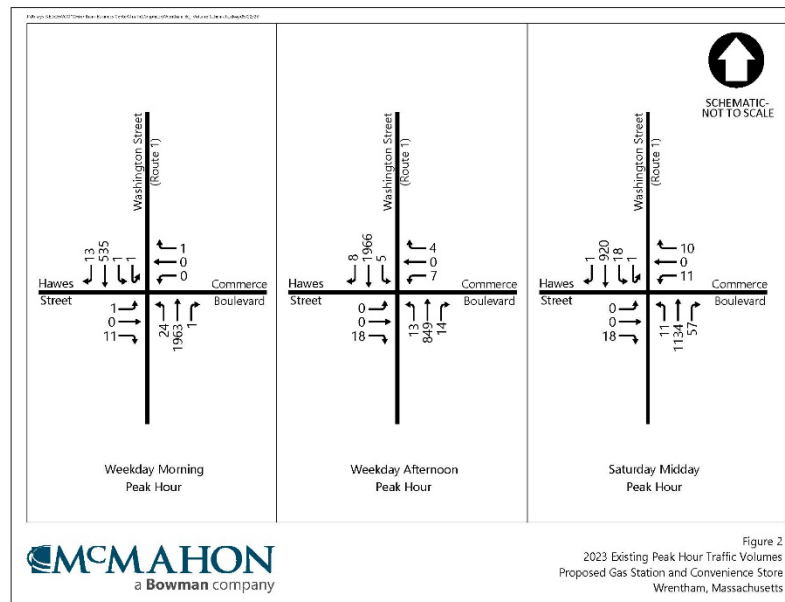
To assess peak hour traffic conditions, manual turning movement counts (TMCs) were conducted at the study area intersection during the weekday morning, weekday afternoon, and Saturday midday peak periods.

Counts were conducted on Saturday, April 1, 2023 from 11:00 AM to 2:00 PM and on Tuesday, April 4, 2023 from 7:00 AM to 7:00 PM. The results of the turning movement counts are tabulated by 15- minute periods. The four highest consecutive 15-minute intervals during each of these count periods constitute the peak hours that are the basis of the traffic analysis provided in this report. As noted in MassDOT's *Traffic and Safety Engineering 25% Design Submission Guidelines*, MassDOT prefers the use of counts taken after March 1, 2022, when the impacts of the COVID-19 pandemic are considered to have settled into a "new normal". Based on a review of the peak period traffic data, the weekday morning peak hour at the study area intersection occurs between 7:00 AM and 8:00 AM, the weekday afternoon peak hour occurs between 4:45 PM and 5:45 PM, and the Saturday midday peak hour occurs between 11:45 AM and 12:45 PM.

Seasonal Variation

To account for seasonal variation in traffic volumes, historic traffic count data on Interstate 495 (MassDOT Count Station 6312) was reviewed from the MassDOT Transportation Data Management System dashboard. Based on the continuous count station data, traffic volumes collected during the month of April are shown to be approximately 3.6% lower than an average month. Therefore, to provide a more conservative analysis, the volumes collected were adjusted upward to reflect an average month.

The 2023 Existing peak hour traffic volumes are displayed in Figure 2.



4.9.2.3 Crash Summary

Crash data for the study area intersection was obtained from the MassDOT crash data portal. The most recent five-year period of data available on the portal is 2016 through 2020. However, as the COVID-19 pandemic may have significantly affected traffic and crash patterns during 2020, this study summarizes data for 2015 through 2020.

The MassDOT Crash Rate Worksheet calculations were used to determine whether the crash frequency at the study intersection was unusually high given the travel demands. The MassDOT Crash Rate Worksheet calculates a crash rate expressed in crashes per million entering vehicles. The calculated rate is then compared to the average rate for unsignalized intersections statewide and within MassDOT District 5. For unsignalized intersections, the statewide and District 5 average crash rates are both 0.57 crashes per million entering vehicles.

The unsignalized intersection of Washington Street at Hawes Street/Commerce Boulevard had a total of 16 reported crashes between 2015 and 2020, resulting in a crash rate of 0.26 crashes per million entering vehicles, which is below the state and districtwide crash rates. Of the total 16 crashes, five were angle collisions, four were rear-end collisions, three were sideswipe collisions, three were single vehicle crashes, and the remaining crash type was unknown. Six crashes resulted in personal injury, nine crashes resulted in property damage only, and the result of the remaining crash was unknown.

4.9.3 Future Conditions

To establish future traffic demands on the study area intersection, the 2023 Existing traffic volumes were projected to the future-year 2030, by which time the project would be anticipated to be built and occupied. Traffic volumes on the study area roadways in 2030 are considered to include existing traffic, new traffic resulting from general population growth, and traffic from other planned development projects independent of the proposed project. The potential background traffic growth, independent of the project, was considered in the development of the 2030 No Build (without project) peak hour traffic volumes. The estimated traffic increases associated with the proposed project were then added to the 2030 No Build volumes to reflect the 2030 Build (with project) traffic conditions. A description of the development of the 2030 No Build and 2030 Build traffic volume networks is presented below.

The proposed gas station and convenience store project site is located within the Wrentham Business Center which includes a subdivision of three lots that were created in 2017 through the use of the Subdivision Control Law and were permitted through the Wrentham Planning Board. The first phase (on Lot 2) of the Wrentham Business Center project has been constructed and is operational as a 116,000 square foot indoor recreational facility called Supercharged Entertainment. The next phase of the Wrentham Business Center project includes a proposed approximately 179,000 square foot warehouse with a minor office component on Lot 3, and the construction of the 12 fueling position gas station and 4,500 square foot convenience store on Lot 1. The warehouse component of the Wrentham Business Center has been approved by the Wrentham Planning Board and the entire subdivision project is currently under review through the Massachusetts Environmental Policy Act (MEPA). With the previous approval of the warehouse, the trips associated with that portion of the development could be included as a background development and included in the 2030 No Build condition volumes. However, the overall build program of the Wrentham Business Center calls for the warehouse development and the proposed gas station and convenience store to be constructed concurrently with each other; as such, the warehouse project is included under 2030 Build conditions, but not as a background development within the No Build condition. The other background traffic growth discussed below is included in both the 2030 No Build and 2030 Build conditions.

