Route 28 Visioning Project

BASELINE BUILDOUT REPORT - REVISION

CAPE COD COMMISSION

To: Jill R. Goldsmith, Chatham Town Manager

From: Phil Dascombe, Senior Community Design Planner, Cape Cod Commission (Project Manager)

CC: Deanna Ruffer, Chatham Community Development Director

Date: September 26, 2013

During the course of the public process for the Route 28 Visioning Project, it has come to our attention that there was a minor misapplication of formula in the baseline buildout analysis conducted for the project. This occurred in the South Chatham area, and affected parcels in the study area on the north side of Route 28 between Morton Road and Route 137. These parcels are split between two zoning districts, Small Business (SB) on the front and R-60 (Residential) in the rear. When the buildout was conducted, formula for R-20 zoning was incorrectly applied to the rear of these properties, instead of the R-60 formula. There are 352 parcels in the Commission's study area, only 318 of which were subject to the baseline buildout analysis, and 41 of which are split between SB and a residential zoning designation (either R-20 or R-60). The incorrect application of the R-20 formula affected 13 parcels of these properties (4% of the buildout parcels).

The baseline buildout was re-run with the corrected formula. This resulted in a slight (1%) reduction in the number of dwelling units projected in two of the scenarios (see Table A for details). It is important to note that this revision does not alter any of the observations or analysis reported in the original Baseline Buildout Report. However, all references to the reported buildout estimates for the affected scenarios need to be edited. To accomplish this, a revised report is attached to this memo and is intended to supercede the Baseline Buildout Report dated May 2012.

Table A: Revisions to buildout results by scenario

	Residential Maximized			Commercial Maximized			Comm Max SB split			Commission Scenario 1		
	Original	Revised	% change	Original	Revised	% change	Original	Revised	% change	Original	Revised	% change
Additional Dwelling Units	516	509	-1%	5	5	0%	26	26	0%	382	379	-1%
Additional Floor Area (SF)	60,829	60, 829	0%	778,413	778,413	0%	622,296	622,296	0%	60,829	60,829	0%

CAPE COD
COMMISSION

Route 28 Visioning Baseline Buildout Report

PREPARED FOR THE TOWN OF CHATHAM
REVISED SEPTEMBER 2013

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INTRODUCTION

The Cape Cod Commission conducted a baseline buildout analysis for the Route 28 Visioning Project in Chatham in order to: estimate the amount and distribution of development potential in the study area; aid understanding of how regulations affect development; and to allow comparison and testing of alternate scenarios. It is important to emphasize that the results of the buildout are estimates of future development potential only. While many of the assumptions may be subject to debate, no assumption is going to provide a precise prediction of the future. The true value of the buildout estimate is that it helps with an understanding of possible future outcomes possible under zoning and provides a baseline against which alternate scenarios can be measured.

The baseline buildout analysis focuses on establishing a maximum amount of development, projected well into the future (30 years or more). While the buildout may provide a framework for understanding the amount of potential development, it does not account for future changes in regulations, economic decisions of individual property owners nor does it provide any guidance about how quickly buildout conditions will be reached. The buildout analysis also generalizes development potential based on land use rules applied across entire zoning districts, it is not intended to be a detailed study of individual lots.

OVERVIEW

The Commission staff developed a summary of the key assumptions for conducting the buildout and provided it to the town prior to commencing the analysis. These assumptions are attached to this report (Appendix A). Once the Commission staff conducted the analysis, it refined these initial assumptions (see Refinements below) for the purpose of improving the analysis.

REFINEMENTS

Of the 352 properties in the study area, 13% of them have more than one zoning designation, i.e. they are split between two zoning districts. The majority of these split lots (96%) are designated Small Business (SB) and either R-20 or R-60 residential, the latter usually covering some portion of the rear of the parcel. The proportion of the lots in each of these districts varies, but on average the lots in the study area are split 52% (SB) to

48% (R-20 or R-60). In cases where there are two zoning designations on a single property, the zoning bylaws allow uses permitted in one district to be partially located in the other under certain circumstances. For calculating a buildout, split lots like these present a challenge due to the variety of scenarios that may result from this flexibility. For example, a lot split SB and R-20 could be entirely used in a manner consistent with SB, entirely in a manner consistent with R-20, or some mix of the two. Initially, the Commission decided to designate all these lots with a single zoning designation and assume that they were either buildout entirely as residential or entirely as commercial. However, to refine the buildout, a scenario was created that assumed that these split lots were developed based on them being split 50%:50% (SB:Residential). This is reflected in the "Commercial Maximized Split Lots" scenario and the "Commission Scenario 1" described below.

The first of the buildout assumptions listed in Appendix A incorrectly states that there are few non-conforming lots in the study area. Since that document was prepared, further analysis reveals that there are numerous lots throughout the study area that are less than the minimum lot size required by zoning. For example, in the Small Business District where the minimum lot size is 20,000 sf, approximately 55% of the lots are less than this minimum lot size. However, as stated in the assumptions, the buildout looks to the future and presumes that development is allowed on non-conforming lots and that future development will be consistent with both the use requirements and dimensional standards. The buildout is calculated from the existing lot area regardless of whether it is non-conforming. Therefore, any non-conforming lot would have a correspondingly smaller development potential.

BASELINE SCENARIOS

As described in the baseline buildout assumptions (Appendix A), a range of development potential along the corridor was established based on existing zoning. Other regulations may affect development potential or choices, but for this baseline assessment only zoning is used for the analysis. These scenarios should not be considered to be either end of a continuum but rather possible outcomes representing foreseeable future conditions. Two alternate scenarios for buildout were also conducted in order to explore the effect of changed assumptions on the results. Each of the scenarios run for this baseline buildout are described below:

- Residential Maximized. This scenario assumes that residential development is maximized on every lot. For example, where

residential use is allowed, it is assumed that the property is developed to the maximum residential density allowed under zoning.

- Commercial Maximized. This scenario assumes that commercial development is maximized on every lot. For example, where single use commercial is allowed, it is assumed that the maximum amount of non-residential floor area will be constructed.
- Commercial Maximized Split lots. The assumptions for this scenario are the same as the Commercial Maximized above, except that all lots split into two zoning designations are developed with residential on 50% of the lot, and the remaining 50% developed as non-residential use.
- Commission Scenario 1. This scenario was developed to create a buildout number that reflected more conservative assumptions, i.e. did not assume a maximization of the development. In this case, SB lots were assumed to be developed with residentially scaled uses (i.e. homes, and homes with small commercial spaces within the residence and not stand alone commercial) similar to the way there lots are developed today; R-20 and R-60 parcels were assumed to develop residentially at the maximum density; and, GB3 lots were developed with a mix of commercial and residential uses at the maximum density allowed. For lots in the Flexible District, rather than assume every Flexible District lot would be developed at 12 units/acre as allowed by zoning, a more conservative residential density of 8 units/acre was assumed.

EXCLUSIONS

The study area includes 352 parcels, however, not all of these were included in the buildout analysis. For the purposes of buildout several land use types are considered either undevelopable, or unlikely to be developed; these include protected open space with conservation restrictions, municipally owned properties such as cemeteries, and church properties. In addition, the Chatham bylaws require that only upland area be used for lot area and so for the purposes of calculating development potential all wetland areas in the district were subtracted from the gross lot area. Of the 352 parcels in the study area, only 318 were subject to the analysis.

INPUTS

The Commission utilized software called Community Viz to calculate the buildout potential in the study area. This program is an extension to ArcGIS and uses a series of formula to establish buildout numbers. The results are presented as additional dwelling units for residential development, and additional floor area (or square footage) in the case of non-residential development. For the baseline analysis, these calculations are made based on the existing zoning designations along the corridor.

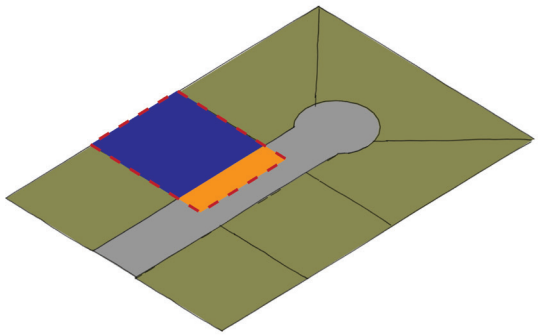


Figure 1: In this example, the blue area illustrates a new lot meeting frontage and minimum lot size requirements. The gray area shown is a new subdivision road. The gross lot area is calcualted by adding an area equal to half the right-of-way width (orange) multiplied by the frontage.

