

# BUILD-OUT ANALYSIS

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## RYE, NEW HAMPSHIRE

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BASELINE BUILD-OUT SCENARIO  
WITH ALTERNATIVE SCENARIOS

**DRAFT** AUGUST 2024

*Prepared by FB Environmental Associates  
For the Town of Rye*





# BUILD-OUT ANALYSIS RYE, NEW HAMPSHIRE

*Prepared as part of the Rye Master Plan 2023-2024 update.*

## **BASELINE BUILD-OUT SCENARIO WITH ALTERNATIVE SCENARIOS**

**DRAFT** AUGUST 2024



### **Prepared by:**

FB Environmental Associates  
97A Exchange Street, Suite 305  
Portland, Maine, 04101  
[www.fbenvironmental.com](http://www.fbenvironmental.com)

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*Photo: Seacoast Science Center*

*Cover photo: Piscataqua Region Estuaries Partnership*



# EXECUTIVE SUMMARY

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*The build-out analysis for the Town of Rye indicates that the Town has moderate buildable area for future development, and much of the Town is constrained due to existing development, large wetland complexes and conserved lands. At current population growth rates and existing regulations, the Town of Rye could reach full build-out in approximately 50 years.*

As part of the development of the Rye Master Plan Update, a build-out analysis was completed by FB Environmental (FBE) to understand potential future development in Rye based on current municipal land-use regulations and vacant land areas. The Rye community enjoys stellar beach access and expansive coastal natural resources and the Town is a desirable place to live. Encompassing approximately 13 square miles in coastal New Hampshire, Rye had a population of approximately 5,543 people at the 2020 U.S. Census.

A build-out analysis is a planning tool that identifies areas with development potential and projects future development based on a set of conditions (e.g., zoning regulations, environmental constraints) and assumptions (e.g., building footprint dimensions). The results of the build-out analysis can be used for planning purposes to help guide future development activities in the community, anticipate future demands on infrastructure, as well as identify specific areas for conservation. Note that the analyses presented herein provide a full build-out scenario based on Rye's current zoning standards (the baseline analysis) which are subject to amendment, in addition to two future alternative scenarios, and should be viewed as estimates only. "Full build-out" is a theoretical condition which represents the period when all available land suitable for residential, commercial, and industrial uses has been developed to the maximum conditions permitted by local ordinances. FBE presented the baseline build-out analysis results as ranges to indicate potential variability in future development.

The Town of Rye has approximately 2,985 individual parcels. The baseline build-out analysis identified that 12% - 14% (968 - 1,184 acres of approximately 8,407 acres) of the Town is buildable under current zoning regulations. The Single Residence District has the most acreage of buildable area at 761 - 930 acres. FBE identified 2,772 existing principal buildings in the Town of Rye, and the build-out analysis projected that an additional 414 - 506 buildings could be constructed in the future, resulting in a total of 3,136 - 3,228 buildings in the Town of Rye at full build-out. The potential for a moderate increase in the baseline analysis' projected new buildings (15% - 19% increase compared to existing buildings), is strongest in central and inland Rye (Figure 1). In central inland Rye, many of the areas identified in the build-out analysis that can accommodate future growth could be considered "backlands", or parcels not currently accessible to development by existing roads. These areas may only be developed if a right-of-way or other access road is developed. If the population of Rye continues to grow at rates identified in the 10-, 20-, and 50- year period and current zoning and development constraints remain the same, full build-out would hypothetically occur in the mid to late 21st century.

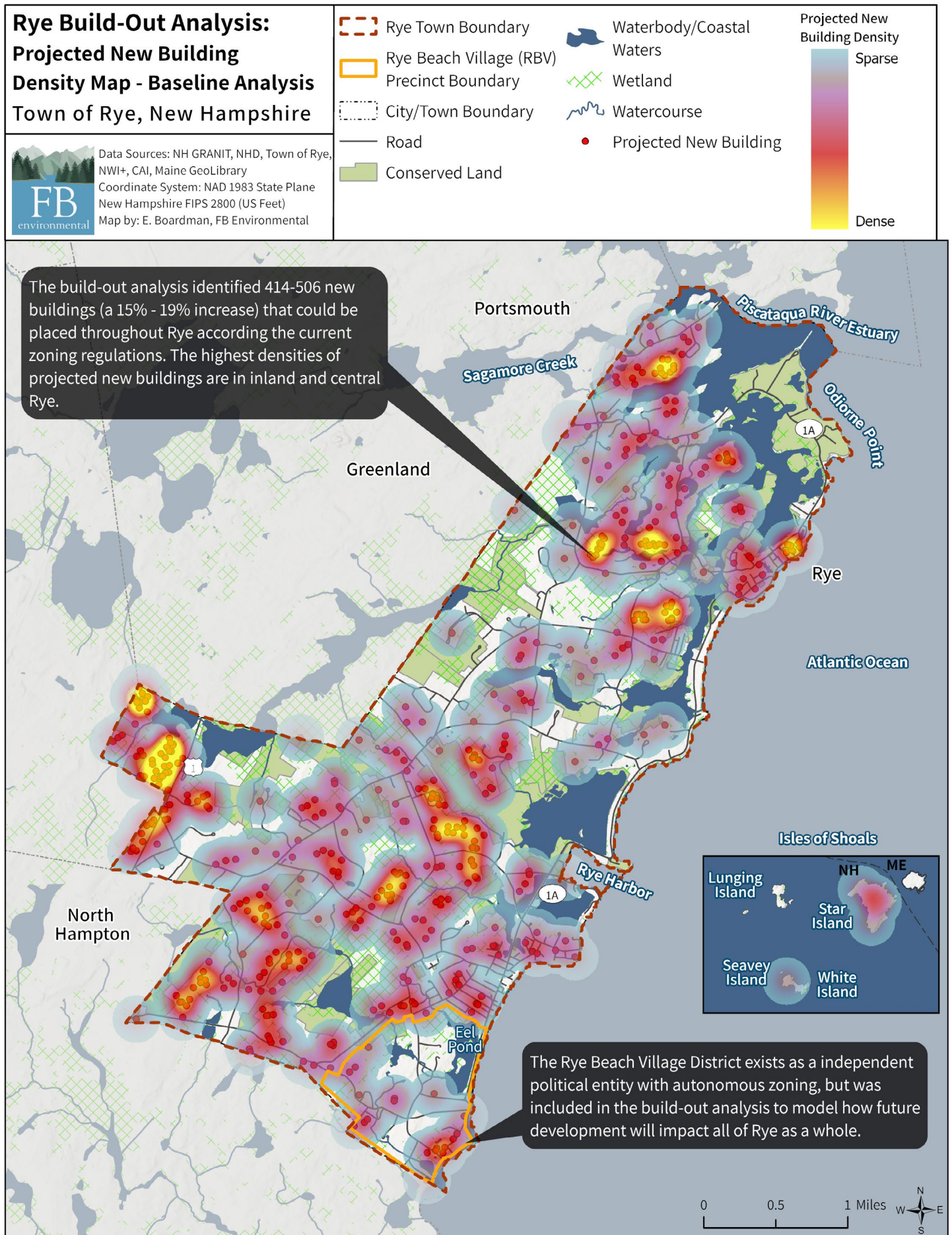
Alternative build-out scenarios can provide opportunities to understand how hypothetical changes to the Town of Rye's zoning ordinances or development exclusion in certain portions of the town may affect projected buildings and buildable area. The two alternative scenarios used by FBE in this project are multi-faceted and combine alternative zoning regulations with additional setbacks from natural resources to provide better resource protection while continuing to allow growth in targeted areas. Both alternative scenarios include enhanced resource protection. The first alternative scenario also includes moderate development increases in the town center and along Route 1, while the second alternative scenario includes slightly greater development increases in these two areas than in the first alternative scenario. The first alternative scenario showed that 10% - 12% (849 - 1,035 acres) of the Town of Rye would be buildable under the hypothetical changes and projects an additional 1,127 - 1,377 buildings, resulting in a total of 3,849 - 4,099 buildings. The second alternative scenario showed that 10% - 12% (853 - 1,042 acres) would be buildable and projects an additional 1,292 - 1,580 buildings, to equal a total of 4,014 - 4,302 buildings.

Ultimately, this build-out analysis for the Town of Rye indicated that due to extensive environmental development constraints (particularly wetlands), conserved land, and existing buildings, the Town of Rye has moderately low buildable area for future development compared to other New Hampshire communities.



Photo: NH Municipal Association





**FIGURE 1.** Building density map of projected new buildings in Rye based on the baseline build-out analysis results.



# INTRODUCTION

The Town of Rye, located in coastal New Hampshire, encompasses approximately 13 square miles and covers 52% of the state's coastline. The Rye build-out analysis describes potential future development in Rye based on current municipal land-use regulations and identified natural resource constraints. Model results provide the community with a powerful educational tool that can guide the Master Plan update and future planning efforts.

A build-out analysis is a computer model of community growth and development that can be used to investigate how much land is available for development, how a community might change in appearance and function over time, and what the potential impacts from future development might be. Performing a build-out analysis shows a locality what land is available for development, how much development can occur, and at what densities. The results of the analysis provide estimates of the numbers of potential lots and new building units the study area may see developed at some point in the future. "Full build-out" refers to the hypothetical time and circumstances in the future whereby no more building construction may occur, or the point at which lots have been subdivided to the minimum size allowed and there is no more "developable" land.

The build-out analysis presents projected new building placement and density only, and does not assign building use. The analysis does not take into account the current public and social services or resource capacity needed to serve the population. Instead, based on projected future development, the analysis can be used plan for future service needs.

*A build-out analysis is a powerful tool to understand future development.*

**How  
Much?**

- Under current zoning, how much land is available for development?

**Where &  
When?**

- How might Rye's appearance change over time?

**Effects?**

- What are the potential impacts from future development?



Photo: Marinas.com



Photo: NH State Parks



# METHODS

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## COMMUNITY VIZ SOFTWARE

FBE conducted the build-out analysis using ESRI ArcMap v.10.8 and ArcPro geographic information system (GIS) software and CommunityViz v.5.2 extension. CommunityViz is a GIS-based, decision-support tool designed to help planners and resource managers visualize, analyze, and communicate about important land use decisions. FBE utilized the software's 'Build-out Wizard' to calculate the development capacity of the study area (numerically and spatially), as well as the 'Time Scope Analysis' tool to project and visualize how future development might occur over time.

The baseline build-out analysis and alternative scenario build-out analyses were performed according to the following general steps:

1. Collect data on existing conditions in the study area: existing buildings, zoning, and growth rates.
2. Collect and/or create relevant GIS data (e.g., development constraints layers such as wetlands and conserved lands).
3. Analyze build-out potential using CommunityViz's Build-Out Wizard tool.
4. Determine potential dates at which full build-out is reached using CommunityViz's TimeScope Analysis tool.

## DISCLAIMER AND DATA LIMITATIONS

Much of the data used in this analysis were serviced from publicly available datasets obtained from New Hampshire's Geographic Information System online data library (NH GRANIT). Many of these data layers were created from remotely-sensed data (e.g., aerial photography, digital orthophotos, and satellite images) and large, landscape-level mapping projects (e.g., soil units). Due to their inherent levels of accuracy, the data layers were originally intended to be viewed at certain scales (generally 1:24,000 or 1:25,000). Data provided by the Town of Rye was used to increase resolution where possible.

NH GRANIT maintains a continuing program to identify and correct errors in these data but makes no claims as to the validity or reliability or to any implied uses of these datasets. As a result, the data presented herein should be used for planning purposes only. If greater data precision is required, this report should be supplemented with field surveys or other on-the-ground methods of data collection. There may also be minor data discrepancies between datasets used in this analysis due to the variety of source materials and mapping standards used by the original creators of the datasets. The reader is encouraged to refer to the original referenced sources if specific data inconsistencies need to be resolved.