4.9.3.1 Future Roadway Improvements

Based on previous discussions with the Town of Wrentham, no future town-funded roadway improvement projects are currently proposed in the vicinity of the project site that would be expected to impact traffic volumes or operations. During the local permitting process for the proposed warehouse at 15 Commerce Boulevard, residents and business owners discussed existing travel patterns, access, and safety along Hawes Street. In an effort to address existing concerns on Hawes Street and at its intersection with Washington Street, the Town of Wrentham has stated an intention to pursue potential signage and striping changes. The Wrentham Police Department and

Wrentham Department of Public Works would work together with MassDOT, as appropriate, to review and implement potential changes.

Intersection improvements at the intersection of Washington Street at Thurston Street are planned as part of the development of a proposed gas station and convenience store and a proposed warehouse development on Thurston Street. As part of the improvements, the eastbound and westbound Thurston Street approaches would be reconfigured to accommodate exclusive left-turn lanes and a shared through/right-turn lane in each direction. Signal timing and phasing adjustments would also be expected as part of the intersection improvement. For the purposes of this study, the reconfiguration of Thurston Street and associated signal timing and phasing adjustments have been included in the No Build analysis.

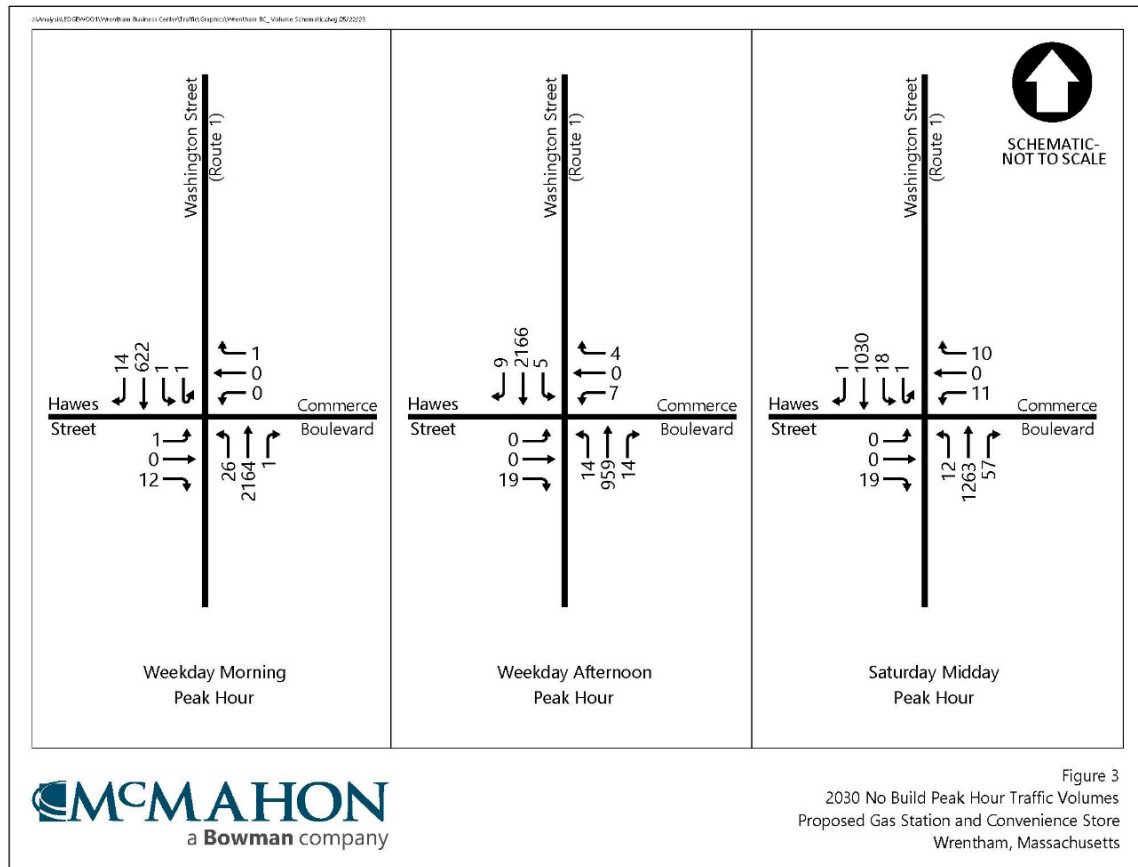
The project team has also coordinated with MassDOT in an effort to understand future roadway improvements that may impact transportation operations within the study area. MassDOT identified a Washington Street (Route 1) Corridor project that is evaluating alternative cross-sections for the Washington Street corridor from just north of the I-495 interchange in the south to the Wrentham town-line in the north. The Washington Street (Route 1) Corridor project is currently in the pre-25% design submittal stage, where MassDOT is exploring concepts for the corridor and study area intersections. MassDOT has previously shared that refined concepts for corridor improvements may include a median along Washington Street in the vicinity of Hawes Street and Commerce Boulevard. Therefore, the Wrentham Business Center project considers that a median may ultimately be proposed. Further development of concepts is being reviewed in coordination with MassDOT as part of the MEPA review process and future access permitting. Based on the information received to date, no specific corridor improvements are included as part of the future year conditions for this traffic impact study.

As outlined in previous processes (locally and with MEPA) the proposed signalization of Commerce Boulevard/Hawes Street is an integral part of the development of the Wrentham Business Center. Reasoning has been previously provided regarding the installation of a signal at the intersection of Commerce Boulevard/Hawes Street independent of the proposed warehouse, gas station, and convenience store land uses, to address existing safety concerns within this segment of the Washington Street corridor. The installation of a traffic signal is proposed to be completed as part of the warehouse and gas station development and construction. Although the warehouse land use has already been approved by the Wrentham Planning Board with the proposed signal in place under future conditions, the traffic signal would ultimately need to be approved by MassDOT. For the purposes of this study, the signalization of the Commerce Boulevard/Hawes Street intersection has not been included in the 2030 No Build condition of this traffic impact study.