To conduct the buildout analysis, the Community Viz software requires certain inputs or assumptions about the residential density allowed under zoning and an estimate of the total non-residential floor area for each of the zoning designations.

To calculate the residential buildout, an estimate of the potential additional dwellings is made based on the minimum lot size under zoning , or the density allowed per parcel (dwelling units per acre). The gross lot area needed for each unit is adjusted to account for roads and access needed for subdivision, as illustrated in Figure 1. The net additional units are then calculated by subtracting any existing development on the property from this maximum buildout density.

To calculate the non-residential buildout, an estimate of the additional building square footage possible on each parcel is needed. This estimate is based on the dimensional standards and parking regulations of the zoning. To account for these factors, an “effective Floor Area Ratio” (FAR) is calculated that establishes an estimate of the amount of floor space that can be constructed in a given area while still conforming to the setback, lot coverage, height and parking requirements of the zoning. A general business mix of uses was assumed in making parking calculations for this formula, including restaurants, office and retail, which varied depending on the scenario.

A density and effective FAR is created for each of the districts in the study area. These effective FAR and all other major assumptions are contained in the buildout reports included in Appendix B.

OUTPUTS

In order to interpret the resulting buildout numbers, two important presumptions must be understood:

- 1. The analysis assumes that all lots in a given district are developed in a manner consistent with the zoning. For example, if there is an existing non-residential use in a residential district, the buildout will assume that the non-residential use is removed (demolished) or re-used, and replaced with a conforming residence. This is appropriate in most planning applications as zoning looks over a long horizon (30 years or more) and therefore it is conceivable that all uses will eventually become conforming. However, under Massachusetts zoning law, it is also possible that non-conforming uses may stay indefinitely. This effect should be considered when reviewing the buildout results.
- 2. The buildout analysis determines the number of additional dwellings and amount of non-residential floor area only. It neither provides guidance on the size of those dwelling units (bedrooms, stories or square-footage), nor does it provide guidance on how the non-residential floor space is used (whether used for retail, restaurant, office or other). For example, an additional unit on a residential lot could either be a 1,000-square-foot, one bedroom house, or a 4,000-square-foot, 5 bedroom house. Similarly, non-residential floor area could be used as office, retail, restaurant, or any combination of non-residential use allowed under zoning. As such, the baseline buildout only provides part of the picture needed to understand how development will occur over time. Additional analysis and assumptions may need to be applied to the buildout numbers to understand the form and use of future development that may occur.

PRESENTATION OF INFORMATION

For ease of understanding, the buildout data is presented as an overall total for the study area, but is also broken down based on the zoning district and by the area of the corridor within which it occurs. For this area breakdown, the study area has been divided into eight sub-areas. It

should be emphasized that the only purpose of these areas is to present the buildout information. The areas were created for buildout analysis purposes by referencing the descriptions for the neighborhood centers contained in the land use section of the Long Range Comprehensive Plan. In some cases, boundaries followed zoning boundaries in these areas, in others major intersections were used as a boundary. In all cases, the edges were partly defined by the study area boundary. Geographic names were given to each of these areas for ease of reference. It should be noted that the boundaries or names given to these areas should not be interpreted to define any future zoning districts or neighborhood center boundaries.

RESULTS

A summary of the baseline buildout results is presented below. More detailed information is provided in Appendices B and C.

SCENARIO COMPARISON

The overall results from the four baseline buildout scenarios are presented in Table 1 below. These figures show a range of additional development potential:

- Depending on the scenario, between 5 and 509 additional dwellings can be added, which is between a 1% and a 126% change for residential units.
- Depending on the scenario, between approximately 60,000 sf and 780,000 sf of non-residential floor area can be added, which is between a 15% and 198% increase in non-residential floor area.

Table 1: Buildout Results by Scenario

		Residential Maximized		Commercial Maximized		Comm Max SB split		Commission Scenario 1	
Existing		Amount	% change	Amount	% change	Amount	% change	Amount	% change
405 dwellings	Additional Dwelling Units	509	126%	5	1%	26	6%	379	94%
393,253 sf non-residential floor area	Additional Floor Area (SF)	60, 829	15%	778,413	198%	622,296	158%	60,829	15%

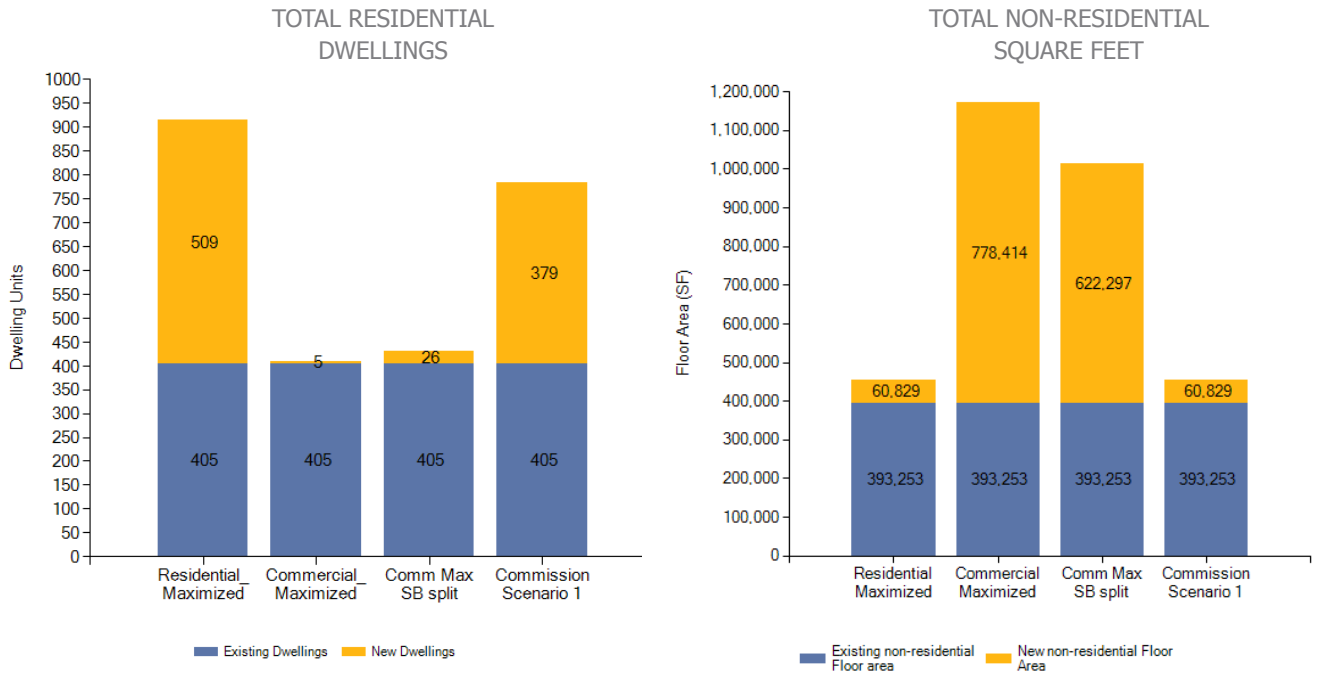


Figure 2: Total buildout potential for residential dwellings (left) and non-residential floor area (right) based on four different scenarios

BREAKDOWN BY ZONING DISTRICT

Within the study area, there are four separate zoning districts, and one overlay district, shown in Figure 3. These are:

- R-20 Residential District
  - A residential district with a minimum lot size of 20,000 square feet. The R-20 areas front on Route 28 between Sam Ryder Road and West Chatham and on the south side of Route 28 in parts of South Chatham. The R-20 district also is located to the rear of many Small Business lots along the corridor, particularly on the south side of Route 28.
- R-60 Residential District
  - A residential district with a minimum lot size of 60,000 square feet. The R-60 areas front on Route 28 on the north side of Route 28 in parts of South Chatham. The R-60 district also is located to the rear of Small Business lots along the corridor, particularly on the north side of Route 28.
- Small Business District (SB)
  - A district that allows residential uses and a mix of mostly small business uses. This zoning district applies a certain distance from the right-of-way along large stretches of Route 28.