### *RYE BEACH VILLAGE DISTRICT*

Within the boundaries of the Town of Rye, is the Rye Beach Village (RBV) District. The Village was formed by an act of the NH Legislature and encompasses the southeastern portion of Rye. The Village legally exists as an independent political entity that has autonomous zoning authority. The Town of Rye continues to have responsibility for emergency services, education and health services, infrastructure oversight, and maintenance of local roadways within the Village. While the Town and Village are distinct political entities, many of the goals of both jurisdictions historically align with similar intents to protect natural resources, preserve community character, and ensure proper investment in community services and capital expenses. A key difference between the Town and Village are that they maintain separate master plans and zoning ordinances as they have separate authority to enact zoning regulations and land use decisions. The Rockingham Planning Commission provided FBE with RBV zoning files and information. The RBV district is included in the build-out analysis as future development will impact all of Rye, though it is acknowledged that the RBV has separate legal authority.

## EXISTING BUILDINGS

FBE used 2022 ESRI World Imagery and 2023 Google Earth Aerial Imagery to create a GIS layer of existing buildings within the study area. Examination of aerial imagery resulted in the creation of a shapefile with 2,722 points representing principal structures such as homes and office buildings (secondary structures such as garages and sheds were not included; Figure 2). In areas where it was difficult to discern the presence of a dwelling (typically due to shadows or the presence of trees), FBE referred to parcel data from the Town of Rye and the Building Footprint Data sourced from Microsoft Office. This provided increased accuracy in the development of the existing buildings layer.



## POPULATION GROWTH RATES

According to the US Census Bureau, the Town of Rye has experienced steady but slow population growth in the last 50 years (Tables 1-2), increasing from 4,083 people in 1970 to 5,543 people in 2020. Rye has experienced a slightly slower growth rate than the State of New Hampshire over the last 50 years, though at a similar pace with the state over the past 10 years.

**TABLE 1.** US Census Bureau population for Rye from 1970-2020. Data from [www.census.gov](http://www.census.gov).

Town	Population					
	1970	1980	1990	2000	2010	2020
Town of Rye	4,083	4,508	4,612	5,182	5,298	5,543
New Hampshire (for reference)	737,681	920,610	1,109,252	1,235,786	1,316,470	1,377,529

**TABLE 2.** Compound annual growth rates for Rye over 10- year, 20-year, and 50-year spans.

Town	Compound Annual Growth Rate		
	50 Year (1970-2020)	20 Year (2000-2020)	10 Year (2010-2020)
Town of Rye	0.61%	0.34%	0.45%
New Hampshire (for reference)	1.26%	0.54%	0.45%

## BASELINE ZONING

The process of modeling zoning requirements by the Town of Rye to create spatial datasets of development restrictions is critical to a build-out analysis (Table 3). There are ten relevant zones within the study area. FBE obtained a digital layer of zoning and parcels from CAI Technologies via the Town of Rye, and zoning requirements from the town's zoning code. Rye Beach Village District files were obtained from the Rockingham Planning Commission and RBV zoning code was accessed via the Town of Rye website.

**TABLE 3.** Zoning standards used in the baseline build-out for the Town of Rye.

Zone	Front Setback (ft)	Side/Rear Setback (ft)	Minimum Lot Size (sq. ft)	Minimum Lot Size (acres)
Rye				
Single Residence District (SR)	40	20/30	66,000	1.55
General Residence District (GR)	30	20/30	44,000	1.01
Business District (B)	30	20/30	44,000	1.01
Commercial District (C)	30 / 60*	20/24	44,000	1.01
Public Recreation District (PREC)	Recreational purposes only.			
Public Recreation and Conservation District (PRAC)	Recreational purposes only.			
Conservation District (CON)	Residential, commercial, and industrial uses prohibited.			
Rye Beach Village (RBV) District				
RBV Low Density Residential District	40	25	60,000	1.38
RBV Medium Density Residential District	40	25	43,560	1
RBV Recreational District	50	30	217,800	5
*Along Lafayette Road, the front setback is 60 feet.				
When the side and rear setback differ, the smaller of the two is used in the model.				

## BASELINE DEVELOPMENT CONSTRAINTS

To determine where development may occur, a build-out analysis first subtracts land unavailable for development due to physical constraints, including environmental restrictions (e.g., wetlands), zoning restrictions (e.g., Wetland Conservation District, overlay districts, street Right-of-Ways, etc.), and practical design considerations (e.g., lot layout inefficiencies). Existing buildings also reduce the capacity for new development (displayed on the map in Figure 2). FBE created the existing buildings layer and obtained town zoning information and/or setback requirements from the town zoning ordinances and the Rockingham Planning Commission. All other data were acquired from CAI Technologies, NH GRANIT, the National Hydrography Dataset, and the National Wetland Inventory to model the development constraints. A list of development constraints used in the baseline build-out analysis is described below, and summarized in Table 4.

- Conserved land areas, sourced from the Town of Rye via CAI Technologies, were cross checked against the NH state database and a list of recently updated conserved parcels from the Town of Rye.
- Existing building locations constrain where future development may be placed. Only primary buildings are identified (i.e., main houses, condo buildings, etc., but not garages, sheds, hotel/motel units, etc.).
- Per the Wetland Conservation District, there is a 100-foot setback from the edges of all tidal marshes, bays, estuaries, rivers, river tributaries and creeks, natural perennial streams, vernal pools, ponds one acre in size or larger (specifically Eel Pond, Burke's Pond, Brown's Pond, and East Rye Pond), wetlands within the Berrys Brook watershed, wetlands in Bailey's Brook, Seavey Creek, Witches Creek, and Parsons Creek; a 75-foot setback from wetlands that are not non-bordering, isolated wetlands; and a 25-foot setback from non-bordering, isolated wetlands. FBE used the National Wetland Inventory Plus dataset to determine wetland type and size, and buffer it appropriately.
- Soils that are poorly drained or very poorly drained (typically referred to as hydric soils) were obtained from the Rye Natural Resource Inventory (NRI) and the United States Department of Agriculture Web Soil Survey dataset. These soils hinder development due to waterlogging, causing structural instability and flood risks.
- Slopes that are steeper than 20% are considered a development constraint, however there are no steep slopes within the Town of Rye large enough to be detected from topographic datasets.
- Roads are considered a development constraint and are buffered by 30 feet to adequately model this constraint.
- Rye zoning overlays were reviewed for relevant development constraints, including the Coastal Area Overlay District, Historic District, Rye Beach Precinct, Multi-Family Dwelling Overlay District, Rye Landfill Groundwater Management Zone, and Aquifer and Wellhead Protection District. Though constraints exist - such as building heights and/or additional permit requirements, no additional development constraints were included in the model from these zoning overlay districts.
- The Public Recreation District, Public Recreation and Conservation District, and Conservation District do not allow residential, commercial, or industrial development.

**TABLE 4.** Summary of development constraints for baseline build-out analysis for the Town of Rye.

Development Constraint Description	Constraint
Conserved Land	No development
Road	No development
Hydric Soils	No development
Water Resources	100-foot setback from the edges of all tidal marshes, bays, estuaries, rivers, river tributaries and creeks, natural perennial streams, vernal pools, ponds one acre in size or larger, and specifically Eel Pond, Burke's Pond, Brown's Pond, and East Rye Pond.
	100-foot setback from wetlands within the Berrys Brook watershed.
	100-foot setback from wetlands in Bailey's Brook, Seavey Creek, Witches Creek, and Parsons Creek.
	75-foot setback from other wetlands not non-bordering, isolated wetlands.
	25-foot setback from isolated, non-bordering wetlands.
Public Recreation, Public Recreation and Conservation, and Conservation Districts.	No development



Building setbacks were estimated based on the average front and rear setbacks specified by the zoning ordinance (Table 3). Setbacks are measured from building center points in CommunityViz. To account for this, building footprints need to be estimated to avoid building overlap. FBE estimated the dimensions of the minimum building footprint to be 35 feet x 35 feet. This number was added to the average front/rear setback for each zone to estimate the “Minimum Separation Distance” used in CommunityViz. Minimum lot sizes were based on the requirements for each zone (Table 3). Future lots were made the smallest size allowable for the zoning district, and unit types (e.g., residential house, commercial building) were not specified.

Building density is difficult to predict with precision in a build-out analysis because the exact siting of construction and development occurs in a somewhat unpredictable fashion. A wide range of factors (in addition to those mentioned above) can decrease the permitted density: stormwater drainage facilities, right-of-ways, road frontage, conservation restrictions, etc.. A standard approach to account for these density losses is to use an “efficiency factor,” a simple multiplier that adjusts the “lot efficiency,” the amount of land on a parcel that is available for construction after addressing all constraints. Simply stated, an efficiency factor is used to account for information that can only be obtained upon on-the-ground inspection of parcels. Efficiency factors are entered as a percentage, where 100% means complete efficiency (no density lost) and 0% means no buildings are estimated for a zone. Based on professional experience, FBE used an efficiency factor of 66% for all zones to account for these unknown factors that will affect the exact siting of construction. FBE presented build-out analysis results as ranges to indicate potential variability in future development.