4.9.3.2 Background Traffic Growth

The 2023 Existing peak hour traffic volumes were grown by one percent per year (compounded annually) over the seven-year study horizon (2023 to 2030) to establish

the 2030 No Build conditions. The peak hour traffic volumes associated with the two developments identified by the Town were then added to the base future traffic volumes. The resulting 2030 No Build weekday morning, weekday afternoon, and Saturday midday peak hour traffic volumes are illustrated in Figure 3.



4.9.3.3 Background Developments

Conversations with the Town of Wrentham identified two planned developments located within close proximity to the project site that would be expected to impact future traffic volumes on the study area roadways, namely:

- A proposed gas station and convenience store at 500 Thurston Street
- A proposed warehouse development at 500-524 Thurston Street

The proposed gas station and convenience store project located at 500 Thurston Street involves the construction of an approximately 6,000 square foot convenience store and 17 total vehicle fueling positions, as well as a single-stall car wash. The April 2019 Transportation Impact Assessment conducted by Vanasse & Associates, Inc. was referenced to determine the number of additional trips on the study area roadways estimated to be generated by the project.

The proposed warehouse project to be located at 500-524 Thurston Street would construct an approximately 132,000 square foot building on the southeast corner of the intersection of Washington Street at Thurston Street. The trips associated with this proposed warehouse were included in the future traffic volume projections based on information provided in the Traffic Impact Assessment prepared by Vanasse & Associates, Inc. dated September 2021.

The town also identified two other development projects in the vicinity of the project site: a potential warehouse project at 544 Thurston Street and a solar farm project at 80 Washington Street which is anticipated to be under construction in 2023. At the time of discussion, the warehouse development project had not yet filed with the Wrentham Planning Board. Therefore, traffic estimated to be generated by this development is not known at this time and is expected to be captured in the background growth rate discussed below. ITE does not provide data for vehicle trips associated with solar energy facilities, however a review of impact studies prepared for solar farms shows that trip generation associated with operations are generally minimal. Any trips associated with occasional maintenance or other occurrences at the solar farm are expected to be captured in the background growth rate.

4.9.4 Build Conditions

To establish the 2030 Build peak hour traffic volumes, the distributed project trips were added to the 2030 No Build peak hour traffic volumes. As mentioned in previous sections of this report, peak hour traffic volumes associated with the proposed warehouse development at 15 Commerce Boulevard were not included in the 2030 No Build traffic volumes. These volumes have been included in the 2030 Build peak hour volumes based on the estimates and trip distribution patterns identified in previous documentation submitted to the Town of Wrentham and MEPA. The resulting 2030 Build weekday morning, weekday afternoon and Saturday midday peak hour traffic volumes are presented in Figure 6.

4.9.4.1 Trip Generation

In order to estimate the number of vehicle trips associated with the proposed development, the Institute of Transportation Engineers' (ITE) publication, *Trip Generation Manual, 11th Edition*, was referenced. The publication provides traffic generation information for various land uses compiled from studies conducted by members nationwide. Vehicle trip estimates for the proposed gas station and convenience store development were estimated based on data presented in this publication for Land Use Code 945 (Convenience Store/Gas Station) and the subcategory for a convenience store between 4,000 and 5,500 square feet. These references establish vehicle trip rates (in this case expressed in trips per square foot of convenience store gross floor area) based on actual traffic counts conducted at similar types of existing land uses. The estimated vehicle trips to the proposed site are presented in Table 1.

Not all trips to convenience stores and gas stations are new trips. A significant portion of the total trips attracted to such uses are pass-by trips. According to ITE, for Land Use

Code 945 (Convenience Store/Gas Station), approximately 76 percent of the total weekday morning peak hour trips of this land use type are attributed to pass-by trips, while approximately 75 percent of the total weekday afternoon peak hour trips of this land use type are attributed to pass-by trips. A pass-by rate is not provided for the Saturday midday site peak hour through ITE. Therefore, the more conservative weekday afternoon peak hour pass-by rate of 75 percent was used to estimate total pass-by trips for the Saturday midday site peak hour. The vehicle trips estimated to be generated by the proposed gas station and convenience store development are separated into pass-by vehicle trips and new vehicle trips as shown in Table 1.

Table 1: Proposed Project Trips

Description	Size	In	Out	Total	In	Out	Total	In	Out	Total
Convenience Store/Gas Station ¹	12 VFP	162	162	324	137	137	274	125	120	245
- Pass-By Trips ²		-123	-123	-246	-103	-103	-206	-92	-92	-184
New Project Trips		39	39	78	34	34	68	33	28	61

1 ITE Land Use Code 945 (Convenience Store/Gas Station for 4-5.5k square feet), based on 12 fueling positions.

2 Based on ITE Land Use Code 945, 76% of weekday morning and 75% of weekday afternoon peak hour vehicle trips are considered pass-by trips. Saturday midday peak hour pass-by rates are not available for LUC 945, therefore weekday afternoon pass-by rates were applied to the Saturday midday period.