- General Business (GB3)
  - A business district that allows a mix of commercial and residential uses. GB3 areas are focused in West Chatham, the Cornfield Area and around the intersection of Crowell Road and Route 28.
- Flexible Development District
  - As described in the purpose of the zoning, this is a district to provide a mix of commercial and multi-family, senior or congregate residential development. This overlay occurs in four places, parts of West Chatham, the Cornfield Area, on the north side of Route 28 near Route 137 and properties near Crowell Road.

The distribution of parcels among these districts is shown in Figure 4, including lots that are split by the SB or GB3 district boundaries. In order to understand the distribution of the buildout potential, the results of each scenario are broken down based on these zoning districts and shown in Figures 5 and 6. Figure 5 shows new residential units in each zoning district under the four scenarios. Figure 6 shows new non-residential square footage in each zoning district under the four scenarios.

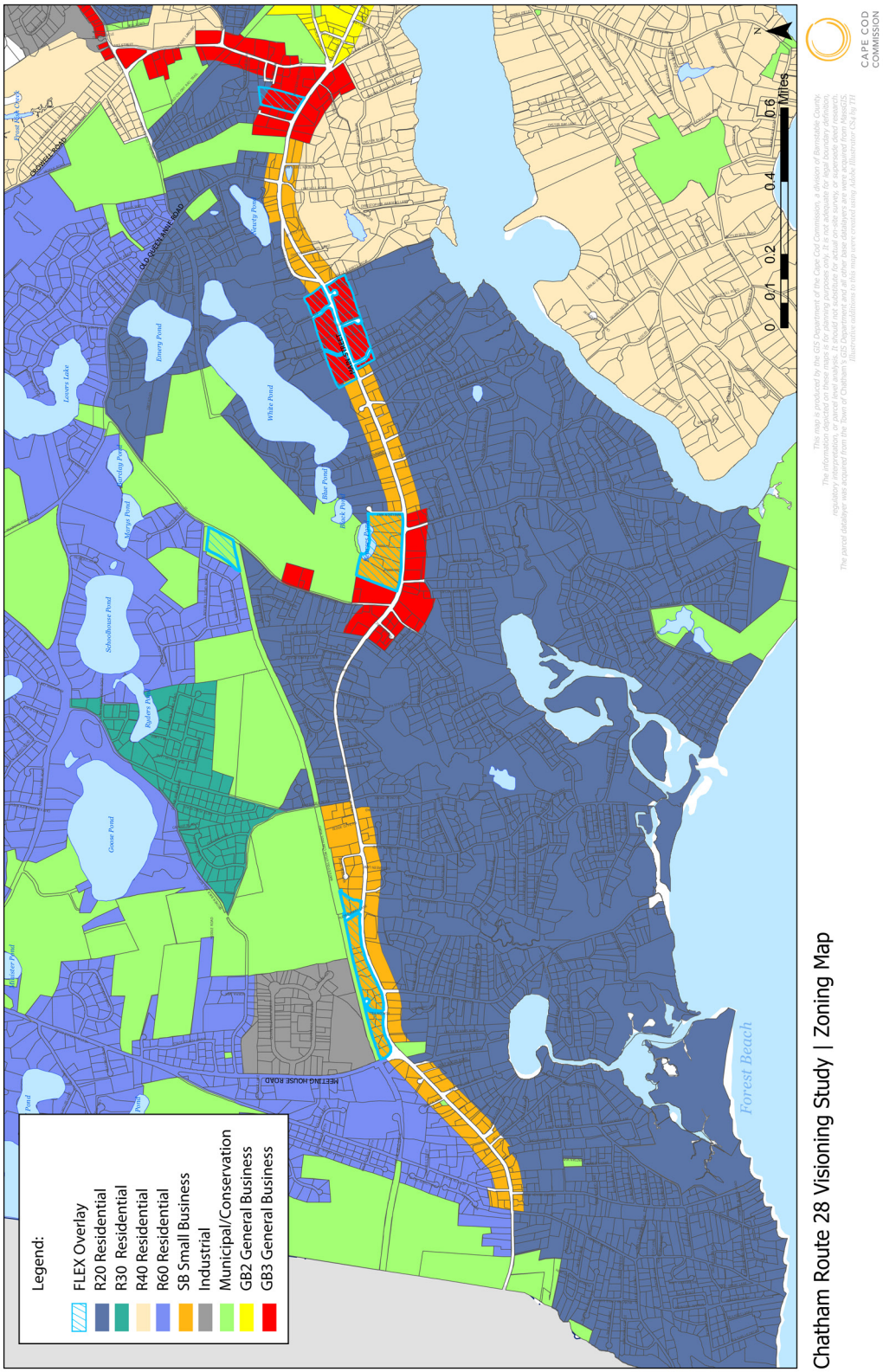
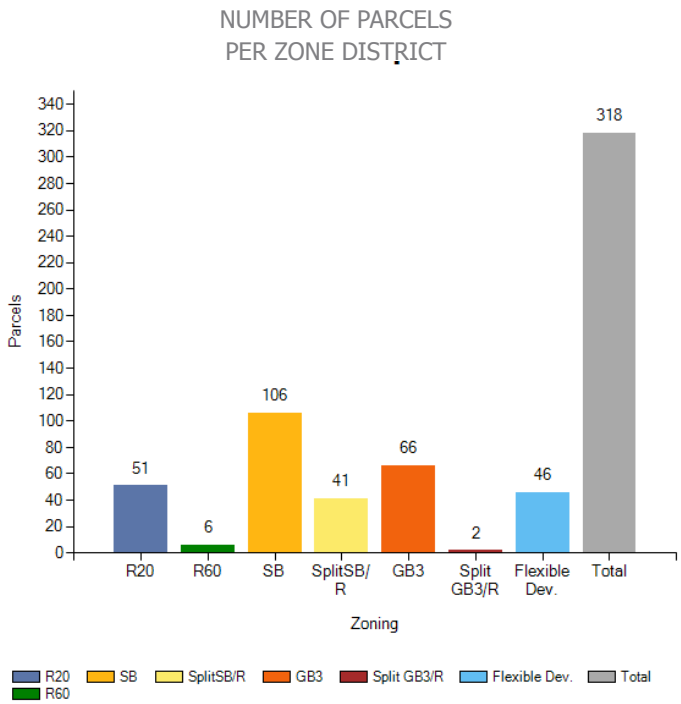


Figure 3: Zoning districts in the study area.



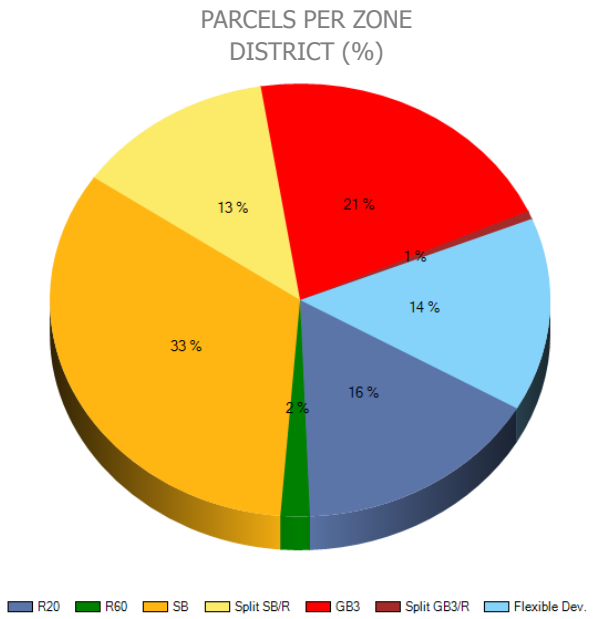


Figure 4: Distribution of parcels by zone, amount (top) and percentage (bottom)