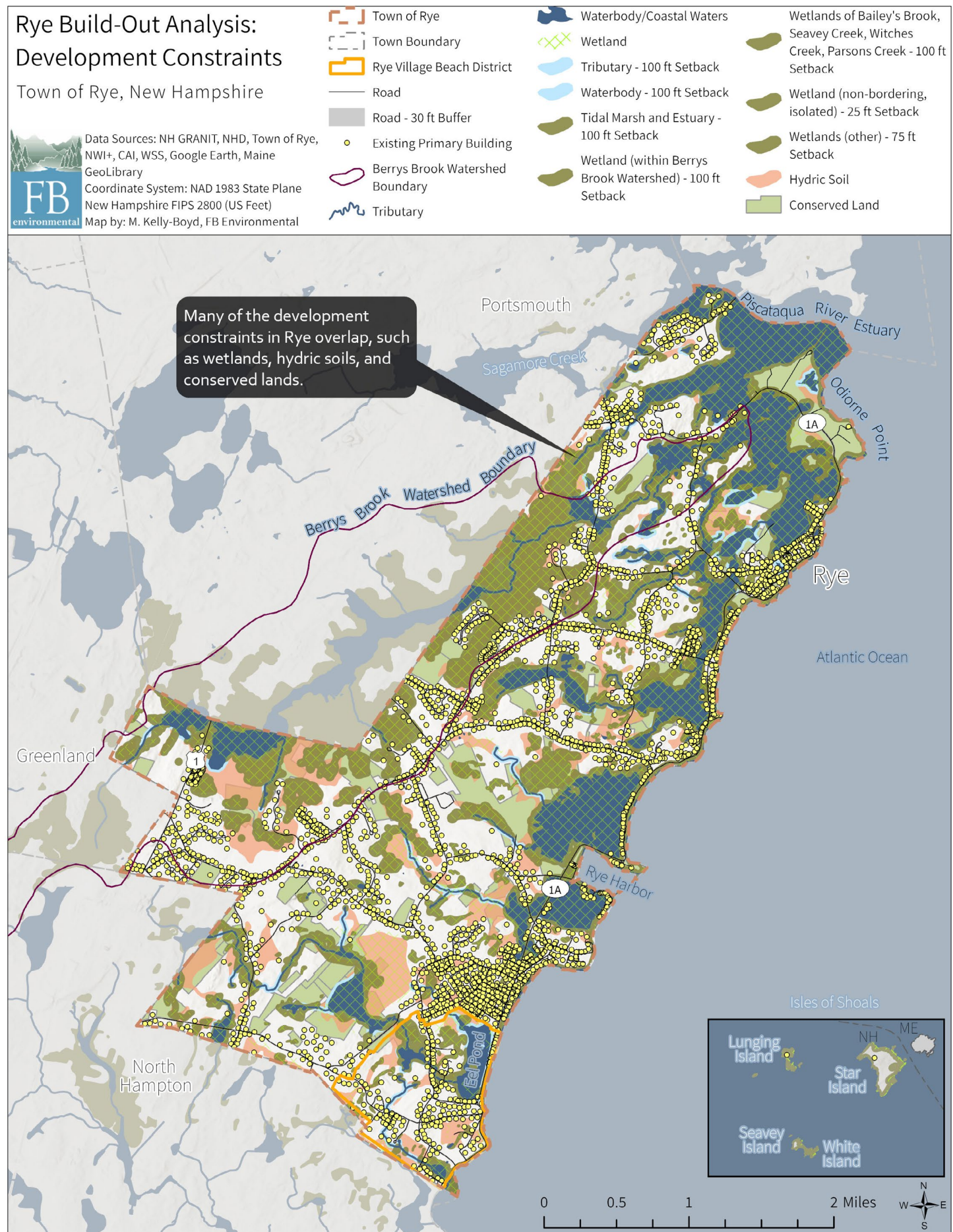
## **PROJECTED NEW BUILDINGS**

A build-out analysis is comprised of a numeric and spatial build-out. A numeric build-out is completed first in order to obtain a number of total projected new buildings based on minimum lot size and total area of buildable land. A spatial build-out is then run to place building points on the map, converting numeric building counts into points representing individual structures. A spatial build-out considers the size of projected new buildings, geometry of lots, and setbacks to various spatial features incorporated into the build-out (e.g., lot lines, roads, natural features). For example, an oddly shaped lot may have enough total area for two buildings, but due to setback rules or minimum separation distances, it may only fit one unit. Along with development constraints and lot size, a spatial build-out also considers the minimum allowable separation distance between buildings or parcel shapes. The build-out does not consider the conversion of small camps to larger residential buildings or redevelopment projects. During the placement of projected new buildings onto buildable area, the user has control over whether the spatial build-out building points are distributed in a random or grid pattern, and if the points should follow existing roads. The grid pattern is best suited for new urban-type development, and the random layout is best for suburban-type development. For the Town of Rye, the random layout was deemed most appropriate.

## **TIMESCOPE ANALYSIS**

The TimeScope Analysis is a computer model of community growth that simulates change over time in a study area. In our analysis, each projected new building within the town was assigned a hypothetical future build date based on a population growth rate for Rye. For the baseline analysis, FBE used compound annual growth rates representing 10-, 20-, and 50-year periods, from 2010-2020 (0.45%), 2000-2020 (0.34%), and 1970-2020 (0.61%), respectively, to run three iterations of the TimeScope Analysis. The projection also provides a date of full build-out based on each historical population growth rate, to provide a range of estimated dates.

This tool provides an analysis of how the number of buildings within the Town might grow based on projected population rates, but it does not take into account future zoning amendments or design considerations as the population grows, which may increase or decrease population changes (e.g., changes in residential zoning or land conservation). It is also important to note that the growth rates used in the TimeScope Analysis are based on town-wide census statistics. Using census data to project population increase and/or decrease for development planning has the inherent limitation of projecting future growth based on past conditions. As such, the TimeScope Analysis might over- or under-estimate the time required for the study area to reach a hypothetical full build-out. Numerous social and economic factors influence population change and development rates, including policies adopted by federal, state, and local governments. The relationships among the various factors are complex and therefore difficult to model.



**FIGURE 2.** Development constraints (including existing buildings) in Rye.



# BASELINE ANALYSIS RESULTS

## PARCELS

There are approximately 2,958 individual parcels in the Town of Rye. Of note, within the assessor's database, some parcels are listed more than once (due to multiple ownership, such as under a condo association), but only distinct parcels were included in the analysis.

## CURRENT BUILDABLE AREA

Based on the current input parameters, the baseline build-out analysis showed that approximately 12% - 14% (968 - 1,184 acres) of the Town is buildable under current zoning regulations (Table 5, Figure 3). The zone in the Town of Rye with the most acreage of buildable area is the Single Residence District zone with 761-930 acres of buildable area. The zones with the highest percentage of buildable area in the Town of Rye is the Commercial District with 34% - 42% buildable area, and within the Rye Beach Village District, the Recreational District has the highest percent buildable area remaining at 46% - 56%.

**TABLE 5.** Amount of buildable land in the Town of Rye.

Zone	Total Area (Acres)	Buildable Area (Acres)	Percent Buildable Area
<b>Rye</b>			
Single Residence District (SR)	5,929	761 - 930	13% - 16%
General Residence District (GR)	457	45 - 55	10% - 12%
Business District (B)	48	2 - 3	5% - 6%
Commercial District (C)	276	94 - 115	34% - 42%
Public Recreation District (PREC)	78	-	0%
Public Recreation and Conservation District (PRAC)	368	-	0%
Conservation District (CON)	701	-	0%
<b>Rye Beach Village District</b>			
RBV Low Density Residential District	282	17 - 21	6% - 7%
RBV Medium Density Residential District	184	11 - 13	6% - 7%
RBV Recreational District	84	38 - 47	46% - 56%
<b>Total</b>	<b>8,407</b>	<b>968 - 1,184</b>	<b>12% - 14%</b>

## UNDERSTANDING "BACKLANDS" IN RYE

In central inland Rye, many of the areas identified in the build-out analysis that can accommodate future growth could be considered "backlands", or parcels not currently accessible to development by existing roads. These areas may only be developed if a right of way or other access road is developed. It is important to note that the build-out analysis assumes that all land ownership could change – as in, a private landowner that has access to those undeveloped lands could sell their land to allow a right of way to the back lots. The likelihood of change of ownership is not something the build-out analysis can account for. Overall, this characteristic of Rye's buildable area indicates that there is more variability in when full build-out may be reached.

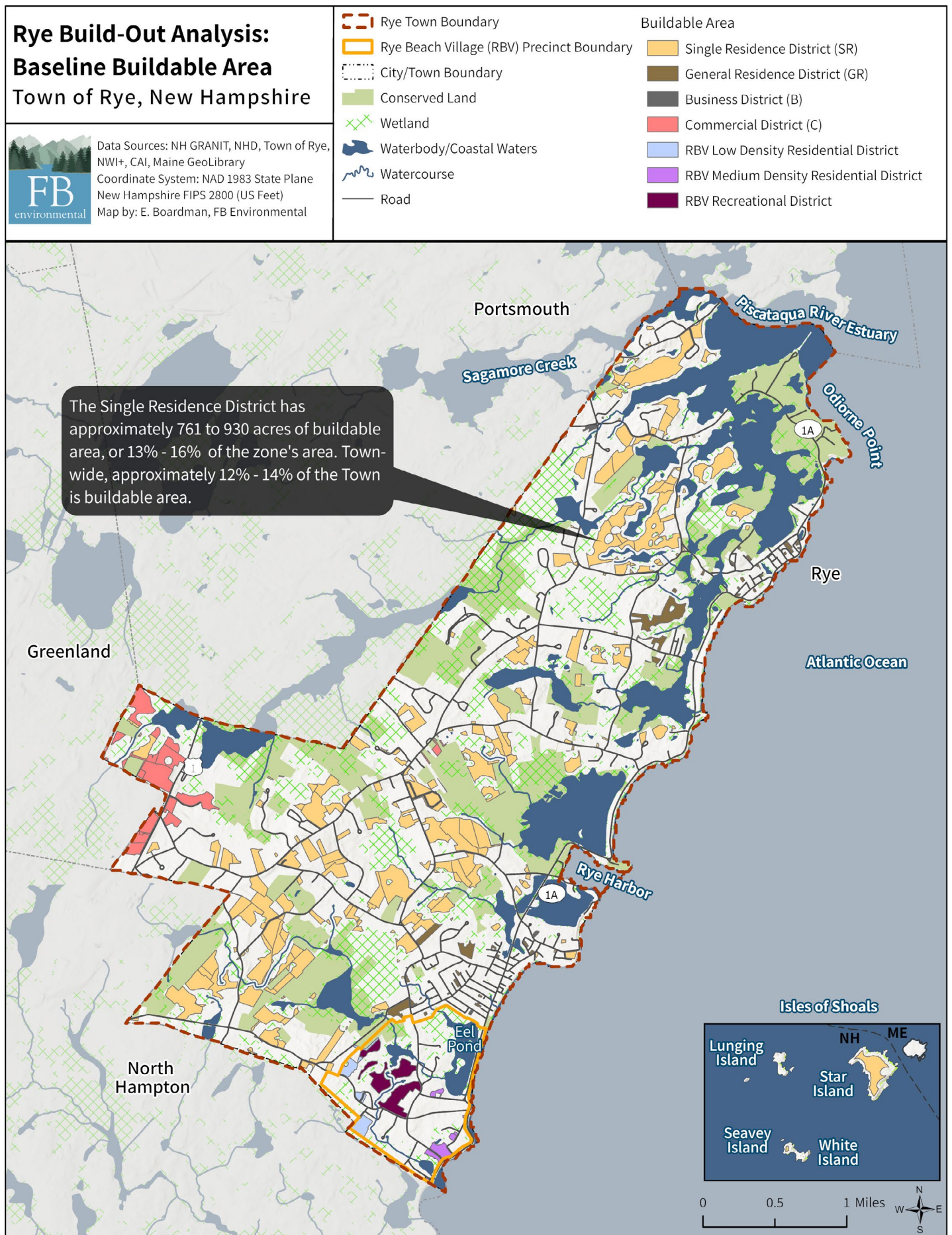


FIGURE 3. Buildable area in the Town of Rye under the baseline build-out analysis.



## PROJECTED NEW BUILDINGS

The existing buildings layer contains 2,722 principal buildings. Based on the current input parameters, the baseline build-out analysis projected that an additional 414 - 506 projected new buildings could be constructed in the future, resulting in a total of 3,136 - 3,228 buildings (Table 6, Figure 5). The Single Residence District zone has the largest number of projected new buildings at 285 - 349 buildings.

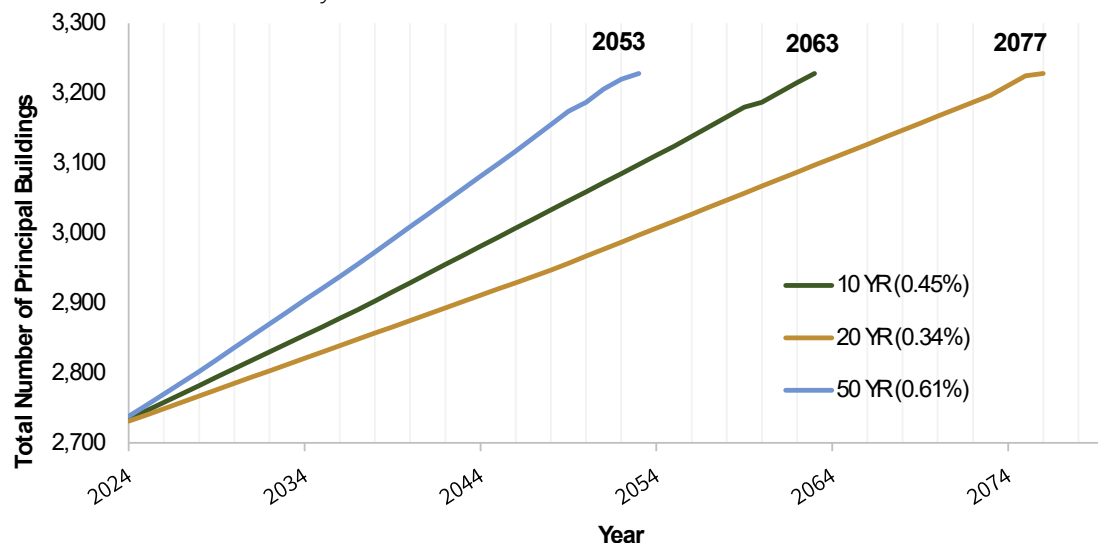
**TABLE 6.** Projected increase in buildings by zone in Rye under the baseline build-out analysis.