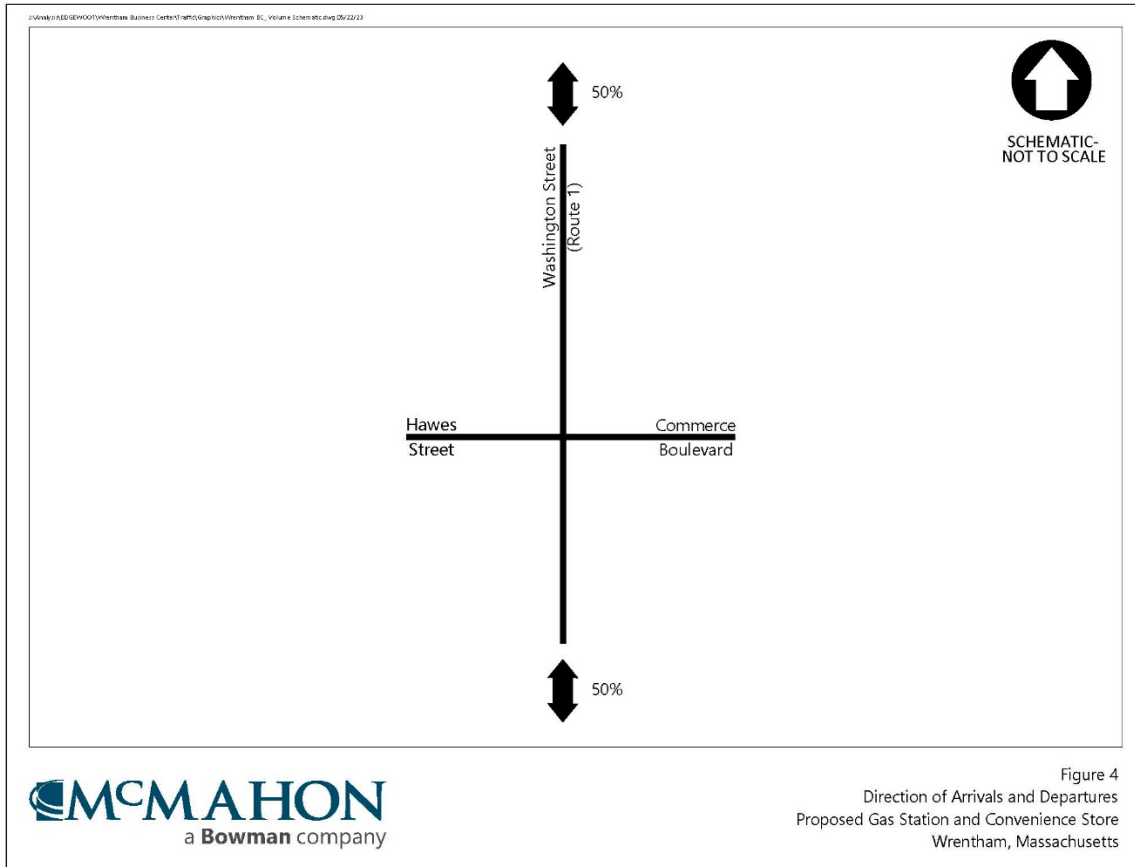
As shown in Table 1, the proposed development is estimated to result in approximately 78 new vehicle trips (39 entering vehicles and 39 exiting vehicles) during the weekday morning peak hour, approximately 68 new vehicle trips (34 entering vehicles and 34 exiting vehicles) during the weekday afternoon peak hour, and approximately 61 new vehicle trips (33 entering vehicles and 28 exiting vehicles) during the Saturday midday peak hour.

4.9.4.2 Trip Distribution

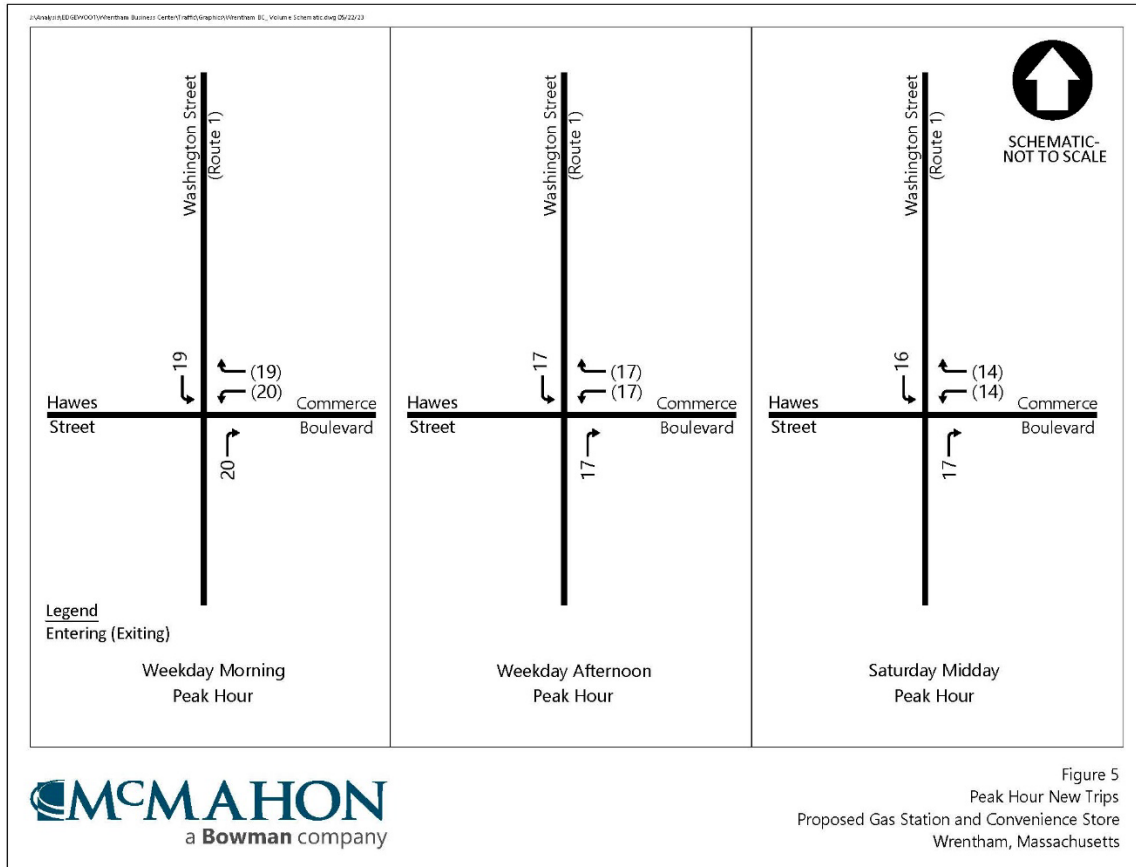
The additional traffic estimated to be generated by the proposed development was distributed onto the study area roadways based on existing travel patterns of vehicles in the study area. The resulting arrival and departure patterns are presented in Figure 4.

The project-related traffic was then assigned to the surrounding roadway network based on the project trip distribution patterns presented in Figure 4, and the resulting new peak hour project trips are shown in Figure 5 for the weekday morning, weekday afternoon, and Saturday midday peak hours.