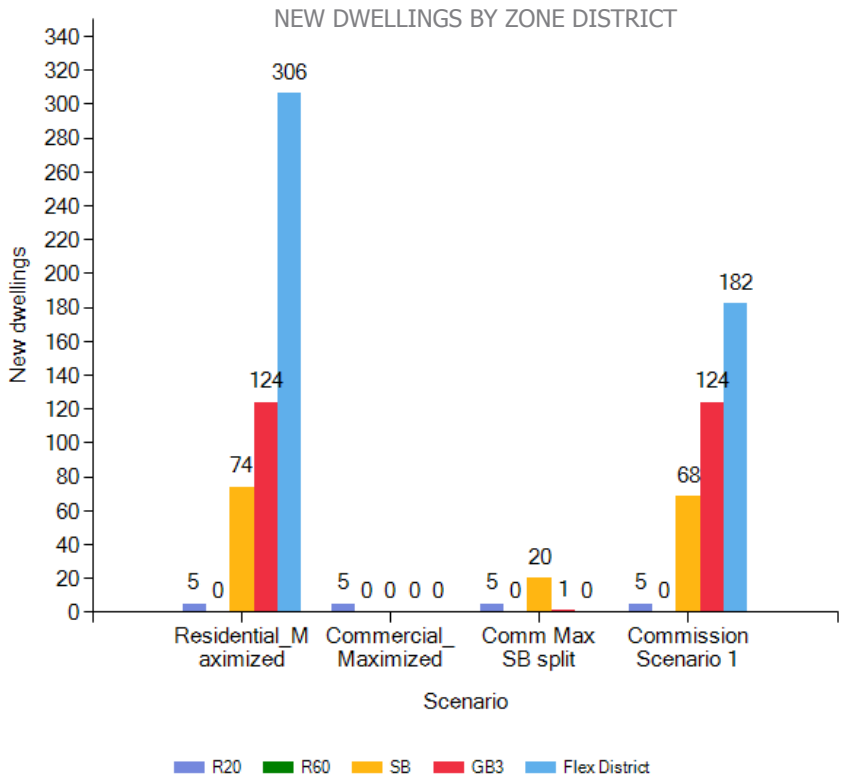


Figure 5: Additional residential dwellings per zoning district under each scneario.

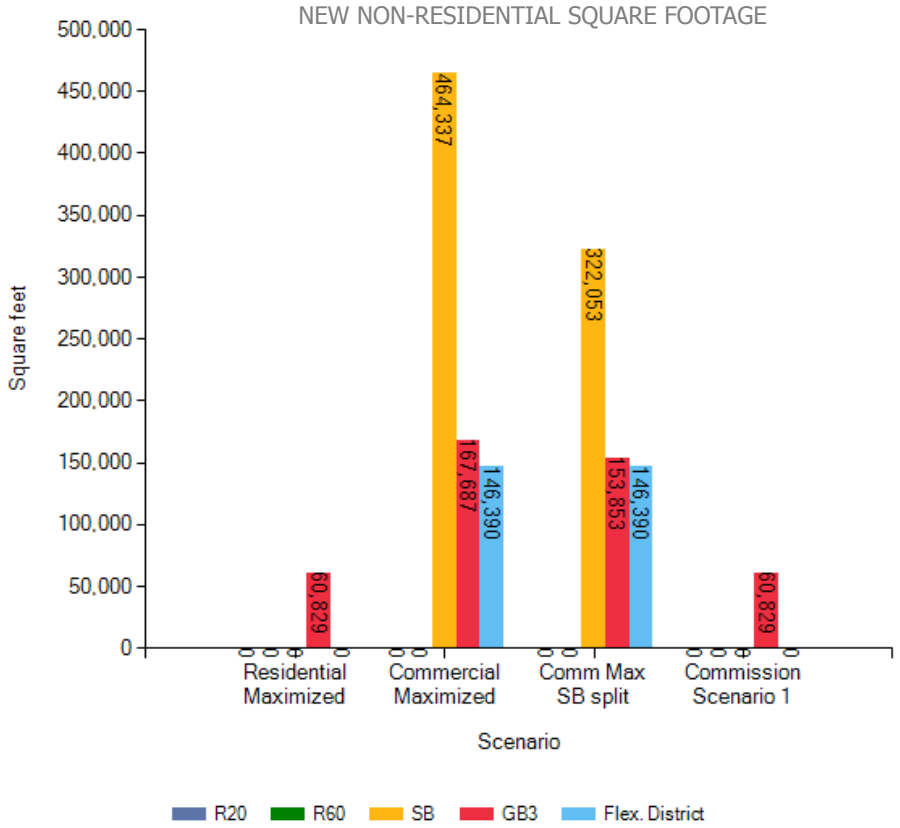
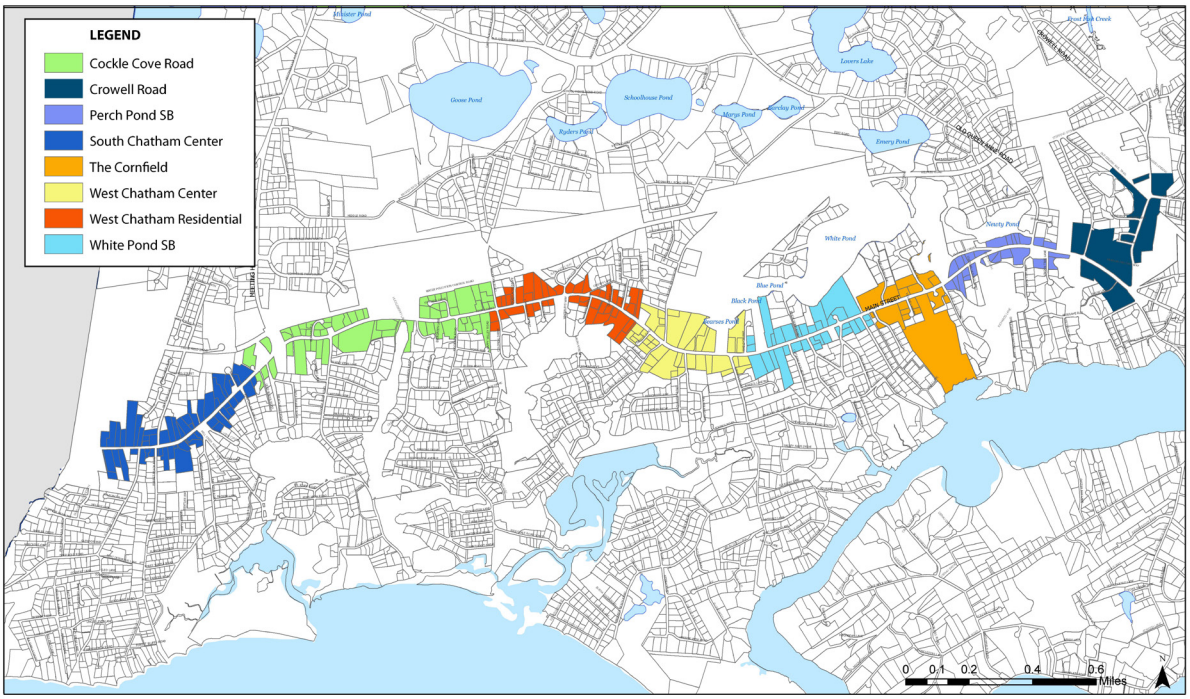


Figure 6: Additional non-residential square footage per zoning district. under each scenario

BREAKDOWN BY NEIGHBORHOOD

To further understand the distribution of the buildout potential, the results of each scenario are broken down geographically. Area designations have been created solely for the purpose of presenting the buildout information. The long range comprehensive plan identifies four neighborhood centers in the study area, and the descriptions provided in the long range plan informed the boundaries of the areas presented here. Names have been assigned to each area based on the geography and/or streets in the vicinity and are listed below (from west to east) and shown in Figure 7:

- South Chatham Center
- Cockle Cove Road
- West Chatham Residential
- West Chatham Center
- White Pond Small Business
- Cornfield Area
- Perch Pond Small Business
- Crowell Road



Chatham Route 28 Visioning Study | Corridor Sub-Areas Map

Figure 7: Corridor sub-areas

Figures 8-11 show the distribution of parcels in these areas and the existing and future levels of development in each area.