Zone	No. Existing Buildings	No. Projected New buildings	Total No. Buildings	Percent Increase
<b>Rye</b>				
Single Residence District (SR)	1,466	285 - 349	1,751 - 1,815	19% - 24%
General Residence District (GR)	836	52 - 64	888 - 900	6% - 8%
Business District (B)	74	4	78	5%
Commercial District (C)	144	56 - 68	200 - 212	39% - 47%
Public Recreation District (PREC)	13	0	13	0%
Public Recreation and Conservation District (PRAC)	1	0	1	0%
Conservation District (CON)	4	0	4	0%
<b>Rye Beach Village District</b>				
RBV Low Density Residential District	63	6 - 8	69 - 71	10% - 12%
RBV Medium Density Residential District	117	9 - 11	126 - 128	8% - 9%
RBV Recreational District	4	2	6	45% - 55%
<b>Total</b>	<b>2,722</b>	<b>414 - 506</b>	<b>3,136 - 3,228</b>	<b>15% - 19%</b>

## TIMESCOPE ANALYSIS

Three iterations of the TimeScope Analysis were run using compound annual growth rates (CAGR) for 10-, 20-, and 50-year periods, from 2010-2020 (0.45%), 2000-2020 (0.34%), and 1970-2020 (0.61%), respectively (Table 2). Full build-out under the baseline condition is projected to occur in 2056-2063 at the 10-year CAGR, 2067-2077 at the 20-year CAGR, and 2047-2053 for the 50-year CAGR (Figure 4).

This analysis shows that if the Town of Rye population continues to grow at recent rates identified in the 10-, 20-, and 50-year period, and current zoning and other development constraints remain the same, full build-out would hypothetically occur in the mid to late 21st century.



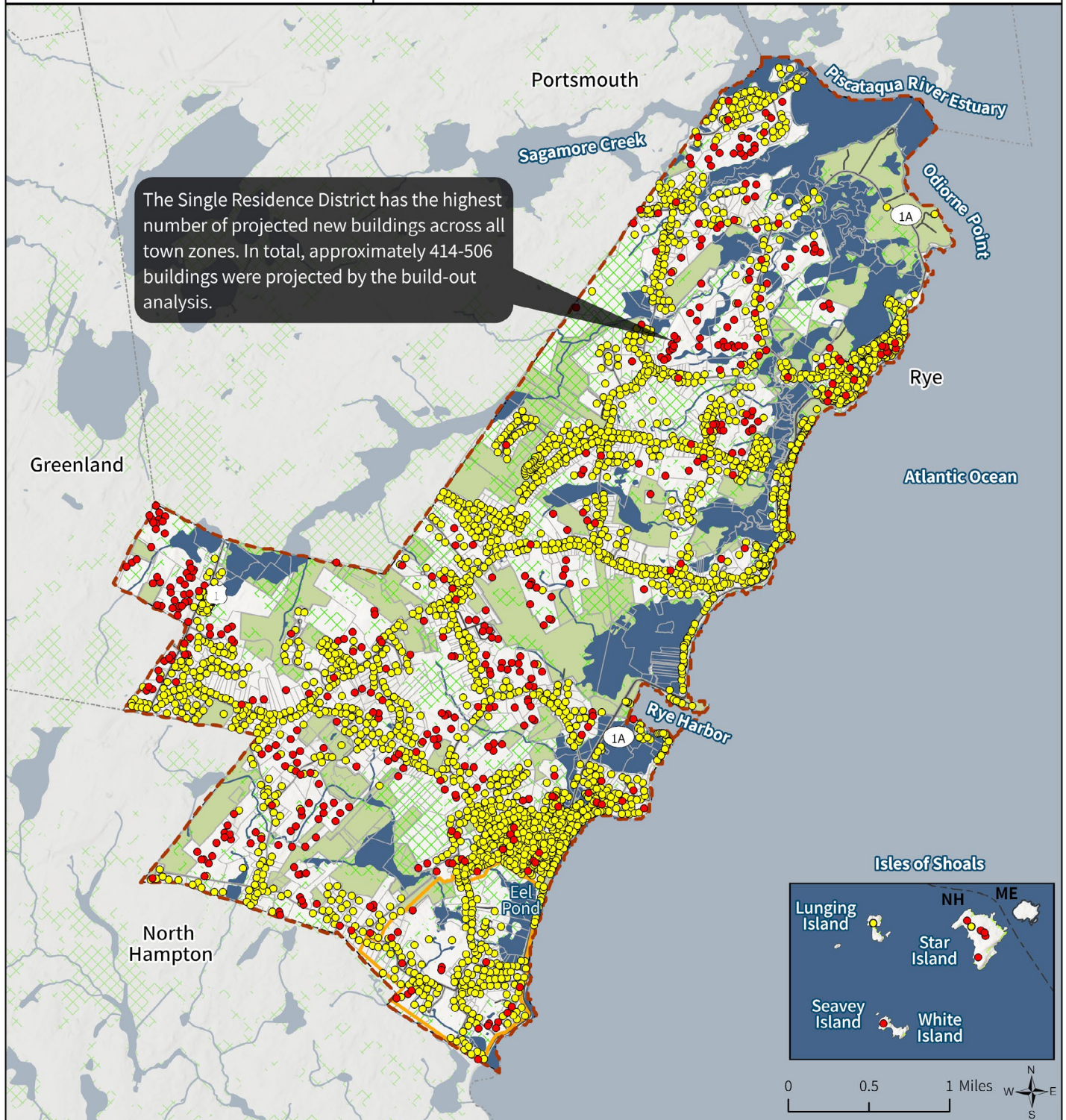
**FIGURE 4.** Full build-out projects for the Town of Rye (using the population growth rates in Table 2).

# **Rye Buildout Analysis: Projected Buildings - Baseline Town of Rye, New Hampshire**



Data Sources: NH GRANIT, NHD, Town of Rye, NWI+, CAI, Maine GeoLibrary  
Coordinate System: NAD 1983 State Plane New Hampshire FIPS 2800 (US Feet)  
Map by: E. Boardman, FB Environmental

- |   |                          |
|---|--------------------------|
| Rye Town Boundary                         | Waterbody/Coastal Waters |
| Rye Beach Village (RBV) Precinct Boundary | Wetland                  |
| City/Town Boundary                        | Watercourse              |
| Parcel Boundary                           | Road                     |
| Conserved Land                            | Projected New Building   |
|   | Existing Building        |



**FIGURE 5.** Projected new buildings in the Town of Rye under the baseline build-out analysis.



# ALTERNATIVE SCENARIOS RESULTS

## OBJECTIVE

An alternative build-out scenario provides an opportunity to understand how hypothetical changes to the Town of Rye's zoning ordinances or development exclusion in certain portions of the town may affect projected buildings and buildable area. The additional scenarios analyzed below are multi-faceted and use alternative zoning regulations and additional natural resource protections.

Due to the fact that the alternative scenarios are multi-faceted and changes in buildable area and projected buildings from the baseline scenario are due to multiple confounding factors, the results of the alternative scenarios should be viewed holistically. For example, viewing the change in buildable areas as a whole - buildable area in the first alternative scenario is 10% - 12% as compared to 12% - 14% in the baseline analysis - shows the effect of the development constraints more than viewing density changes for the selected areas of town (the Town Center and Route 1 districts). Whereas the number of projected buildings is more strongly represented by the density changes rather than the modified development constraints.

Through collaboration with the Town of Rye and Resilience Planning and Design, the two alternative scenarios portray the same modified development constraints but differ in the building densities of certain town districts - the Town Center and Route 1 (Figure 6). This two-fold approach provides added natural resource protection in the face of climate change while also directing development at varying densities to specific areas of town best suited to receive additional development. Summary tables of the two alternative scenarios compared to the baseline analysis can be found toward the end of the document (Tables 12 and 13).

## ALTERNATIVE DEVELOPMENT CONSTRAINTS

The two alternative scenarios include the development constraints of the baseline analysis such as conserved land, roads, hydric soils, and certain zoning districts (Public Recreation, Public Recreation and Conservation, and Conservation Districts). Existing setbacks from water and wetland features are also included but are doubled (Table 7). The alternative scenarios include two new development constraints: areas inundated under both 1 and 4 feet of sea level rise, and FEMA flood hazard areas from a 1% chance of flooding (100-year storms) and 0.2% chance of flooding (500-year storms). It is important to note that the Isles of Shoals are included as a development constraint due to a lack of spatial data on the islands. Sea level rise and FEMA data do not extend to the Isles of Shoals but likely have an affect on the islands. Therefore, the Isles of Shoals were treated as non-buildable areas in the alternative scenarios (Table 7).

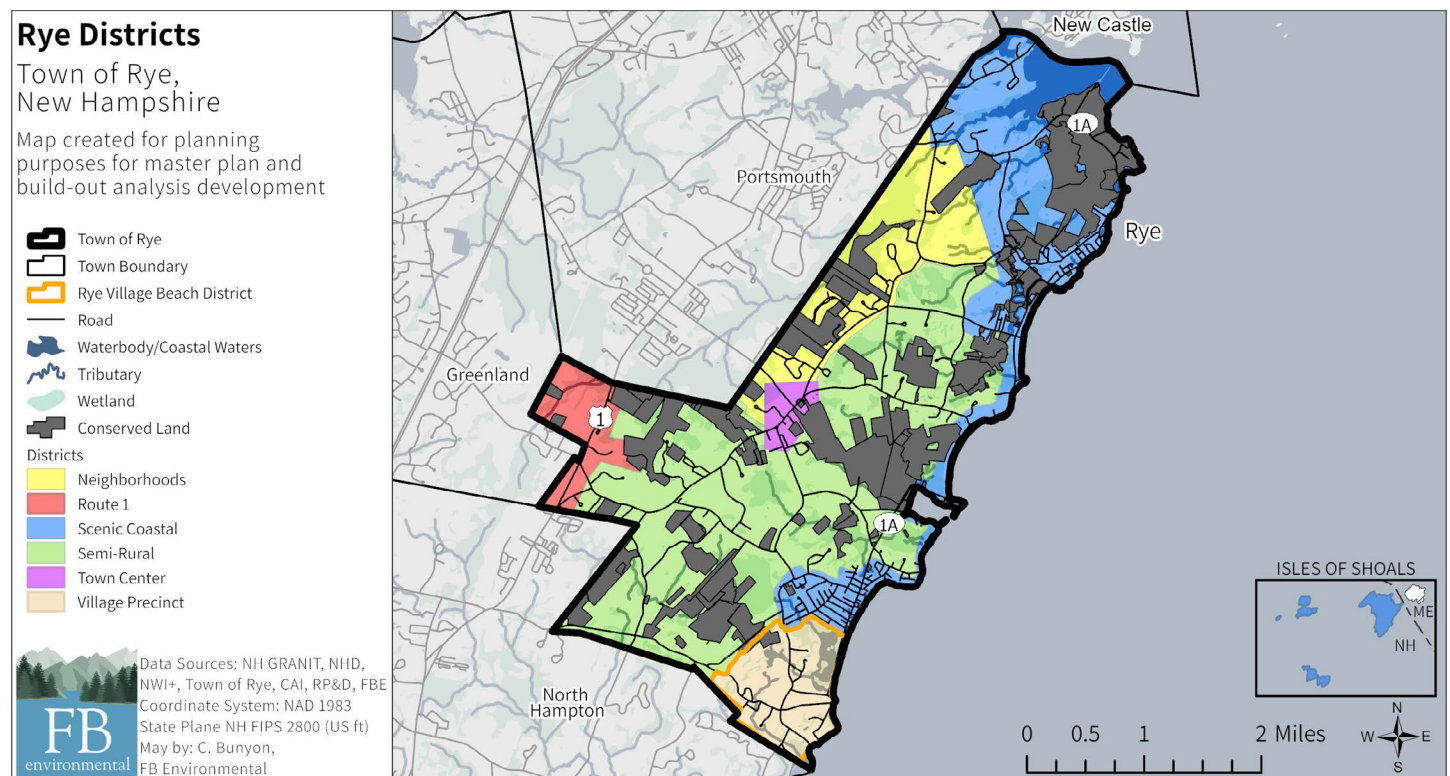
As a result of the additional development constraints throughout Rye and the modified building densities in the Town Center and Route 1 districts, the factors that cause changes in the buildable area and projected buildings are difficult to isolate, and the reader is encouraged to view the alternative scenarios holistically.