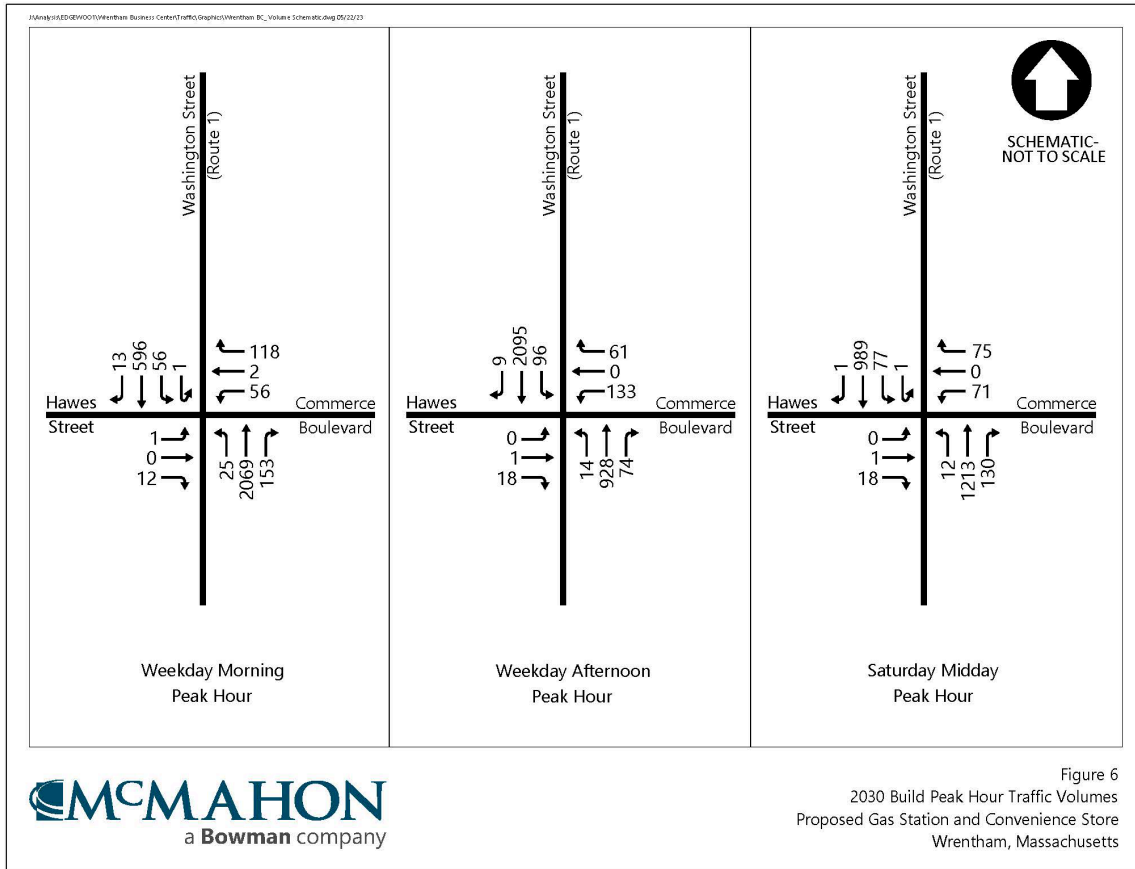
Community & Environmental Assessment
10 Commerce Boulevard
Wrentham, MA



Community & Environmental Assessment
10 Commerce Boulevard
Wrentham, MA



Community & Environmental Assessment
10 Commerce Boulevard
Wrentham, MA



4.9.4.3 MUTCD Signal Warrant Analysis

Based on coordination with the project team, the Town of Wrentham, and MassDOT, the intersection of Washington Street at Hawes Street/Commerce Boulevard is proposed to be signalized in conjunction as part of the overall Wrentham Business Center project. As part of the analysis to determine if signalization is justified, signal warrant analysis was completed based on a methodology previously approved by MassDOT. The methodology includes the use of 12-hour turning movement counts at the intersection, which is preferred for use in signal warrant analyses, with no future projection growth for the Washington Street and the Hawes Street approaches. Vehicle trips associated with the proposed warehouse at 15 Commerce Boulevard and the proposed gas station and convenience store project were then added to the counted Commerce Boulevard approach volumes. The 12-hour turning movement counts were conducted in April 2023, as discussed in previous sections of this report. Vehicle trips exiting Commerce Boulevard were identified utilizing the daily trip generation and hourly distribution identified by ITE for each of the proposed land uses. The use of the daily trip generation and hourly distribution results in differing volumes for the project site than are presented for the weekday morning and afternoon peak hours in the other sections of this report. The vehicle trip estimate completed using the hourly distribution of traffic applied to the daily trip generation for the project provides a more conservative approach to the signal warrant analysis.

Signal warrant analyses were performed for the intersection of Washington Street at Hawes Street/Commerce Boulevard based on methodologies described in the 2009 *Manual on Uniform Traffic Control Devices* (MUTCD). The analyses performed for this report are based on the criteria for the eight-hour and four-hour volume warrants. The Eight-Hour (Warrant 1) and Four-Hour (Warrant 2) vehicular volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing traffic signal control. For the Eight-Hour vehicular volume signal warrant to be met, minimum vehicular volumes for the major street and minor street, found in Table 4C-1 of the MUTCD, must be exceeded. To satisfy the Four-Hour signal warrant, the plotted point representing the hourly volumes on the major street and minor street intersection approaches during any four hours of an average weekday must be above the applicable curve in Figure 4C-1 of the MUTCD.

The eight-hour and four-hour warrant analyses were completed utilizing Highway Capacity Software (HCS). The HCS worksheets are provided in Appendix E of this report for reference. Based on the completed signal warrant analysis, the intersection of Washington Street at Hawes Street/Commerce Boulevard is shown to meet the Eight-Hour and the Four-Hour warrants under the volume conditions analyzed. Based on the warrant analysis, coordination with the Town of Wrentham and MassDOT, and anticipated excessive delay for vehicles on Commerce Boulevard, a traffic signal is proposed at the intersection of Washington Street at Hawes Street/Commerce Boulevard as part of the 2030 Build conditions.

