



CAPE COD
COMMISSION

Cape Wide Buildout Analysis to Support Regional Wastewater Planning

Appendix A

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APPENDIX A

Cape Wide Buildout Methodology

The Capewide buildout was conducted to estimate the additional residential and non-residential development possible under current zoning. Using the density and dimensional requirements of zoning, the development potential is estimated for all parcels that are developable or potentially developable in the region. Developable parcels include properties that are currently vacant as well as properties that are currently developed but that may have additional development potential (i.e. are under-developed). The result of the buildout is a parcel level GIS data layer with an estimated number of additional dwelling units and/or estimated amount of additional non-residential gross floor area. A detailed description of the databases used for the analysis and the assumptions made for the buildout model is included below.

A. Limitations

The buildout analysis is an estimate of future development and looks specifically at how zoning regulations enable and guide future development potential. The buildout estimates the amount of development permitted under the zoning in place at the time of the analysis and provides an estimate of the spatial distribution of such future development. However, as with all buildout methodologies, it is not a prediction of the future. Many other factors, rules, regulations and economic decisions effect the development of property, not all of these factors can be accounted for in the buildout analysis.

As the buildout is being conducted at a regional scale, a number of simplifications to the methodology have to be made and generalized assumptions applied to the analysis. As such, the buildout does not consider many of the unique land use situations that occur in the real world or the many micro-scale regulations and circumstances that affect development at the parcel level. Broad assumptions about land use patterns have been made in order to allow comparisons between different scenarios and to inform decision makers. It is anticipated that more refined and detailed analysis would be conducted for smaller and more discreet areas and that in these locations alternate assumptions and datasets may be used.

It should also be noted that the buildout relies heavily on the robustness and accuracy of the source datasets. Inaccurate, inconsistent and out-of-date data directly affect the results of the buildout. In some cases, information essential to calculating buildout conditions is non-existent and therefore assumptions have to be made to account for this missing information. Using assumptions will introduce a margin of error to the analysis but nonetheless buildout provides a reasonable estimate of future development and is useful for comparing land use and wastewater scenarios against one another.

B. Data preparation and availability

The first step in the buildout process involved dividing all the parcels on Cape Cod into one of two categories; those that would be included in the buildout analysis; and those that would be excluded. To achieve this, the Commission used the “state class codes” assigned to each property on the Cape. These codes are assigned by the Town Assessor for tax purposes and follow a three-digit numerical system outlined in the Massachusetts

Department of Revenue “Property Type Classification Codes” (State Class Codes) dated June 2009. The Commission’s aim was to exclude parcels that appeared un-developable or were considered unlikely to be developed within a 25-30 year planning horizon.

There are 250 unique state class codes in the Massachusetts Department of Revenue classification. While some state class code are applied to property that is not developable (e.g. “ undevelopable lands”), many state class codes require some judgment in determining whether development is possible. For instance, even on properties where development seems unlikely, or that are currently marginal for development, may nonetheless have development potential changes under future favorable market conditions. In cases where development seemed possible but unlikely in the planning horizon, the Commission took a conservative view and excluded these properties in order that the buildout would not over-inflate the development potential for the region. For example, some municipally-owned properties are coded as “vacant, Municipal or City Council (930)”. These are town-owned properties that have no permanent protection and therefore have the potential to either be sold and developed privately, or developed by the town. However, these properties may be equally likely to remain vacant or even permanently protected within the planning horizon. Therefore, taking a conservative view of these cases the properties coded as 930 were excluded from the analysis.

The task of categorizing the state class codes is further complicated as many entries are not consistent with the current three-digit system established by the state. For example, many towns add a digit to the state class codes to sub-categorize and tailor the coding system to their community. Therefore, the Commission had to account for all the combinations of state class codes appearing in the database, including all the four-digit combinations created locally (there are 746 unique combinations in the database, but only 250 state class codes). The latest version of the Property Type Classification Codes also references revised, re-organized and deleted state class codes, many of which still appear in the Assessors data available to the Commission. Furthermore, the attribute for state class code is occasionally left blank or the entry does not match any current state class code. In all of these situations, the Commission had to account for these discrepancies in preparation for the buildout analysis. A complete list of all the state class codes and whether they were included or excluded from the buildout analysis is provided in Appendix A. Appendix A also includes a summary description that provides a rationale for why certain categories were included or excluded from the analysis.