Photo: Storm surge over Route 1A in March of 2018. Credit: Jerry Monkman

**TABLE 7.** Alternative scenario development constraints and zoning changes compared to the baseline analysis.

Development Constraint Description	Baseline Analysis Conditions	Alternative Scenario #1	Alternative Scenario #2
Conserved Land	No development	No development	No development
Road	No development	No development	No development
Hydric Soils	No development	No development	No development
Public Recreation, Public Recreation and Conservation, and Conservation Districts.	No development	No development	No development
Tidal marshes, bays, estuaries, rivers, river tributaries and creeks, natural perennial streams, vernal pools, ponds one acre in size or larger, and specifically Eel Pond, Burke's Pond, Brown's Pond, and East Rye Pond	100-foot setback	200-foot setback	200-foot setback
Wetlands within the Berrys Brook watershed	100-foot setback	200-foot setback	200-foot setback
Wetlands in Bailey's Brook, Seavey Creek, Witches Creek, and Parsons Creek	100-foot setback	200-foot setback	200-foot setback
Other wetlands not non-bordering, isolated wetlands	75-foot setback	150-foot setback	150-foot setback
Isolated, non-bordering wetlands	25-foot setback	50-foot setback	50-foot setback
Areas inundated under both 1 and 4 feet of sea level rise	-	No development	No development
FEMA flood hazard areas for 1% and 0.2% events (100-year and 500-year storms)	-	No development	No development
Isles of Shoals	-	No development	No development
Town Center District	Existing lot sizes by zone (Table 3)	10 units/acre for all zones in this district	30 units/acre for all zones in this district
Route 1 District	Existing lot sizes by zone (Table 3)	4 units/acre for all zones in this district	6 units/acre for all zones in this district


**FIGURE 6.** Rye District boundaries used for the alternative scenarios. These districts are based on future land use visioning from the Master Plan update.



# Rye Build-Out Analysis: Alternative Scenario Development Constraints

Town of Rye, New Hampshire



Data Sources: NH GRANIT, NHD, Town of Rye, NWI+, CAI, WSS, Google Earth, Maine GeoLibrary, FEMA  
Coordinate System: NAD 1983 State Plane New Hampshire FIPS 2800 (US Feet)  
Map by: C. Bunyon, FB Environmental

- |                                 |  |   |
|---------------------------------|--|---|
| Town of Rye                     | Wetland  | Wetland (non-bordering, isolated) - 50 ft Setback           |
| Town Boundary                   | Tributary - 200 ft Setback   | Wetlands (other) - 150 ft Setback                           |
| Rye Village Beach District      | Waterbody - 200 ft Setback   | FEMA 1% and 0.2% Flood Hazard Areas (100-year and 500-year) |
| Road                            | Tidal Marsh and Estuary - 200 ft Setback   | Area Inundated Under 1-4 ft of Sea Level Rise               |
| Road - 30 ft Buffer             | Wetland Within Berrys Brook Watershed - 200 ft Setback                                 | Isles of Shoals   |
| Existing Primary Building       | Wetlands of Berry's Brook, Seavey Creek, Witches Creek, Parsons Creek - 200 ft Setback | Hydric Soil   |
| Berrys Brook Watershed Boundary | Waterbody/Coastal Waters   | Conserved Land  |
| Tributary                       |  |   |

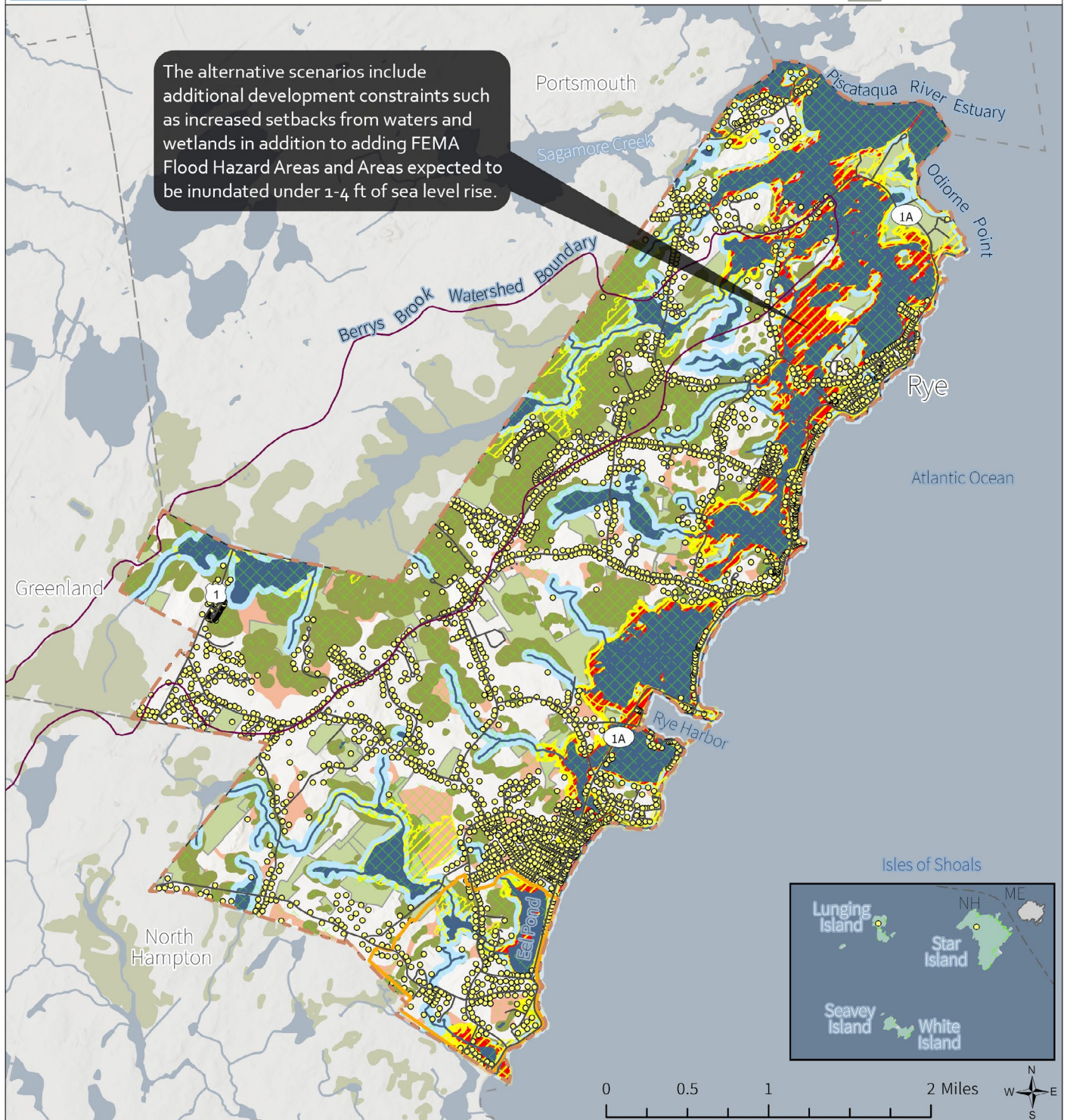


FIGURE 7. Development constraints for both alternative scenarios.

## ALTERNATIVE SCENARIO #1 BUILDABLE AREA

The combined effects of increased development constraints and higher densities (i.e., more units per acre) result in an overall reduction of the total area available for development. However, higher densities allow for smaller lot sizes, making some parcels that were previously too small for subdivision now suitable for development. This explains why the buildable area in the Rye Beach Village District has decreased compared to the baseline analysis (where densities remained the same, but development constraints increased). Conversely, in the Commercial District, despite increased development constraints, the higher density allows previously fully built-out parcels to be considered buildable, increasing the total buildable area in the alternative scenario.

Compared to the baseline build-out analysis, the first alternative scenario has increased development constraints, and a moderate increase in building density within the Town Center and Route 1 Districts. This scenario showed that 10% - 12% (846 - 1,035 acres) of the town would be buildable (Table 8, Figure 8).

In alignment with the baseline's buildable area, this scenario also has the most acreage of land available for development in the Single Residence District (640 - 782) acres. The Commercial District continues to have the greatest percentage of buildable area in a zone, and has increased from the baseline scenario (42% - 51%). Allowing for greater densities in the Town Center District and most significantly within the Route 1 District allowed for more land to be developed in Scenario #1 for the Commercial District compared to the baseline build-out analysis.

**TABLE 8.** The amount of buildable land within the first alternative scenario within the Town of Rye, NH, based on the first alternative scenario.

Zone	Total Area (Acres)	Scenario #1 Buildable Area (Acres)	Scenario #1 Percent Buildable Area
<b>Rye</b>			
Single Residence District (SR)	5,929	640 - 782	11% - 13%
General Residence District (GR)	457	32 - 40	7% - 9%
Business District (B)	48	2	3% - 4%
Commercial District (C)	276	115 - 141	42% - 51%
Public Recreation District (PREC)	78	0	0%
Public Recreation and Conservation District (PRAC)	368	0	0%
Conservation District (CON)	701	0	0%
<b>Rye Beach Village District</b>			
RBV Low Density Residential District	282	17 - 21	6% - 7%
RBV Medium Density Residential District	184	8 - 9	4% - 5%
RBV Recreational District	84	32 - 40	39% - 47%
<b>Total</b>	<b>8,406</b>	<b>846 - 1,035</b>	<b>10% - 12%</b>

Note: See Table 12 for a summary of buildable areas per alternative scenario compared to the baseline analysis.