4.9.4.5 Intersection Improvements

Based on discussions with the Town of Wrentham and through coordination with MassDOT, a traffic signal is proposed to be installed at the intersection of Washington Street at Hawes Street/Commerce Boulevard as part of the proposed Wrentham Business Center project. The potential configuration of the proposed signal at Commerce Boulevard/Hawes Street has gone through several iterations in an effort to identify the most appropriate signal timing and phasing configuration to serve the needs of the overall corridor. As mentioned previously, MassDOT is undertaking a review of the Washington Street corridor north and south of Commerce Boulevard, which is in the early stages of concept design and development. Therefore, the intersection configuration of a traffic signal at Commerce Boulevard/Hawes Street has not yet been identified and would need to be approved by MassDOT. As such, the phasing and configuration of the proposed signal presented in the analysis of this traffic impact study is a concept and is expected to undergo further review, adjustment, and design as the MassDOT and MEPA processes progress. It is expected that access along the corridor for individual land uses and side streets will be reviewed and addressed in full detail as part of the MassDOT project.

For the purposes of the 2030 Build analysis documented in this traffic impact study, the intersection improvements would include restriping the northbound and southbound Washington Street approaches to accommodate an exclusive left-turn lane, a through lane, and a shared through/right- turn lane. The westbound Commerce Boulevard approach would include an exclusive left-turn lane and a shared through/right-turn lane. The eastbound Hawes Street approach would continue to provide one general purpose travel lane. Crosswalks would be proposed at the signal to provide for pedestrian crossings across Washington Street and Commerce Boulevard. The intersection phasing would include a protected left-turn phase for Washington Street northbound and southbound traffic, followed by northbound and southbound general traffic, an exclusive pedestrian phase activated upon push-button only, and the Hawes Street/Commerce Boulevard eastbound and westbound general traffic. The proposed traffic signal would be coordinated with the signals along Washington Street at Thurston Street, Madison Street, and the existing pedestrian crossing signal, as determined appropriate by MassDOT, to facilitate traffic flow through the corridor.

4.9.4.6 Vehicular Site Access and Circulation

Access to the proposed gas station and convenience store would be provided via two full-access driveways on Commerce Boulevard. Sidewalks would be provided on both sides of Commerce Boulevard to facilitate pedestrian access between the project site and Washington Street. The proposed traffic signal at the intersection of Washington Street at Hawes Street would provide more protected access for vehicles turning into and out of Commerce Boulevard. As part of the signalization, proposed crosswalks on the north and east side of the intersection would provide additional pedestrian access to and from the Wrentham Business Center, including the proposed gas station and convenience store.

4.9.5 Traffic Operations Analysis

In previous sections of this report, the quantity of traffic within the study area has been discussed. The following sections describe the overall quality of the traffic flow at the study area intersection during the weekday morning, weekday afternoon, and Saturday midday peak hours. As a basis for this assessment, intersection capacity analysis was conducted using the Synchro capacity analysis software at the intersection of Washington Street at Hawes Street/Commerce Boulevard under the 2023 Existing, 2030 No Build, and 2030 Build peak hour traffic conditions. The analysis is based on Synchro capacity analysis methodologies and procedures contained in the *Highway Capacity Manual, 6th Edition* (HCM). A discussion of the evaluation criteria and a summary of the results of the capacity analysis are presented below.

4.9.5.1 Level-of-Service Criteria

Average total vehicle delay is reported as level-of-service (LOS) on a scale of A to F. LOS A represents delays of 10 seconds or less and LOS F represents delays in excess of 50 seconds for unsignalized intersections and greater than 80 seconds for signalized intersections.

4.9.5.2 Capacity Analysis

Intersection capacity analysis was conducted using Synchro capacity analysis software for the intersection of Washington Street at Hawes Street/Commerce Boulevard to evaluate the 2023 Existing, 2030 No Build, and 2030 Build traffic conditions during the weekday morning, weekday afternoon, and Saturday midday peak hours.

The capacity analysis results for the stop-controlled Hawes Street eastbound and Commerce Boulevard westbound approaches to the study area intersection under 2023 Existing and 2023 No Build conditions are presented in Table 2. The overall capacity analysis results for the study intersection under the proposed 2030 Build signalized condition are presented in Table 3.

Table 2: Unsignalized Intersection Capacity Analysis

Intersection	Peak Hour	Approach	LOS ¹	2023 Existing		2030 No Build		
				Delay ²	V/C ³	LOS	Delay	V/C
Washington Street at Hawes Street/ Commerce Boulevard	AM	EB	B	13.4	0.05	C	15.3	0.04
		WB	E	37.4	0.04	E	49.5	0.01
	PM	EB	C	22.2	0.12	C	23.9	0.10
		WB	F	163.9	0.50	F	273.2	0.52
	SAT	EB	B	11.8	0.04	B	12.7	0.04
		WB	F	83.8	0.39	F	159.6	0.53

1 Level-of-Service

2 Average vehicle delay in seconds

3 Volume to capacity ratio

As shown in Table 2 above, the eastbound Hawes Street approach of the intersection of Washington Street at Hawes Street/Commerce Boulevard is shown to currently operate at LOS B during the weekday morning peak hour, LOS C during the weekday afternoon peak hour, and LOS B during the Saturday midday peak hour. The westbound Commerce Boulevard approach is shown to currently operate at LOS E during the weekday morning peak hour, and LOS F but under capacity during the weekday afternoon and Saturday midday peak hours. Under 2030 No Build conditions, the eastbound Hawes Street approach is projected to operate at LOS during the weekday morning peak hour. All other approaches are projected to operate at the same LOS under 2023 Existing and 2030 No Build conditions during the peak hours analyzed.