C. Major Assumptions

Because the Cape-wide buildout is intended to create a parcel based estimate of future development potential, all inputs must be capable of being reasonably estimated and applied to specific locations on the ground (i.e. a parcel). In many cases, factors affecting development can be reasonably estimated but often can’t be accurately distributed spatially and applied to individual parcels. For this reason, the buildout numbers should not be considered absolute and should be assumed to have a margin of error that accounts for some of these factors. However, the capewide buildout does provide a basis for comparative analysis between different scenarios. Some of the major assumptions made about the buildout are provided in brief below.

The buildout assumes that owners will make the highest and best use of their properties, maximizing the density of residential uses and maximizing the size of the non-residential structures. Also, parcels were assumed to be developable unless the Assessor had

categorized them as “undevelopable”. The Commission’s buildout analysis does not take into account how the Commission’s regulatory review effects the individual development decisions made by property owners. For example, property owners sizing projects to be below the Commission thresholds rather than maximizing the development.

The buildout does not take into account additional development over that allowed under zoning. For example, Chapter 40B (Comprehensive Permit) applications, which account for approximately 2% of the housing stock, have the potential to increase density over and above that allowed by zoning for qualified affordable housing projects. Research of Chapter 40B activity in the region over the past decade revealed no particular spatial pattern to these types of project, and an enormous variation in the density of these projects compared to that allowed under zoning. Therefore, accurately distributing development from these kinds of projects at a parcel level is not possible.

The buildout does not account for relief to the density or dimensional standards resulting from discretionary decisions such as variances. Variances to parking requirements, lot coverage or density would affect the buildout potential under the Commission’s methodology. However, although variance relief can be granted to uses or dimensional standards in the zoning, density is rarely the subject of a variance. As with Chapter 40B projects, accurately distributing and quantifying possible future relief from either the parking or lot coverage requirements in the buildout is not possible.

The buildout does not account for potential accessory dwellings that may be allowed under local ordinances, i.e. a second residence on a single family residential lot. Many Cape towns have bylaws that allow second dwelling units, some allowing the second unit by right while others require some kind of discretionary approval. However, many bylaws have additional restrictions that limit the circumstances under which an accessory dwelling is allowed. These include larger minimum lot sizes, square footage restrictions, limitations on the occupant or certain affordability requirements. Many of these bylaws have been infrequently used to date and so predicting how many property owners would likely take advantage of these bylaws cannot be accurately predicted; neither can they be accurately distributed to parcels. Therefore, the buildout does not specifically account for them.

The buildout does not account for changes to non-conforming uses into the future, i.e. commercial uses in residential districts and vice versa. The State Zoning Act allows expansion or extension of non-conforming uses under certain limitations. However, properties with existing, legal non-conforming uses have the ability to develop in the future as conforming uses in accordance with current zoning. For buildout, it is not possible to predict for individual cases whether the non-conformity will continue and be expanded or developed as a conforming use. Therefore, the buildout assumes that zoning will determine the future use of a property and that residential development will occur on residentially zoned property, and non-residential development on non-residentially zoned property.

D. Procedure

The general procedure follows the methodology established by MassGIS for buildout, in particular the formula for estimating future development potential. The Cape Cod Commission utilized Community Viz, which is a GIS extension to ESRI’s ArcMAP to run the buildout calculations. The program has the capability of calculating buildout based

on a variety of inputs and assumptions about density and the estimated gross floor area. A summary of the procedure is included below, followed by a more detailed explanation of the inputs and assumptions made.

Step 1: Gather data. The most recent available data was gathered to conduct the buildout analysis. The most critical data sets gathered include updated parcel and assessor's records, which are combined with resource information from the Commission GIS and MassGIS.

Step 2: Link zoning to parcels. The state zoning layer is modified to reflect any local overlay districts that affect the density or allowable lot coverage, e.g. wellhead protection districts. This modified state zoning layer is then used to assign a zoning designation to each parcel.

Step 3: Calculate input formulas. Each state zoning designation is assigned either a density for residential development, or an Effective Floor Area Ratio (Effective FAR) for non-residential development, or both in the case of a mixed use category.

Step 4: Create a constraint layer. A constraint layer that includes all areas that are to be excluded from the analysis is created. This layer includes all permanently protected open space, wetlands, water bodies, rights-of-way and all the parcels with state class codes that were determined to be excluded from the analysis.