# Rye Build-Out Analysis: Alternative Scenario #1 Buildable Area Map

Town of Rye, New Hampshire

Data Sources: NH GRANIT, NHD, Town of Rye, NWI+,  
CAI, Maine GeoLibrary  
Coordinate System: NAD 1983 State Plane New  
Hampshire FIPS 2800 (US Feet)  
Map by: C. Bunyon, FB Environmental

-  Town of Rye
-  Rye Village Beach District
-  Town Boundary
-  Conserved Land
-  Wetland
-  Waterbody/Coastal Waters
-  Tributary
-  Road

- Buildable Area
-  Single REsidence District (SR)
  -  General Residence District (GR)
  -  Business District (B)
  -  Commercial District (C)
  -  RBV Low Density Residential District
  -  RBV Medium Density Residential District
  -  RBV Recreational District

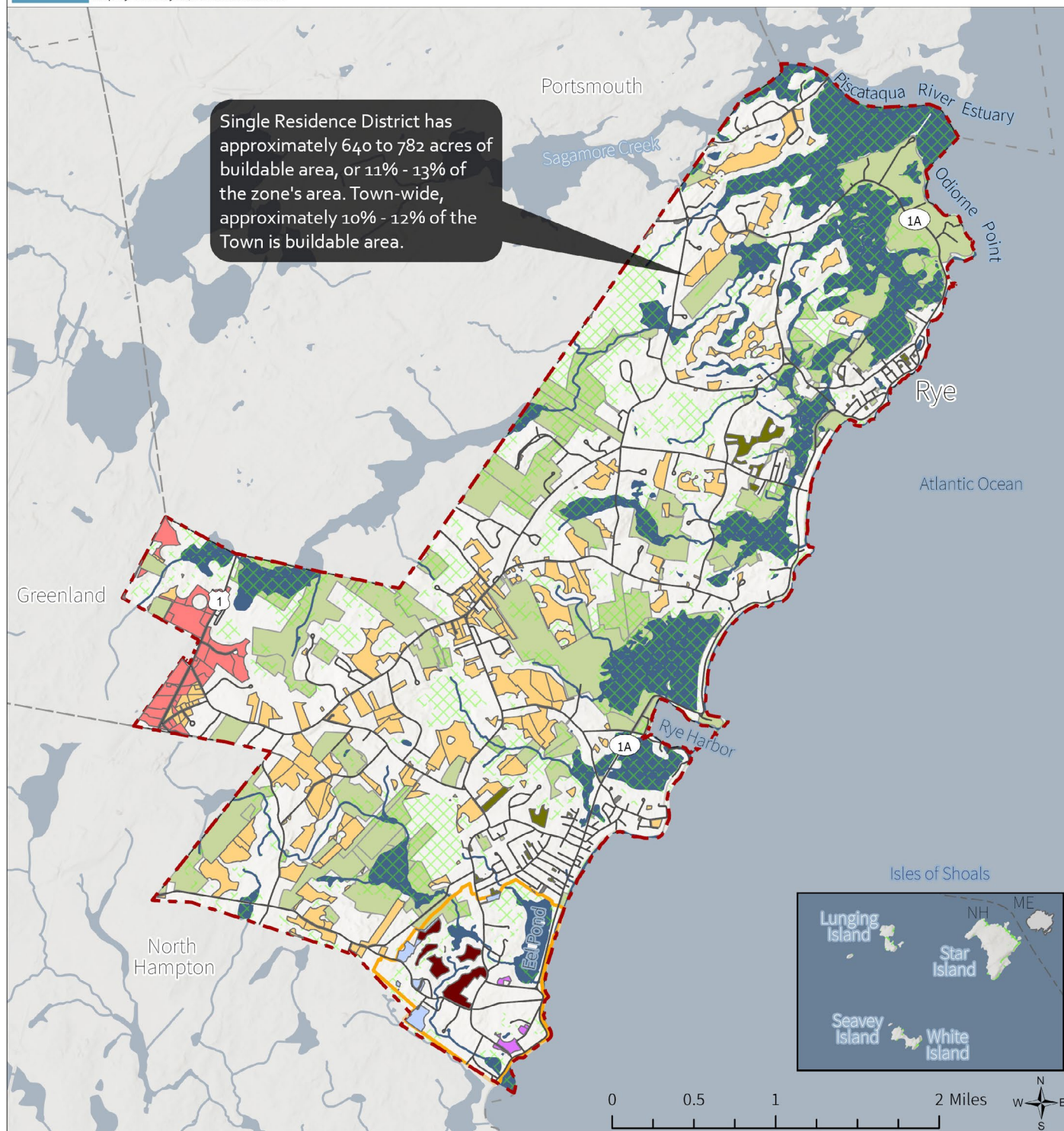


FIGURE 8. Buildable area in the Town of Rye under the first alternative scenario build-out analysis.

## ALTERNATIVE SCENARIO #1 PROJECTED BUILDINGS

Based on the first alternative scenario input parameters, an additional 1,128 - 1,378 buildings were projected to be constructed in the future, resulting in a total of 3,849 - 4,099 buildings (Table 9, Figure 10). Rye's Commercial and Single Residence Districts would have the largest numbers of projected buildings at 707 - 865 and 363 - 443 respectively, with the Commercial District having the largest percent increase at 491% - 600% (Table 9). This large increase is due to the alteration of density within the Route 1 and Town Center Districts from minimum lot sizes (Table 3) to 10 units/acre in the Route 1 District and 4 units/acre in the Town Center District (Table 7). Other zones, such as those within the Rye Beach Village District and the Business District were not affected by the density alteration and therefore show only a reduction in projected buildings from the baseline scenario due to the increase of development constraints.

It is important to note that a build-out analysis only considers primary dwellings as buildings, not accessory dwelling units. Creating accessory dwelling units as rental properties or in-law dwellings, may be a method of increasing the number of housing units to meet development needs. If 20% of all existing and projected primary buildings in the Town of Rye built accessory dwelling units under the first alternative scenario, there could be a total of 4,619 - 4,919 buildings.

**TABLE 9.** Projected increase in buildings by zone in Rye under the first alternative scenario build-out analysis.

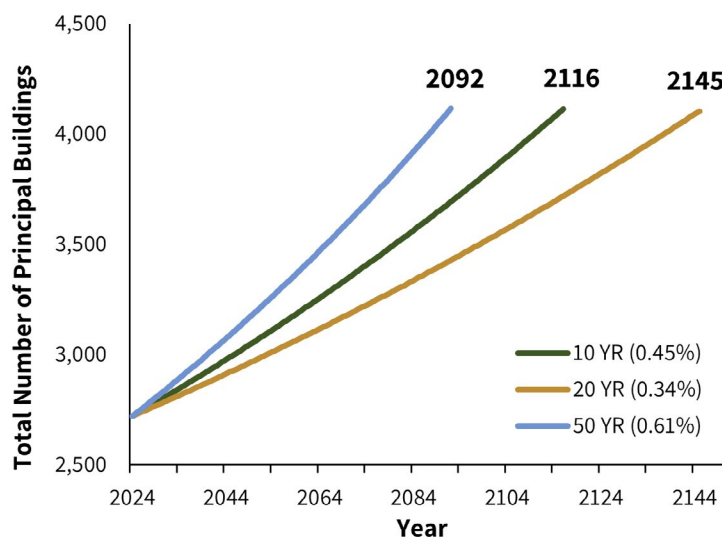
Zone	No. Existing Buildings	Scenario #1 No. Projected New buildings	Scenario #1 Total No. Buildings	Percent Increase
<b>Rye</b>				
Single Residence District (SR)	1,466	363 - 443	1,829 - 1,909	25% - 30%
General Residence District (GR)	836	41 - 50	877 - 886	5% - 6%
Business District (B)	74	3	77	4%
Commercial District (C)	144	707 - 865	851 - 1,009	491% - 600%
Public Recreation District (PREC)	13	0	13	0%
Public Recreation and Conservation District (PRAC)	1	0	1	0%
Conservation District (CON)	4	0	4	0%
<b>Rye Beach Village District</b>				
RBV Low Density Residential District	63	6 - 8	69 - 71	10% - 12%
RBV Medium Density Residential District	117	6 - 8	123 - 125	5% - 7%
RBV Recreational District	4	1	5	23% - 28%
<b>Total</b>	<b>2,722</b>	<b>1,127 - 1,377</b>	<b>3,849 - 4,099</b>	<b>41% - 51%</b>

Note: See Table 13 for a summary of projected buildings per alternative scenario compared to the baseline analysis.

## ALTERNATIVE SCENARIO #1 TIMESCOPE ANALYSIS

Three iterations of the TimeScope Analysis were run using compound annual growth rates (CAGR) for 10-, 20-, and 50-year periods, from 2010-2020 (0.45%), 2000-2020 (0.34%), and 1970-2020 (0.61%), respectively (Table 2). Full build-out under the first alternative scenario is projected to occur in 2102-2116 at the 10-year CAGR, 2127-2145 at the 20-year CAGR, and 2081-2092 for the 50-year CAGR (Figure 9).

This analysis shows that if the Town of Rye population continues to grow at recent rates identified in the 10-, 20-, and 50-year period, and current zoning and other development constraints remain the same, full build-out would hypothetically occur in the late 21st century to early 22nd century.



**FIGURE 9.** Full build-out projects for the Town of Rye for the first alternative scenario (using the population growth rates in Table 2).



# Rye Build-Out Analysis: Alternative Scenario #1 Projected Buildings Map

Town of Rye, New Hampshire



Data Sources: NH GRANIT, NHD, Town of Rye, NWI+,  
CAI, Maine GeoLibrary  
Coordinate System: NAD 1983 State Plane New  
Hampshire FIPS 2800 (US Feet)  
Map by: C. Bunyon, FB Environmental

- Town of Rye
- Rye Village Beach District
- Town Boundary
- Parcel Boundary
- Road
- Conserved Land

- Waterbody/Coastal Waters
- Tributary
- Wetland
- Projected New Building
- Existing Building

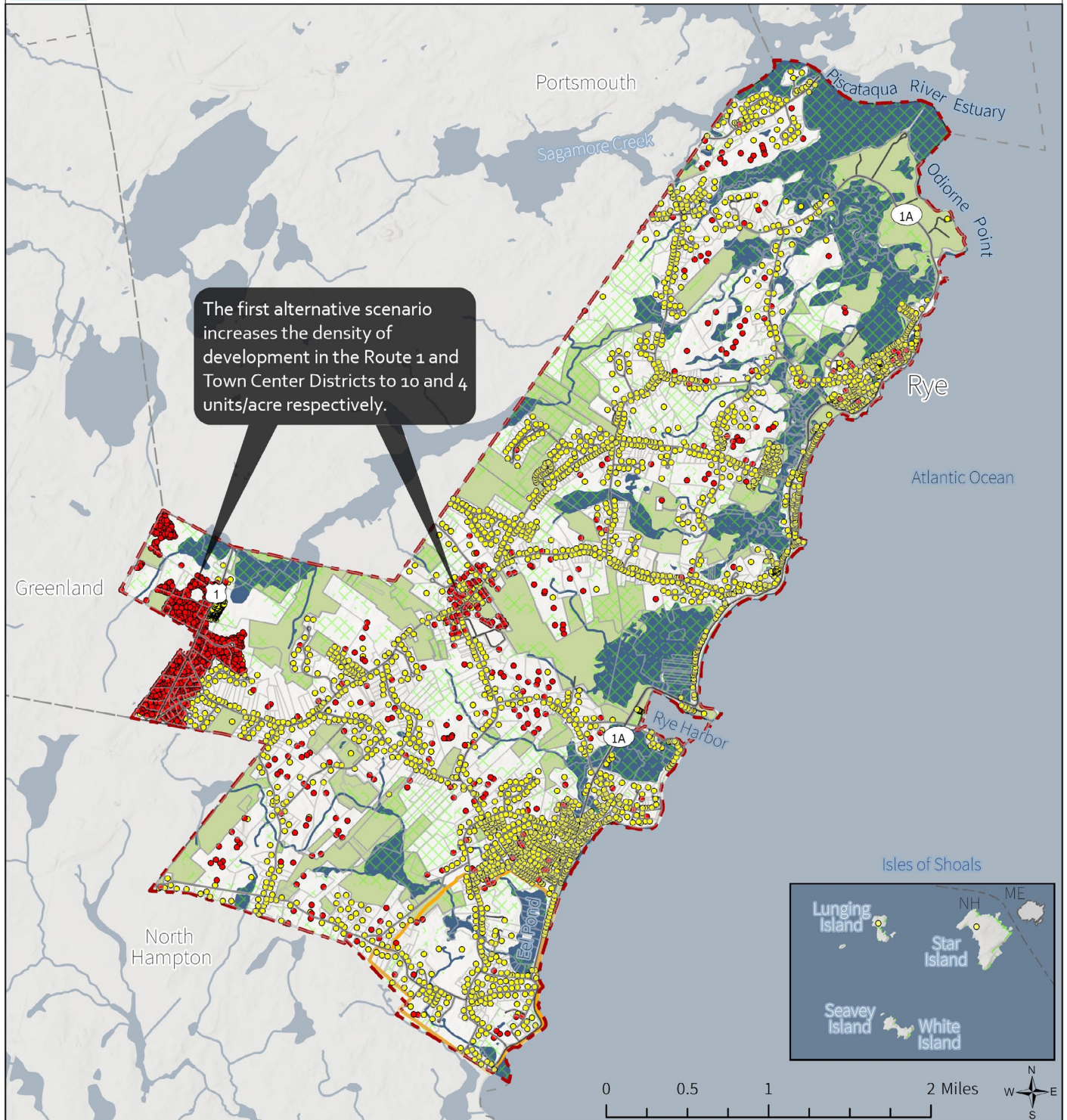


FIGURE 10. Projected new buildings in the Town of Rye under the first alternative scenario build-out analysis.