Table 3: 2030 Build Signalized Intersection Capacity Analysis

Intersection	Movement		Weekday Morning Peak Hour			Weekday Afternoon Peak Hour			Saturday Midday Peak Hour		
			LOS ¹	Delay ²	V/C ³	LOS	Delay	V/C	LOS	Delay	V/C
Washington Street at Hawes Street/ Commerce Boulevard	EB	LTR	A	0.8	0.08	B	17.2	0.09	B	17.2	0.12
	WB	L	E	76.5	0.65	E	73.0	0.80	D	51.8	0.54
		TR	C	31.1	0.65	A	1.0	0.18	A	2.2	0.27
	NB	L	D	38.6	0.25	A	5.2	0.09	D	49.2	0.11
		TR	B	18.0	0.97	A	7.6	0.49	A	6.2	0.61
	SB	L	E	70.0	0.59	A	1.9	0.28	D	41.4	0.51
		TR	A	4.0	0.28	B	13.2	0.92	B	10.0	0.39
Overall			B	17.9	0.82	B	13.4	0.92	B	10.2	0.68

1 Level-of-Service

2 Average vehicle delay in seconds

3 Volume to capacity ratio, intersection capacity utilization reported for overall

With the proposed signal in place, the intersection of Washington Street at Hawes Street/Commerce Boulevard would be projected to operate at overall LOS B during the weekday morning, weekday afternoon, and Saturday midday peak hours. The northbound and southbound through movements on Washington Street are projected to operate at LOS B or better during the peak hours analyzed. The westbound left-turn movement is shown to operate at LOS E during the weekday morning and afternoon peak hours, and LOS D during the Saturday midday peak hour. Signal timings which result in higher delay experienced by the Commerce Boulevard approach are intended to prioritize the Washington Street corridor and will be reviewed in more detail with MassDOT during future permitting processes.

4.9.6 Conclusion

The proposed gas station and convenience store would be developed on Lot 1 of the overall Wrentham Business Center subdivision project located on the east side of Washington Street (Route 1) in Wrentham, MA. The project would construct an approximately 4,500 square foot convenience store and a gas station with six vehicle fueling pumps (12 total fueling positions). Access to the site would be provided by two driveways on Commerce Boulevard.

Based on the analysis presented in this traffic impact study, the proposed development is estimated to result in approximately 78 new vehicle trips (39 entering vehicles and 39 exiting vehicles) during the weekday morning peak hour, approximately 68 new vehicle trips (34 entering vehicles and 34 exiting vehicles) during the weekday afternoon peak hour, and approximately 61 new vehicle trips (33 entering vehicles and 28 exiting vehicles) during the Saturday midday peak hour.

As part of the proposed Wrentham Business Center project, the intersection of Washington Street at Hawes Street/Commerce Boulevard is proposed to be placed under traffic signal control. The proposed signal is warranted based on the counted vehicle volumes on Washington Street and Hawes Street, and the projected vehicle volumes on Commerce Boulevard with the proposed warehouse and gas station projects in place. Signal timings and coordination would be adjusted along the Washington Street corridor to facilitate efficient traffic flow. The proposed signalization of the intersection would include crosswalks on the north and east sides of the intersection. Pedestrian access to and from the project site and proposed signal would be provided via sidewalks on both sides of Commerce Boulevard.

Under 2030 Build conditions, with the proposed gas station and convenience store project, proposed warehouse project, and the traffic signal in place, the intersection of Washington Street at Hawes Street/Commerce Boulevard is projected to operate at overall LOS B during the weekday morning, weekday afternoon, and Saturday midday peak hours. Signal timing and phasing included in the analysis of this traffic impact study is proposed to prioritize movements along the Washington Street corridor, while providing additional signalized protection of vehicles entering and exiting Commerce Boulevard and Hawes Street. Additional coordination and review will be required by

MassDOT to finalize the ultimate signal timing, phasing, and configuration of the proposed signalized intersection.

Based on the analysis presented in this study, the traffic projected to be generated by the proposed gas station and convenience store development is not shown to have a significant impact on the study area intersection with the proposed traffic signal in place.

4.10 Noise & Air Quality

4.10.1 Noise

The impacts of noise in all phases is similar and most impacts are projected to occur during the construction phases of the project. Excavation and heavy equipment movement will be during the normal working daylight hours. Truck movement to and from the site will be routed on to and off Route One where the background noise will mask the noise and where there will be no residential impact.

4.10.2 Air Quality

A GHG emissions analysis was performed for Wrentham Business Center Lots 1 & 3, consistent with the EEA “Greenhouse Gas Emissions Policy and Protocol” dated May 5, 2010. The GHG Policy requires a project to quantify carbon dioxide (CO₂) emissions and identify measures to avoid, minimize or mitigate such emissions, quantifying the effect of proposed mitigation in terms of energy savings and emissions reduction. The GHG Policy requires quantification of GHG emissions from three sources: direct emissions from on-site stationary sources, indirect emissions from energy generated off-site (electricity), and traffic generated by the Project. The Project’s GHG emissions will include: 1) direct emissions of CO₂ from propane gas combustion for space heating; 2) indirect emissions of CO₂ from electricity generated off-site and used on-site for lighting, building cooling and ventilation, and the operation of other equipment; and 3) transportation emissions of CO₂ from Project traffic.

4.10.2.1 Transportation GHG Emissions

The transportation portion of the GHG analysis calculated emissions of CO₂ for the traffic study area for three traffic analysis scenarios:

- 2028 No-Build
- 2028 Build without TDMs
- 2028 Build with TDMs

The vehicle miles traveled (VMT) for the major roadway segments in the traffic study area were calculated by multiplying the length of each road segment by the average daily traffic (ADT) volume on the segment. The CO₂ emissions for each roadway segment were calculated with the EPA MOVES model.

Transportation CO₂ emissions are summarized in Table 1 of the GHG report. The emissions listed for the No-Build and Build cases include both existing volumes on the roadway network and new project-generated trips, which are equivalent to the proposed convenience store. The project's transportation emissions are calculated by subtracting the No-Build values from those for the Build case without TDMs.

4.10.2.2 Building GHG Emissions

The Base Case is the Massachusetts Commercial Energy Code (780 CMR 13) with Massachusetts Amendments to the IECC 2018 Commercial Code. For the convenience store, the 3rd efficiency measure under Section C406.1 is code-option 6, High-efficiency service water heating.

4.10.2.3 Measures to Mitigate Air Quality Impacts

Transportation Demand Management. The Proponent is committed to a program of Transportation Demand Management (TDM) strategies to reduce employee and customer vehicle trips, listed below, and which in aggregate it is estimated will reduce CO₂ transportation emissions by 2%. There is no public transportation that services the project site.