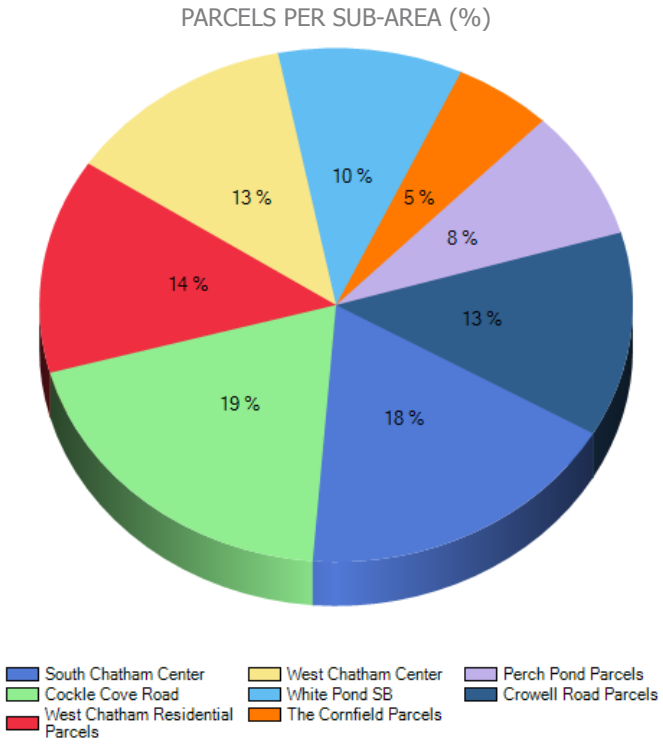


Figure 8: Parcel distribution by area

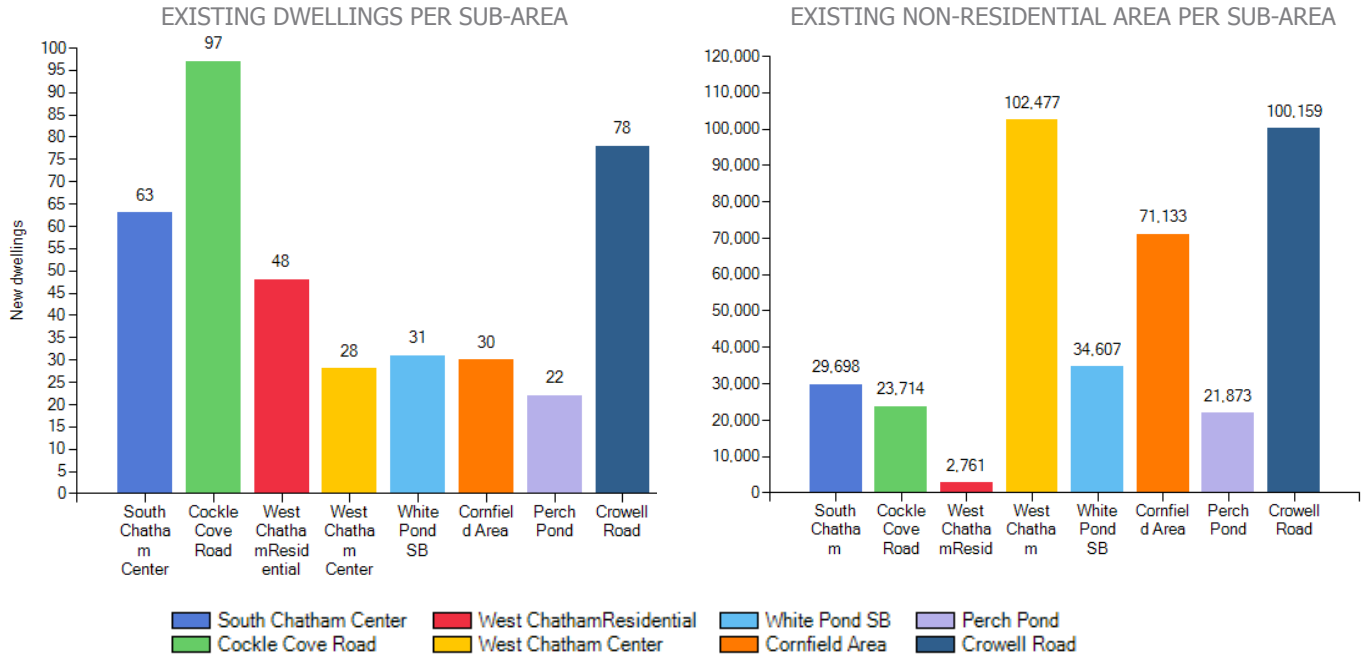


Figure 9: Existing dwellings per area (left), existing non-residential square feet per area (right)

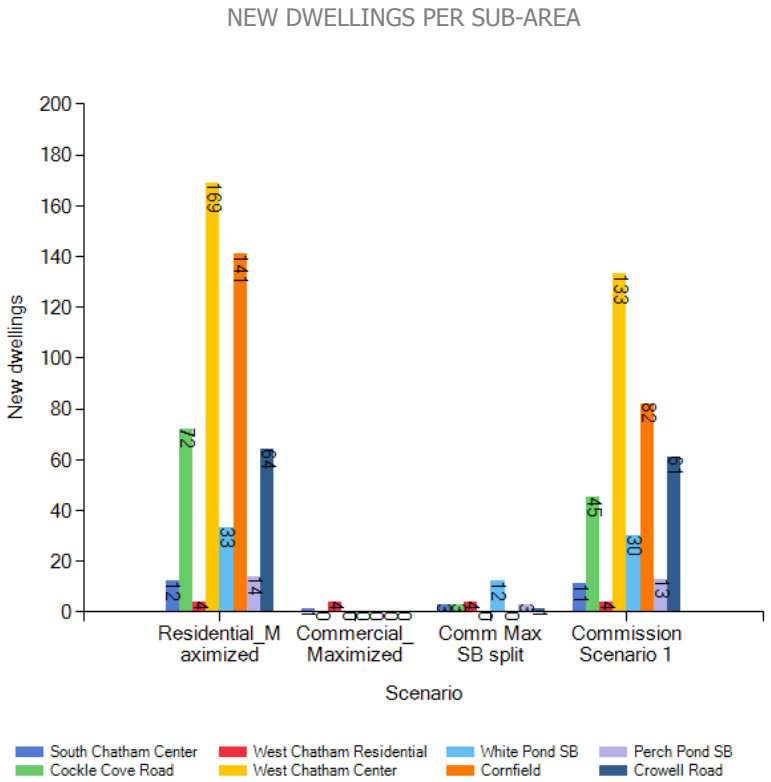


Figure 10: Potential new dwelings per area

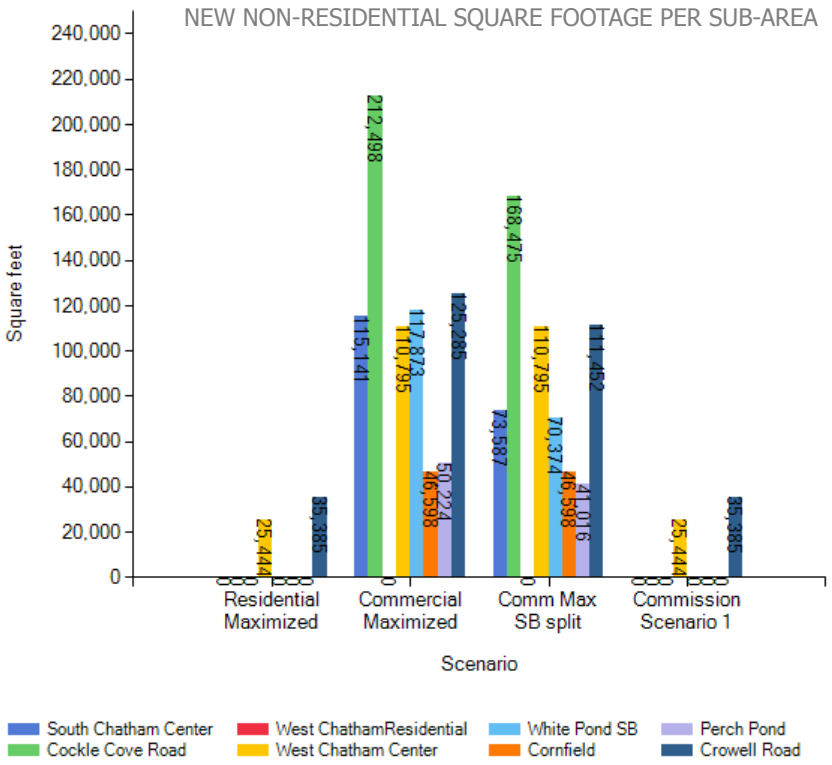


Figure 11: Potential non-residential square feet per area

OBSERVATIONS

The exercise of completing a buildout analysis is as valuable for understanding all the permutations allowed under the local regulations as the numbers generated. As such, the analysis in this section is intended to articulate observations made in studying and compiling the information through this analysis. This is not intended to be an exhaustive study of every aspect of the current regulations or the results of the buildout, but instead it is intended as an overview of important factors that are key for understanding future development patterns.