## ALTERNATIVE SCENARIO #2 BUILDABLE AREA

The second alternative scenario includes the same additional development constraints as the first alternative scenario, but allows for a higher density of development within the Town Center and Route 1 Districts than compared to the first alternative scenario. In accordance with the first alternative scenario, the second alternative scenario also shows a combined effect of increased development constraints and higher densities (i.e., more units per acre). This scenario showed that 10% - 12% (853 - 1,042 acres) of the town would be buildable (Table 10).

The most acreage of land available for development is once again in the Single Residence District with 644 - 787 acres or 11% - 13% of the total zone's area (Table 10, Figure 11). The greatest percentages of land available within a zone is 43% - 52% for the Commercial District, followed closely by 39% - 47% in the Rye Beach Village District Recreational District. The differences between the first and second alternative scenarios are slight, but the increase in density for the second alternative scenario incorporates a few additional parcels in the Single Residence and Commercial Districts within the Town Center and Route 1 Districts to be further developed that were previously at their maximum capacity for development (whether it be for the baseline build-out analysis or the first alternative scenario (Figure 11).

**TABLE 10.** The amount of buildable land within the second alternative scenario within the Town of Rye, NH.

Zone	Total Area (Acres)	Scenario #2 Buildable Area (Acres)	Scenario #2 Percent Buildable Area
<b>Rye</b>			
Single Residence District (SR)	5,929	644 - 787	11% - 13%
General Residence District (GR)	457	32 - 40	7% - 9%
Business District (B)	48	2	3% - 4%
Commercial District (C)	276	118 - 144	43% - 52%
Public Recreation District (PREC)	78	0	0%
Public Recreation and Conservation District (PRAC)	368	0	0%
Conservation District (CON)	701	0	0%
<b>Rye Beach Village District</b>			
RBV Low Density Residential District	282	17 - 21	6% - 7%
RBV Medium Density Residential District	184	8 - 9	4% - 5%
RBV Recreational District	84	32 - 40	39% - 47%
<b>Total</b>	<b>8,406</b>	<b>853 - 1,042</b>	<b>10% - 12%</b>

Note: See Table 12 for a summary of buildable areas per alternative scenario compared to the baseline analysis.



# Rye Build-Out Analysis: Alternative Scenario #2 Buildable Area Map

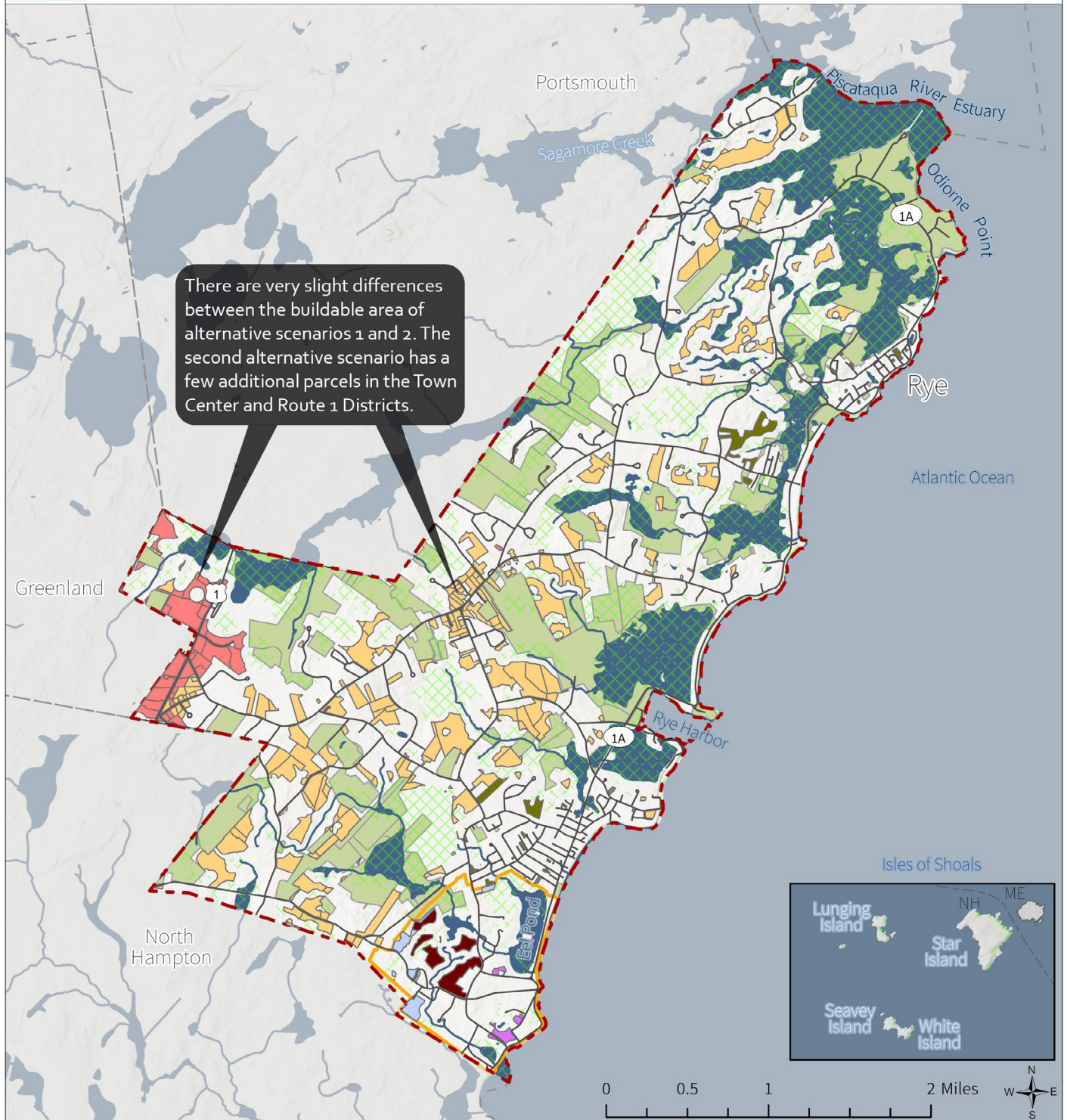
Town of Rye, New Hampshire



Data Sources: NH GRANIT, NHD, Town of Rye, NWI+, CAI, Maine GeoLibrary  
Coordinate System: NAD 1983 State Plane New Hampshire FIPS 2800 (US Feet)  
Map by: C. Bunyon, FB Environmental

- Town of Rye
- Rye Village Beach District
- Town Boundary
- Conserved Land
- Wetland
- Waterbody/Coastal Waters
- Tributary
- Road

- Buildable Area
- Single REsidence District (SR)
  - General Residence District (GR)
  - Business District (B)
  - Commercial District (C)
  - RBV Low Density Residential District
  - RBV Medium Density Residential District
  - RBV Recreational District



**FIGURE 11.** Buildable area in the Town of Rye under the second alternative scenario build-out analysis.

## ALTERNATIVE SCENARIO #2 PROJECTED BUILDINGS

The second alternative scenario shows an additional 1,192 - 1,580 buildings may be constructed, resulting in a total of 4,014 - 4,302 buildings (Table 11, Figure 13). Rye's Commercial and Single Residence Districts still have the largest numbers of projected buildings at 801 - 979 and 435- 531 respectively, with the Commercial District having the largest percent increase of 556% - 680%. This large increase in existing to projected buildings is due to the increase in density within the Route 1 and Town Center Districts from minimum lot of roughly 1 to 1.5 units/acre (depending on the zone), to 30 units/acre within the Route 1 District and 6 units/acre within the Town Center District (Table 7). Other zones, such as those in the Rye Beach Village and the Business Districts were not affected by the density alteration and therefore show only a reduction in projected buildings from the baseline scenario due to the additional development constraints.

Build-out analyses only consider primary dwellings as buildings, not accessory dwelling units. Creating accessory dwelling units may increase the number of housing units needed to meet demands. If 20% of all existing and projected primary buildings in the Town of Rye's Semi-Rural District (Figure 6) built accessory dwelling units under the second alternative scenario, there could be a total of 4,232 - 4,520 buildings.

**TABLE 11.** Projected increase in buildings by zone in Rye under the second alternative scenario build-out analysis.

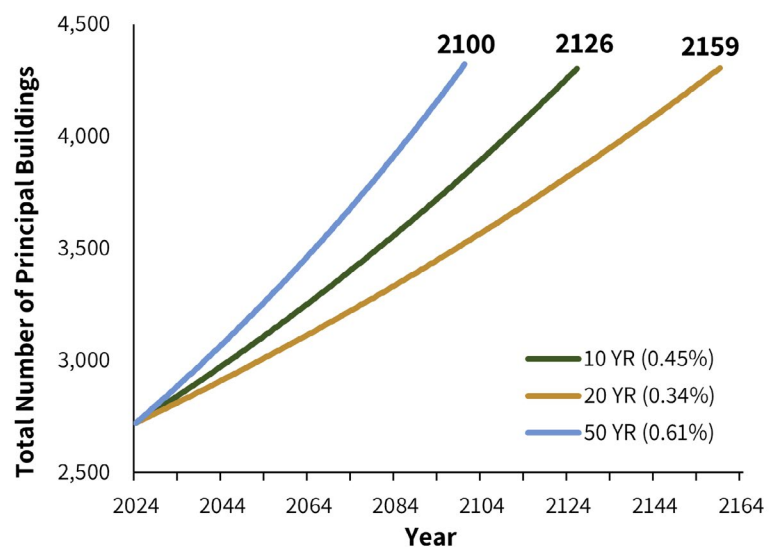
Zone	No. Existing Buildings	Scenario #2 No. Projected New buildings	Scenario #2 Total No. Buildings	Percent Increase
<b>Rye</b>				
Single Residence District (SR)	1,466	435 - 531	1,901 - 1,997	30% - 36%
General Residence District (GR)	836	41 - 50	877 - 886	5% - 6%
Business District (B)	74	3	77	4%
Commercial District (C)	144	801 - 979	945 - 1,123	556% - 680%
Public Recreation District (PREC)	13	0	13	0%
Public Recreation and Conservation District (PRAC)	1	0	1	0%
Conservation District (CON)	4	0	4	0%
<b>Rye Beach Village District</b>				
RBV Low Density Residential District	63	6 - 8	69 - 71	11% - 14%
RBV Medium Density Residential District	117	6 - 8	123 - 125	5% - 7%
RBV Recreational District	4	1	5	23% - 28%
<b>Total</b>	<b>2,722</b>	<b>1,292 - 1,580</b>	<b>4,014 - 4,302</b>	<b>47% - 58%</b>

Note: See Table 13 for a summary of projected buildings per alternative scenario compared to the baseline analysis.

## ALTERNATIVE SCENARIO #2 TIMESCOPE ANALYSIS

Three iterations of the TimeScope Analysis were run using compound annual growth rates (CAGR) for 10-, 20-, and 50-year periods, from 2010-2020 (0.45%), 2000-2020 (0.34%), and 1970-2020 (0.61%), respectively (Table 2). Full build-out under the first alternative scenario is projected to occur in 2111-2126 at the 10-year CAGR, 2139-2159 at the 20-year CAGR, and 2088-2100 for the 50-year CAGR (Figure 12).