Nearby Food Service – There is an existing Italian restaurant (Luciano's) across Washington Street from the project site and within a short walk.

Provide Bicycle Storage – Bicycle racks will be provided within the project in convenient, weather-protected locations.

Transportation Coordinator – The Proponent will designate a Transportation Coordinator to create programs to encourage the use of alternative modes of travel to single-occupancy vehicles.

Rideshare Matching – The Proponent will establish a rideshare-matching program to match employees in carpools and/or vanpools on at least a quarterly basis. The services of MassRIDES may be enlisted to carry out this program.

Roadway Improvements. Roadway improvements that reduce intersection delays will result in a decrease in motor vehicle emissions. The project proponent is committed to roadway improvements for the project (see the Transportation Section for more details).

Building Design and Operation Mitigation

GHG emissions for the Project are reduced by the following building design and operational energy efficiency measures (EEMs):

Higher Efficiency Building Envelopes - IECC Section C406.1 code-option 7

Higher Efficiency Service Water Heating – IECC Section C406.1 code-option 6

Restaurant Refrigeration Equipment. High efficiency refrigeration equipment will be selected to reduce electrical use by 5% below Code-rated units.

Energy Efficient Interior Lighting – High-efficiency LED fixtures will be used to reduce interior light power density.

Energy Efficient Exterior Lighting – Energy efficient LED fixtures will be used to light the public areas and interior roadways.

Water Conserving Fixtures – All buildings will have low-flow toilets and faucets.

Recycle Materials – All buildings will have recycling areas for cardboard, paper, and plastics.

The net reduction of the Project's total CO₂ emissions is 10.2% compared to the Base Case (Table 4).

Table 4 – GHG Emissions Summary (tons/year)

Source	Base Case	Mitigation Alternative	Change in GHS Emissions
Direct Emissions	146.2	123.1	-15.80%
Indirect Emissions	217.1	197.2	-9.20%
Subtotal	363.3	320.3	-11.80%
Transportation Emissions	70.6	69.2	-2.00%
Total CO ₂ Emissions	433.9	389.5	-10.20%

4.11 Water Supply

The site is currently supplied by the Town of Wrentham's municipal water supply system. The municipal system currently provides water to the site for potable, fire protection, irrigation and HVAC uses from a 12" main on Commerce Blvd that connects to the 12" main on Route One that was installed in 2018. The water main on Route One was upgraded specifically to serve this development and the development at the intersection of Route One and Route 495. The Proponent has had meetings with Town professional staff, including the Water Department, and they do not foresee any issues with water quality or quantity.

The proposed water use for the redevelopment is 7,108 gpd, based on Title 5 estimates (Table 5). Title 5 estimates are generally found to be about 200% of the actual water flows and this is intentional so that sewage disposal systems are designed to be able to handle without undue stress periodic high flow periods that are normal in actual water usage. Therefore, the actual use will probably be in the range of about 3,500 gpd. The Proponent will continue to review the data as we refine the proposed uses and density and continue to coordinate the design of the project with the Wrentham Water Department. A summary of the proposed water demand by use is included in **Table 10**.

Table 5 – Estimated Water and Wastewater Usage

Use	Density	Rate	Total	Comment
PHASE 1				
Indoor Recreation Facility w/restaurant	1	4,183 gpd	4,183 gpd	Estimated from similar facility
PHASE 2				
Warehouse	75 persons	20 gpd/person	1,500 gpd	
Office	10,000 sf	75 gpd/1,000 sf	750 gpd	
PHASE 3				
Gasoline	6 islands	75 gpd/island	450 gpd	
Convenience Store	4,500 sf	50 gpd/1,000 sf	225 gpd	
TOTAL:			7,108 gpd	

Mitigation efforts during all phases will include the installation of water saving fixtures.

4.12 Wastewater

The wastewater on the site will be handled through on-site sewage disposal systems for each lot. Each of the lots will be in separate ownership, with Lot 1 currently owned by WBH, LLC, Lot 2 owned by Supercharged Racing of Wrentham, LLC, and Lot 3 under agreement to ND Acquisitions, LLC. The proposed system on Lot 1 will be located outside of the Zone A and Riverfront Area. The Project is subject to regulation by the local Board of Health under Title 5, State Sanitary Code since the system will create no more than 10,000 gpd of flow on an individual lot.

4.13 Electric And Gas Service

The site is currently serviced by National Grid and there is no gas service. When Commerce Blvd was constructed, the electric utilities were designed to accommodate this growth and we do not anticipate any issues. It is anticipated that electric heat pumps will be used to heat the building.

4.14 Solid and Hazardous Waste

Detailed environmental investigations have been completed for the Project (Section 3.15). Any environmental issues will be addressed within the guidelines of MADEP Construction of Building in contaminated areas WSC-00-425 January 2000. The primary materials of construction for the buildings to be removed include concrete, asphalt, steel and aluminum. Estimates for the quantities of these materials are currently being calculated. Recycling will be an on-going priority of the project team.

4.15 Community Services

4.15.1 Schools

It is not anticipated that there will be any impact on the school system from the Project.

4.15.2 Recreation

It is not anticipated that there will be any impact on the Town recreation facilities from the Project.

4.15.3 Police & Fire

Since the Project is located on a major town artery it is not anticipated that the public safety departments will need to add personnel. Additional calls could be expected due to injuries in the warehouse. This activity is net positive financially for the community in that each ALS run generates approximately \$1,200 for the community. The installation of a signal at the intersection of Commerce Boulevard and Route One will result in a safer turning movement into and out of Commerce Boulevard.

4.15.4 Public Works

It is not anticipated that there will be any impact on the Town Public Works Department from the Project.

4.16 Economic Considerations

4.16.1 Cost-benefit Ratio to the Town of Wrentham

The site is currently assessed at \$283,700 and it is anticipated that the new facility will be assessed for approximately \$4 million which, at a tax rate of \$16.84, will generate an additional \$67,360 in tax revenue for the town. As discussed, it is not anticipated to generate any additional community costs.

4.16.1 Time Schedule

The Project is estimated to commence construction in Fall 2023 and be completed in approximately 12 months.