1. Overall Development Potential

The results show that despite a perception of being generally built-out, significant amounts of potential additional development remain. In reality, it is unlikely that every property will be developed to its maximum potential, since many other factors such as other regulations, economic decisions and market demand will temper the development in many locations. However, on any of these lots, development or redevelopment that could intensify the development pattern is possible under certain circumstances.

Depending on the assumptions used, the results shown in Figure 2 illustrate that increases in both number of dwellings and non-residential square footage may be fairly modest or may be large. The most likely scenario probably places the potential amount of development somewhere in between these totals.

2. Residential zones nearly builtout

Figure 5 shows that few new additional dwellings - a total of five more than today - are possible in either of the residential zoning districts (R-20 or R-60). Ignoring the possibility of Comprehensive Permits, it is unlikely under existing zoning that any significant changes in density in these areas will occur. However, the buildout does not take into account the mass or bulk of new housing or modifications to existing residences. The bulk and mass of structures in the residential districts are controlled through a combination of lot coverage, setbacks and height regulations. These dimensional standards limit the overall size of structures but in most cases would still allow significant additions to be made to existing structures. Such changes could have a dramatic effect on the character of the corridor. This issue will be the focus of discussions in either Workshop 2 or Workhop 3.

3. General Business District limited potential

Twenty-two percent of the lots in the study area are either entirely, or partly, in the GB3 zone. Depending on the scenario, growth in this district could be between 7% and 20% of the total additional non-residential floor area. Distributing this growth among the 68 parcels in this district, seems to indicate that in many cases only fairly modest increases in floor area may be possible.

In areas where the Flexible Development District overlays the GB3 district, there is no requirement for building commercial space with incidental residential as there is under the GB3 regulations. In the Cornfield Area, the entire GB3 district is overlaid by the flexible development district.

This pattern could have consequences to the future pattern of development along the corridor. If demand for residential development remains higher than that for commercial space, it is conceivable that areas like the Cornfield may become increasingly residential in nature. In addition, with limited non-residential expansion potential in the GB3 areas, it is possible that commercial development may look to other locations for business growth, including parts of the small business district or out of town.

4. Flexible Development District residential development potential

Significant amounts of the future residential development potential exists within the Flexible Development District, as illustrated in Figure 5. This is not surprising given that the district allows 12 residential units/acre, versus the four units/acre and two/units per acre of the GB3 and SB/R-20 districts respectively. Careful consideration should be given to whether such high-density residential is appropriate in all areas designated as Flexible Development District. Figure 10 shows that the areas with greatest residential development potential coincide with areas that include Flexible Development District overlays (Cockle Cove, West Chatham, Cornfield Area and Crowell Road), but some of these areas are not considered neighborhood centers where you might expect higher density housing.

5. Small Business District commercial development potential

Because the Small Business zone is measured from the street, many properties in the study area are effectively split between two designations; SB in the front and typically a residential district behind. From a zoning

perspective, it is important to understand how the rules in the two districts are applied to understand the buildout potential. The zoning regulations provide some guidance on this topic but the language is subject to interpretation (Section III D 3 h). From conversations with town staff it appears that the language has been interpreted to mean that the Zoning Board of Appeals may grant a Special Permit for parking for commercial uses to be located on the residential portions of the lot. For instance, a commercial parking lot for a commercial use in SB could be placed in the abutting residential zone. This interpretation effectively increases the area available for commercial uses in the SB District.

The impact of this on buildout potential can be seen by comparing the buildout amounts shown in Figure 2. The Commercial Maximized scenario assumes that lots that are split can use the entire lot for commercial purposes, whereas the Commercial Maximized SB Split Lot scenario shows the effect of limiting commercial development to half the lot while allowing the rear to develop as residential. Specifically, there is an increase in the amount of residential development (21 more dwellings), but a decrease in the non-residential square footage (approx. 150,000 sf less).

The buildout reveals that although it is unlikely that all 42 split SB lots will be used solely for commercial purposes, it is nonetheless possible and warrants careful consideration as this may significantly alter the character of the roadway. Accommodating parking on-site usually has the effect of reducing the size of a non-residential use because the parking spaces needed per square foot of floor area consumes land area available for development. By allowing parking on adjacent land, whether on another portion of a split lot or separately owned lot, the size of the building can be increased as land consumptive parking is no longer a constraint to development.

Figure 6 shows the potential distribution of new non-residential development throughout the study area with the greatest amount in the SB zoning district. This is partly because there are more SB zoned parcels than any other in the study area. The location of this additional development potential is illustrated in Figure 11, with the three areas with the highest potential for non-residential development occurring in the Cockle Cove, South Chatham and the White Pond SB district between West Chatham and the Cornfield Area. These areas may not coincide with areas where the town would like to see increased non-residential development.

SEWER REGULATIONS

This report does not cover any analysis of the sewer regulations and the affect of those regulations on development potential. The analysis of the sewer regulations will be contained in a subsequent report specific to that topic.

NEXT STEPS

This report identifies some key observations from the buildout analysis conducted to date. As alternate development and zoning scenarios are discussed, further analysis can be completed and compared to these baseline numbers.

The next step in the process of establishing a future land use pattern is to determine if the land use pattern described by the buildout results (and at the first public workshop) is consistent with how the town wishes to grow. In cases where the zoning does not further the vision of the long-range plan, subsequent public workshops will be used to refine the vision and desired land use pattern before participants are asked to indicate their preferences for certain development types. The aim is to generate a clearer picture of the kind of land use the community wants to see in the long term and use that to form the basis of recommendations to adjust local land use regulations to match the desired land use vision.

APPENDIX A

Route 28 Visioning Project

To: Jill R. Goldsmith, Chatham Town Manager
Deanna Ruffer, Chatham Community Development Director

From: Phil Dascombe, Senior Community Design Planner,
Cape Cod Commission (Project Manager)

Date: January 1, 2013

Subject: Baseline Buildout assumptions

Please find below the assumptions that the Cape Cod Commission and the Community Development Director have agreed to in order to conduct the baseline buildout analysis under our scope of work for the Route 28 Visioning Project. It is anticipated that alternate scenarios and additional buildout analysis will be conducted at future stages of the project and that some of the assumptions below may be modified to compare to the baseline numbers. As with all buildout, it is important to emphasize that the results of the buildout are estimates of future potential only. While many of the assumptions may be subject to debate, no assumption is going to provide an accurate prediction of the future and therefore there is little value in lengthy debate on each of these assumptions. The true value of the buildout estimate is that it helps us with an understanding of a possible future outcome and provides a baseline against which alternate scenarios can be measured.

It should also be noted that buildout analyses generally focus on establishing a maximum amount of develop, usually projected well into the future (30 years or more). While the buildout may provide a framework for understanding the amount of potential development, it does not account for future changes in regulations, economic decisions of individual property owners nor does it provide any guidance about how quickly buildout conditions will be reached.

Overview

1. The baseline buildout will look to establish a range of development potential along the corridor in the study area based on existing zoning only. The intention is to conduct two buildouts, one that assumes that residential development is maximized, and a second buildout that maximizes commercial development, with the understanding that the likely development scenario will fall somewhere in between these ranges.

After the initial ranges are established, more refinements may be made to the assumptions below and a third baseline buildout may be run. Additional buildout may be conducted to support alternatives and scenarios in the future.

2. In a separate effort, the Commission will also compare the zoning-based buildout to the potential under the flow regulations of the sewer bylaw as a comparison.

3. Although the sewering of Route 28 is to be phased, and parts of the corridor are only likely to be sewered in 20-30 years (South Chatham), for consistency we will assume that the entire study are will be sewered at buildout conditions.