This analysis shows that if the Town of Rye population continues to grow at recent rates identified in the 10-, 20-, and 50-year period, and current zoning and other development constraints remain the same, full build-out would hypothetically occur in the early 22nd century.



**FIGURE 12.** Full build-out projects for the Town of Rye for the second alternative scenario (using the population growth rates in Table 2).

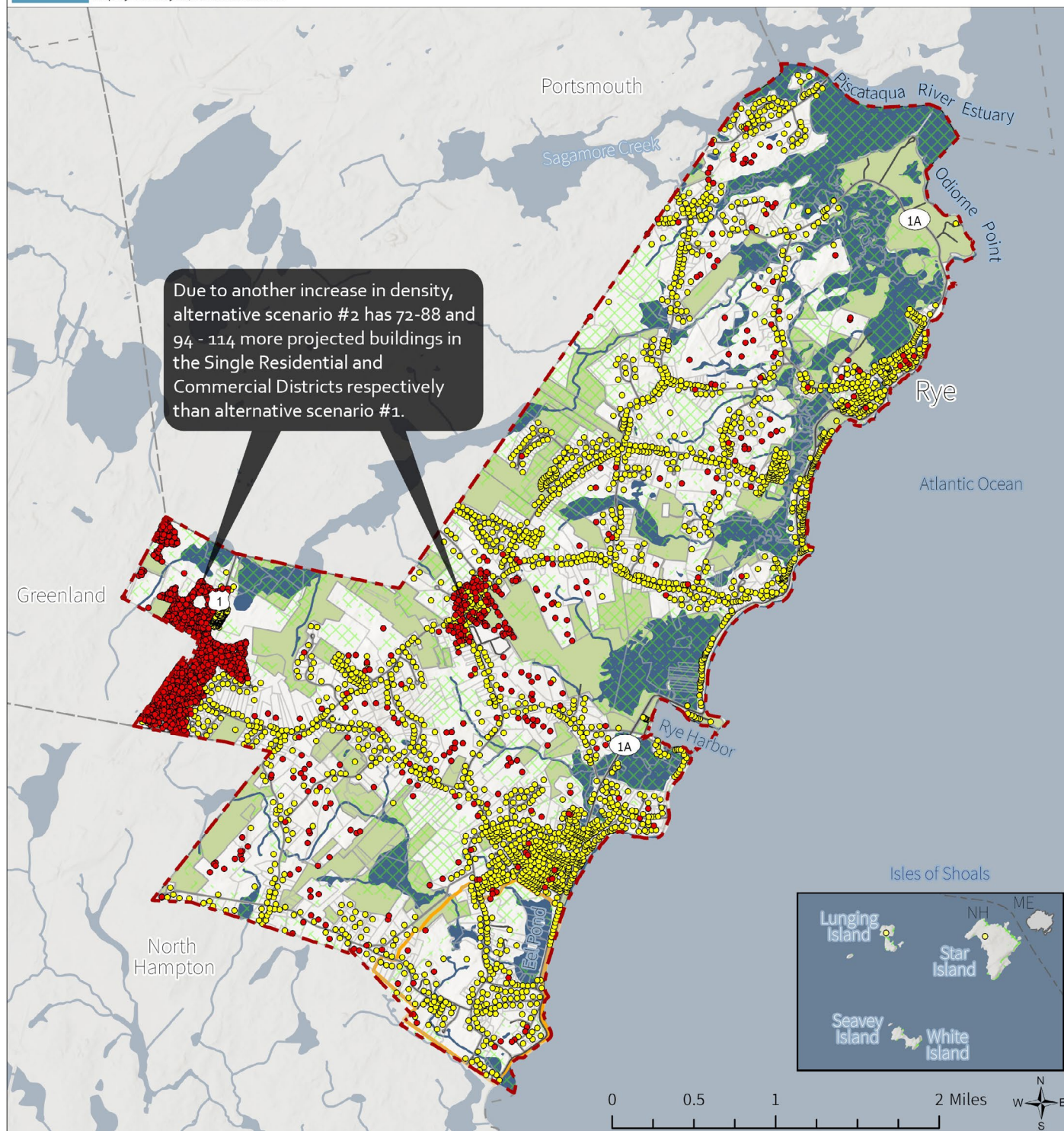


# Rye Build-Out Analysis: Alternative Scenario #2 Projected Buildings Map

Town of Rye, New Hampshire

Data Sources: NH GRANIT, NHD, Town of Rye, NWI+, CAI, Maine GeoLibrary  
Coordinate System: NAD 1983 State Plane New Hampshire FIPS 2800 (US Feet)  
Map by: C. Bunyon, FB Environmental

-  Town of Rye
-  Rye Village Beach District
-  Town Boundary
-  Parcel Boundary
-  Road
-  Conserved Land
-  Waterbody/Coastal Waters
-  Tributary
-  Wetland
-  Projected New Building
-  Existing Building



**FIGURE 13.** Projected new buildings in the Town of Rye under the second alternative scneario build-out analysis.

# SUMMARY TABLES

TABLE 12. Summary table of buildable areas from the baseline analysis (Table 5), alternative scenario #1 (Table 8), and alternative scenario #2 (Table 10).

Zone	Total Area (Acres)	BASELINE ANALYSIS		ALTERNATIVE SCENARIO #1		ALTERNATIVE SCENARIO #2	
		Buildable Area (Acres)	Percent Buildable Area	Buildable Area (Acres)	Percent Buildable Area	Buildable Area (Acres)	Percent Buildable Area
Rye							
Single Residence District (SR)	5929	761 - 930	13% - 16%	640 - 782	11% - 13%	644 - 787	11% - 13%
General Residence District (GR)	457	45 - 55	10% - 12%	32 - 40	7% - 9%	32 - 40	7% - 9%
Business District (B)	48	2 - 3	5% - 6%	2	3% - 4%	2	3% - 4%
Commercial District (C)	276	94 - 115	34% - 42%	115 - 141	42% - 51%	118 - 144	43% - 52%
Public Recreation District (PREC)	78	0	0%	0	0%	0	0%
Public Recreation and Conservation District (PRAC)	368	0	0%	0	0%	0	0%
Conservation District (CON)	701	0	0%	0	0%	0	0%
Rye Beach Village District							
RBV Low Density Residential District	282	17 - 21	6% - 7%	17 - 21	6% - 7%	17 - 21	6% - 7%
RBV Medium Density Residential District	184	11 - 13	6% - 7%	9-Aug	4% - 5%	9-Aug	4% - 5%
RBV Recreational District	84	38 - 47	46% - 56%	32 - 40	39% - 47%	32 - 40	39% - 47%
Total	8406	968 - 1184	12% - 14%	846 - 1,035	10% - 12%	853 - 1,042	10% - 12%



**TABLE 13.** Summary table of projected buildings from the baseline analysis (Table 6), alternative scenario #1 (Table 9), and alternative scenario #2 (Table 11).

Zone		No. Existing Buildings	BASELINE ANALYSIS			ALTERNATIVE SCENARIO #1			ALTERNATIVE SCENARIO #2		
			No. Projected Buildings	Total No. Buildings	Percent Increase	No. Projected Buildings	Total No. Buildings	Percent Increase	No. Projected Buildings	Total No. Buildings	Percent Increase
Rye											
Single Residence District (SR)	1,466	285 - 349	1,751 - 1,815	19% - 24%	363 - 443	1,829 - 1,909	25% - 30%	435 - 531	1,901 - 1,997	30% - 36%	
General Residence District (GR)	836	52 - 64	888 - 900	6% - 8%	41 - 50	877 - 886	5% - 6%	41 - 50	877 - 886	5% - 6%	
Business District (B)	74	4	77 - 78	5%	3	77	4%	3	77	4%	
Commercial District (C)	144	56 - 68	200 - 212	39% - 47%	707 - 865	851 - 1,009	491% - 600%	801 - 979	945 - 1,123	556% - 680%	
Public Recreation District (PREC)	13	0	13	0%	0	13	0%	0	13	0%	
Public Recreation and Conservation District (PRAC)	1	0	1	0%	0	1	0%	0	1	0%	
Conservation District (CON)	4	0	4	0%	0	4	0%	0	4	0%	
Rye Beach Village District											
RBV Low Density Residential District	63	6 - 8	69 - 71	10% - 12%	6 - 8	69 - 71	11% - 14%	6 - 8	69 - 71	11% - 14%	
RBV Medium Density Residential District	117	9 - 11	126 - 128	8% - 9%	6 - 8	123 - 125	5% - 7%	6 - 8	123 - 125	5% - 7%	
RBV Recreational District	4	2	6	50%	1	5	23% - 28%	1	5	23% - 28%	
Total	2,722	414 - 506	3,136 - 3,228	15% - 19%	1,127 - 1,377	3,849 - 4,099	41% - 51%	1,292 - 1,580	4,014 - 4,302	47% - 58%	

# CONCLUSION

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The build-out analyses completed for the Town of Rye can be a helpful planning tool to envision future growth in the Town during the master planning process. While the build-out analysis with alternative scenarios serve as a useful planning tool, the reader is cautioned that the spatial and numerical information provided herein are estimates and should be treated accordingly. Furthermore, the build-out lays the groundwork for understanding future development in the Town but does not incorporate how community services will need to be increased to meet community needs.

The Town of Rye has extensive development constrictions, particularly large wetland complexes, conserved lands, and existing development. The tidal marshes of Rye behind the Town's beaches provide unique character to the town and add to its desirability, while also naturally restricting buildable area. In addition, the Town of Rye has numerous large tracts of conserved land that protect its natural resources while restricting development. Between these two constraints, future buildable area in Rye is lower than many other New Hampshire communities. In addition, many of the areas identified in the build-out analysis that can accommodate future growth could be considered “backlands”, or parcels not currently accessible to development by existing roads. These areas may only be developed if a right of way or other access road is developed. Though the likelihood of change of ownership is not something the build-out analysis can account for, this characteristic of Rye's buildable area indicates that there is more variability to when full build-out may be reached.

Ultimately, the Town of Rye has moderate buildable area at approximately 12% - 14%. While FB Environmental typically sees 25%-50% buildable area in build-out models for more rural New Hampshire communities, the buildable area in the Town of Rye is in line with expectations given the current level of development in the Town. With 2,722 existing buildings and an additional 414 - 506 projected new buildings under the baseline analysis, the Town of Rye may choose to alter building densities or encourage accessory dwelling units in certain areas as an approach to direct further growth into regions that can accommodate such growth to meet the future development pressures.

## RECOMMENDED NEXT STEPS

FBE recommends the following next steps for the Town to consider during the Master Planning process:

- » Consider projected development hotspots (Figure 1) and areas with buildable area (Figures 3, 8, and 11) in the context of current issues facing the Town. Questions to consider exploring could include:
  - Which areas of Rye could be a good fit for meeting affordable housing needs?
  - Which areas of the Town projected to experience future growth are at increased risk from effects of climate change due to sea level rise, storm surges, inundation during flooding, or being cut off from emergency services?
- » Reflect on the alternative scenarios with the added development constraints and specific density alterations to help guide the Master Planning Process and future zoning regulations.
- » Consider enacting additional natural resource protections of resources such as future tidal marsh migration areas due to sea level rise, and areas prone to flooding.
- » Use the projected development estimations to understand how Town services such as sewer, public water, emergency services, and school systems may be impacted. For example, can the sewer district support any expansions to its service area to accommodate growth while protecting natural resources and water quality? Consider adjusting density development in areas where water and sewer service is possible.



Photo: FBE



Photo: Aimee Seavey/New England.com



## CITATIONS

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