Assumptions

1. Non-conforming lots, uses and structures. The state and local regulations governing expansion of uses and structures on non-conforming lots are complex and dictated by the existing characteristics of the site and uses. Accounting for changes in non-conformities is therefore difficult in a buildout analysis. Existing processes in town zoning allow expansion and in most cases redevelopment that conforms to the current zoning regulations would be permitted. Information from the town reveals that there are very few non-conforming lots in the study area, and information on non-conforming structures is not available without a detailed survey. Given these factors, it is appropriate to assume that at some point in the future, the uses and structures along the corridor will redevelop in a manner consistent with zoning. Therefore, buildout conditions will be calculated based on conformity with the existing zoning.

2. Development potential will not be calculated for any municipally owned lot or any lot that is permanently protected. Only the upland area of lots will be used to calculate buildout (i.e. wetlands will be subtracted).

3. Historic District Review. The Historic Business District applies to all SB or GB3 property along the corridor. In this district, any exterior changes to a structure visible from the street must be reviewed by the HBDC. This review broadly examines proposed changes to the building within its setting. However, without the benefit of specific dimensional requirements to guide assumptions about the size, placement and massing of development in these areas, the baseline buildout cannot account for this review.

4. Right of way width is assumed to be 33 feet, per the current subdivision regulations.

5. Efficiency Factor. This is used to account for constraints to development potential due to a variety of factors not associated with the dimensional standards of the zoning. Factors that may reduce the buildable area include, irregularly shaped lots, larger loading areas, outside storage areas and providing on-site stormwater treatment. For the baseline buildout conditions, the analysis will assume a 5% reduction in efficiency of development. This efficiency factor also accounts for the loss of developable parcel area due to large setbacks in SB and GB3 districts. This factor could be something to change as part of alternate scenarios to see the sensitivity of the analysis to this factor.

6. Flexible Overlay District. This district encourages certain residential uses by allowing higher densities than the underlying zoning. These overlay districts occur in both GB3 and SB zoning districts. As the baseline buildout is aimed at creating a range, these overlay districts can be accommodated by assuming that the density is higher (12 units/acre) for the maximized residential end of the range, but at the maximized commercial end of the range these parcels are developed per the zoning without using the flexible district provisions.

7. For the maximized residential scenario, we will assume that R-20 and SB district lots will develop as all residential. In the GB3 district, residential is allowed if it is incidental to commercial. To account for this, and assuming that any residential uses would be located above some portion of a commercial use, we will assume that commercial uses will occupy 75% of the space and residential uses 25% of the space

8. For the maximized commercial scenario, we will assume that R-20 would develop residentially as allowed under zoning, but that all SB and GB3 would develop with commercial uses only.

9. Parking requirements for office and retail uses are assumed to be dictated by the town bylaws (1 space per 150 ft. gross floor area). For eating and drinking uses, the requirement for one space for every 4 seats has to be converted to a per-square-foot number (1 space per 145 square feet). It is assumed that for every parking space required, 450 square feet of space is need. This accounts for the parking space, parking lot aisles and landscaping in the parking field.

10. Lots that are in one or more zoning districts will not be split, but will be designated based on the most permissive zoning designation, i.e. if split between R-20 and SB they will be assumed to be SB. The intention is to then calculate the development potential based on the lot going to a residential or mixed use versus what would happen if the lot was developed solely for commercial uses.

11. Affordable housing incidental to a single family use. This provision allows a rented, second-unit on a single family lot subject to several criteria, but most significantly if the lot is over 20,000 s.f. and if the unit is deed restricted. This provision has been infrequently used town wide, and in light of the relatively small study area, it is not expected to significantly alter the baseline buildout results. Therefore, this provision is not accounted for in the analysis.

12. Mandatory Affordable Housing. For projects resulting in ten or more new units, this provision requires ten percent of the units to be deed restricted as affordable. A density bonus is allowed under this provision, subject to the discretion of the Planning Board, if more than ten percent affordable units are provided. Because of the discretionary nature of this provision, and that density remains per the zoning unless additional affordable units are provided, this provision of the bylaws is not accounted for in the analysis.

		R-20	GB3	SB	Flex.District
Density assumptions	Residential Density	1/20,000 sf	4 units/acre	1/20000	12 units/acre
Bulk, mass assumptions	Lot Coverage	n/a (density only used)	60%	50%	Same as underlying
	Front setback	25	50	50	Same as underlying
	Side setback	15	15	20	Same as underlying
	Rear setback	15	15	20	Same as underlying
	Height	30	30	30	Same as underlying

APPENDIX B

Build-Out Report - Residential_Maximized

Analysis Name: BaselineBuildoutRev1

Land Use Layer

Layer containing land-use information	parcels_92013
Attribute specifying land-use designation	Overlay_Zo
Attribute specifying unique identifier of each land-use area	FID

Density Rules

Land-Use Designation	Dwelling Units	Floor Area	Efficiency Factor (%)
GB3	4.36 DU per acre	0.12 FAR	95
GB3FD	12 DU per acre		95
GB3Split	4.36 DU per acre	0.12 FAR	95
M			95
M/C			95
R20	2.01 DU per acre		95
R60	0.7 DU per acre		95
SB	2.18 DU per acre		95
SBFD	12 DU per acre		95
SBR60Split	0.7 DU per acre		95
SBSplit	2.18 DU per acre		95

Dwelling Unit Quantities

Land-Use Designation	Numeric Build-Out	Spatial Build-Out	Difference	Existing Dwelling Units
GB3	117	0	117	66
GB3FD	146	0	146	63
GB3Split	7	0	7	1
M	0	0	0	0
M/C	0	0	0	0
R20	5	0	5	57
R60	0	0	0	7
SB	25	0	25	123
SBFD	160	0	160	19
SBR60Split	1	0	1	15
SBSplit	48	0	48	46
Total	**509**	**0**	**509**	**397**

Commercial Floor Space

Land-Use Designation	Numeric Build-Out Floor Area (sq. feet)	Spatial Build-Out Floor Area (sq. feet)	Difference	Existing Floor Area
GB3	60683.053	0	60683.053	179852
GB3FD	0	0	0	74644.5
GB3Split	146.394	0	146.394	13077
M	0	0	0	0
M/C	0	0	0	0
R20	0	0	0	2761
R60	0	0	0	0
SB	0	0	0	72941
SBFD	0	0	0	11217.25
SBR60Split	0	0	0	1163.5
SBSplit	0	0	0	30766
Total	**60829.447**	**0**	**60829.447**	**386422.25**

Build-Out Report - Commercial_Maximized

Analysis Name: BaselineBuildoutRev1

Land Use Layer

Layer containing land-use information	parcels_92013
Attribute specifying land-use designation	Overlay_Zo
Attribute specifying unique identifier of each land-use area	FID

Density Rules

Land-Use Designation	Dwelling Units	Floor Area	Efficiency Factor (%)
GB3		0.16 FAR	95
GB3FD		0.16 FAR	95
GB3Split		0.16 FAR	95
M			95
M/C			95
R20	2.01 DU per acre		95
R60	0.7 DU per acre		95
SB		0.13 FAR	95
SBFD		0.13 FAR	95
SBR60Split		0.13 FAR	95
SBSplit		0.13 FAR	95

Dwelling Unit Quantities

Land-Use Designation	Numeric Build-Out	Spatial Build-Out	Difference	Existing Dwelling Units
GB3	0	0	0	66
GB3FD	0	0	0	63
GB3Split	0	0	0	1
M	0	0	0	0
M/C	0	0	0	0
R20	5	0	5	57
R60	0	0	0	7
SB	0	0	0	123
SBFD	0	0	0	19
SBR60Split	0	0	0	15
SBSplit	0	0	0	46
Total	**5**	**0**	**5**	**397**

Commercial Floor Space

Land-Use Designation	Numeric Build-Out Floor Area (sq. feet)	Spatial Build-Out Floor Area (sq. feet)	Difference	Existing Floor Area
GB3	152365.533	0	152365.533	17985
GB3FD	66388.048	0	66388.048	74644.
GB3Split	15321.241	0	15321.241	1307
M	0	0	0	0
M/C	0	0	0	0
R20	0	0	0	276
R60	0	0	0	0
SB	197734.212	0	197734.212	7294
SBFD	80002.071	0	80002.071	11217.2
SBR60Split	62845.489	0	62845.489	1163.
SBSplit	203757.158	0	203757.158	3076
Total	**778413.752**	**0**	**778413.752**	**386422.2**

Build-Out Report - Comm Max SB split

Analysis Name: BaselineBuildoutRev1

Land Use Layer

Layer containing land-use information	parcels_92013
Attribute specifying land-use designation	Overlay_Zo
Attribute specifying unique identifier of each land-use area	FID

Density Rules

Land-Use Designation	Dwelling Units	Floor Area	Efficiency Factor (%)
GB3		0.16 FAR	95
GB3FD		0.16 FAR	95
GB3Split	1.09 DU per acre	0.16 FAR	95
M			95
M/C			95
R20	2.01 DU per acre		95
R60	0.7 DU per acre		95
SB		0.13 FAR	95
SBFD		0.13 FAR	95
SBR60Split	0.7 DU per acre	0.13 FAR	95
SBSplit	2.18 DU per acre	0.13 FAR	95

Dwelling Unit Quantities

Land-Use Designation	Numeric Build-Out	Spatial Build-Out	Difference	Existing Dwelling Units
GB3	0	0	0	66
GB3FD	0	0	0	63
GB3Split	1	0	1	1
M	0	0	0	0
M/C	0	0	0	0
R20	5	0	5	57
R60	0	0	0	7
SB	0	0	0	123
SBFD	0	0	0	19
SBR60Split	1	0	1	15
SBSplit	19	0	19	46
Total	**26**	**0**	**26**	**397**

Commercial Floor Space

Land-Use Designation	Numeric Build-Out Floor Area (sq. feet)	Spatial Build-Out Floor Area (sq. feet)	Difference	Existing Floor Area
GB3	152365.533	0	152365.533	17985
GB3FD	66388.048	0	66388.048	74644.
GB3Split	1487.526	0	1487.526	1307
M	0	0	0	0
M/C	0	0	0	0
R20	0	0	0	276
R60	0	0	0	0
SB	197734.212	0	197734.212	7294
SBFD	80002.071	0	80002.071	11217.2
SBR60Split	30840.995	0	30840.995	1163.
SBSplit	93478.232	0	93478.232	3076
Total	**622296.617**	**0**	**622296.617**	**386422.2**

Build-Out Report - Commission Scenario 1

Analysis Name: BaselineBuildoutRev1

Land Use Layer

Layer containing land-use information	parcels_92013
Attribute specifying land-use designation	Overlay_Zo
Attribute specifying unique identifier of each land-use area	FID

Density Rules

Land-Use Designation	Dwelling Units	Floor Area	Efficiency Factor (%)
GB3	4.36 DU per acre	0.12 FAR	95
GB3FD	8 DU per acre		95
GB3Split	4.36 DU per acre	0.12 FAR	95
M			95
M/C			95
R20	2.01 DU per acre		95
R60	0.7 DU per acre		95
SB	2.18 DU per acre		95
SBFD	8 DU per acre		95
SBR60Split	0.73 DU per acre		95
SBSplit	2.01 DU per acre		95

Dwelling Unit Quantities

Land-Use Designation	Numeric Build-Out	Spatial Build-Out	Difference	Existing Dwelling Units
GB3	117	0	117	66
GB3FD	84	0	84	63
GB3Split	7	0	7	1
M	0	0	0	0
M/C	0	0	0	0
R20	5	0	5	57
R60	0	0	0	7
SB	25	0	25	123
SBFD	98	0	98	19
SBR60Split	1	0	1	15
SBSplit	42	0	42	46
Total	**379**	**0**	**379**	**397**

Commercial Floor Space

Land-Use Designation	Numeric Build-Out Floor Area (sq. feet)	Spatial Build-Out Floor Area (sq. feet)	Difference	Existing Floor Area
GB3	60683.053	0	60683.053	179852
GB3FD	0	0	0	74644.5
GB3Split	146.394	0	146.394	13077
M	0	0	0	0
M/C	0	0	0	0
R20	0	0	0	2761
R60	0	0	0	0
SB	0	0	0	72941
SBFD	0	0	0	11217.25
SBR60Split	0	0	0	1163.5
SBSplit	0	0	0	30766
Total	**60829.447**	**0**	**60829.447**	**386422.25**

APPENDIX C

Name	Residential Maximized	Commercial Maximized	Comm Max SB split	Commission Scenario 1
Build-Out Numeric Buildings	547	226	243	417
Build-Out Numeric Dwelling Units	509	5	26	379
Build-Out Numeric Floor Area	60,829.45	778,413.75	622,296.62	60,829.45
Build-Out Spatial Buildings	0	0	0	0
Build-Out Spatial Dwelling Units	0	0	0	0
Build-Out Spatial Floor Area	0	0	0	0
Cockle Cove Road dwellings	72	0	3	45
Cockle Cove Road floor area	0	212,498	168,475	0
Cockle Cove Road Parcels	62	62	62	62
Cornfield dwellings	141	0	0	82
Cornfield floor area	0	46,598	46,598	0
Crowell Road dwellings	64	0	1	61
Crowell Road floor area	35,385	125,285	111,452	35,385
Crowell Road Parcels	41	41	41	41
Existing Cockle Cove Road Dwellings	97	97	97	97
Existing Cockle Cove Road floor area	23,714	23,714	23,714	23,714
Existing Cornfield Dwellings	30	30	30	30
Existing Cornfield floor area	71,133	71,133	71,133	71,133
Existing Crowell Road Dwellings	78	78	78	78
Existing Crowell Road floor area	100,159	100,159	100,159	100,159
Existing Dwelling Distribution	405	405	405	405
Existing Dwellings	405	405	405	405
Existing Floor area	393,253	393,253	393,253	393,253
Existing Perch Pond Dwellings	22	22	22	22
Existing Perch Pond floor area	21,873	21,873	21,873	21,873
Existing South Chatham Center Dwellings	63	63	63	63
Existing South Chatham Center floor area	29,699	29,699	29,699	29,699
Existing West Chatham Center Dwellings	28	28	28	28
Existing West Chatham Center floor area	102,477	102,477	102,477	102,477
Existing West ChathamResidential Dwellings	48	48	48	48
Existing West ChathamResidential floor area	2,761	2,761	2,761	2,761
Existing White Pond SB Dwellings	31	31	31	31
Existing White Pond SB floor area	34,607	34,607	34,607	34,607
FD New Dwellings	306	0	0	182
FD new floor area	0	146,390	146,390	0
Flex Parcels	46	46	46	46
GB3 Flex District New Dwellings	146	0	0	84
GB3 Flex District New Floor Area	0	66,388	66,388	0
GB3 New Dwellings	124	0	1	124
GB3 new floor area	60,829	167,687	153,853	60,829
GB3 Parcels	66	66	66	66
Parcels in Buildout Analysis	318	318	318	318
Parcels in study area	352	352	352	352
Perch Pond floor area	0	50,224	41,016	0
Perch Pond Parcels	26	26	26	26
Perch Pond SB dwellings	14	0	3	13
R20 New Dwellings	5	5	5	5
R20 new floor area	0	0	0	0
R20 Parcels	51	51	51	51
R60 New Dwellings	0	0	0	0
R60 new floor area	0	0	0	0
R60 Parcels	6	6	6	6
SB Area	6,827,880	6,827,880	6,827,880	6,827,880
SB Flex District New Dwellings	160	0	0	98
SB Flex District New Floor Area	0	80,002	80,002	0
SB New Dwellings	74	0	20	68
SB new floor area	0	464,337	322,053	0
SB Parcels	106	106	106	106
South Chatham Center dwellings	12	1	3	11
South Chatham Center floor area	0	115,141	73,587	0
South Chatham Center Parcels	57	57	57	57
Split parcels	31	31	31	31
Split parcels GB3	2	2	2	2
Split parcels SB	41	41	41	41
The Cornfield Parcels	17	17	17	17
Total Area	12,927,617	12,927,617	12,927,617	12,927,617
West Chatham Center dwellings	169	0	0	133
West Chatham Center floor area	25,444	110,795	110,795	25,444
West Chatham Center Parcels	40	40	40	40
West Chatham Residential dwellings	4	4	4	4
West Chatham Residential Parcels	43	43	43	43
West ChathamResidential floor area	0	0	0	0
White Pond SB dwellings	33	0	12	30
White Pond SB floor area	0	117,873	70,374	0
White Pond SB Parcels	32	32	32	32