Step 5: Create existing development datalayer. A GIS layer is created that includes information about the existing development on each property, including the existing dwellings and non-residential square footage listed in the Assessor's data.

Step 6: Run Buildout. Community Viz is used to run the buildout analysis. Community Viz first calculates the potential development on each parcel (based on the density or Effective FAR) and then establishes the net additional development by subtracting the existing development from the maximum buildout potential. The results provide additional dwelling units and/or non-residential square footage for each parcel.

E. Detailed Buildout Procedure

Step 1: Gather data

The Commission aimed to have the most recent available data to inform the buildout analysis. The two key datasets for the buildout analysis were the assessor's data (information about the parcels) and parcel data (property line work) which are linked using GIS to establish land use. Others are used as part of the analysis, each are briefly described below.

Assessor's Data

The analysis relies on linking the local assessor's data to parcel data, and ensuring that the integrity of the information is maintained across multiple towns. Inconsistencies in the way in which the assessor's data is formatted and gathered have raised concerns about the ability to create a consistent Cape-wide coverage. This state-wide problem is being addressed in a separate effort by MassGIS. They received a grant that will fund to create standardized assessing data and parcel linework over the next 3 years. MassGIS agreed to prioritize this effort for 14 Cape Towns in order to support the Commission's effort. The Commission standardized the remaining Cape town in house (Wellfleet). This updated assessor's data was delivered to the Commission in the Spring of 2012.

Parcel Data

GIS Parcel data is a representation of property boundaries, not an authoritative source. The authoritative record of property boundaries is recorded at the registries of deeds and a legally authoritative map of property boundaries can only be produced by a professional land surveyor. The parcel data used in this project was created by MassGIS using their Standard for Digital Parcels and Related Datasets. Version 2.1 of this standard is found in full on their website: <http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/standards/standard-parcels.html>

State Zoning

The MassGIS zoning datalayer (august 2007) represents the boundaries of municipal zoning districts, but there is no standard district classification across the state. While districts in different towns may have similar or even identical names, their definitions are often quite different. This state zoning layer applies generalized codes to allow for regional display and analysis. However, this datalayer does not include a statewide coverage of overlay districts.

Open Space

The protected and recreational open space datalayer (March 2012) contains the boundaries of conservation lands and outdoor recreational facilities in Massachusetts. Conservation and outdoor recreational facilities owned by federal, state, county, municipal, and nonprofit enterprises are included in this datalayer. Not all lands in this layer are protected in perpetuity, though nearly all have at least some level of protection. The following types of land are included in this datalayer:

- **conservation land**- habitat protection with minimal recreation, such as walking trails
- **recreation land**- outdoor facilities such as town parks, commons, playing fields, school fields, golf courses, bike paths, scout camps, and fish and game clubs. These may be privately or publicly owned facilities.
- **town forests**
- **parkways** - green buffers along roads, if they are a recognized conservation resource
- **agricultural land**- land protected under an Agricultural Preservation Restriction (APR) and administered by the state Department of Agricultural Resources (DAR, formerly the Dept. of Food and Agriculture (DFA))
- **aquifer protection land** - not zoning overlay districts
- **watershed protection land** - not zoning overlay districts
- **cemeteries** - if a recognized conservation or recreation resource
- **forest land** -- if designated as a Forest Legacy Area

MassGIS Article 97 Lands

The protected and recreational open space datalayer, containing the boundaries of conservation lands and outdoor recreational facilities in Massachusetts, is created and maintained by MassGIS. The associated database contains relevant information about each parcel, including ownership, level of protection, public accessibility, assessor's map and lot numbers, and related legal interests held on the land, including conservation restrictions and article 97 status. Conservation and outdoor recreational facilities owned by federal, state, county, municipal, and nonprofit enterprises are included in this datalayer. Not all lands in this layer are protected in perpetuity, though nearly all have at least some level of protection.

Although the initial data collection effort for this data layer has been completed, open space changes continually and this data layer is therefore considered to be under development. Additionally, due to the collaborative nature of this data collection effort, the accuracy and completeness of open space data varies across the state's municipalities. Attributes, while comprehensive in scope, may be incomplete for many parcels.

The build out methodology isolated the parcels with Article 97 status and which were indicated as having a level of protection "in perpetuity".

DEP Wetlands

The DEP wetland datalayer (January 2009) contains delineations of all the resources regulated by the state's Wetland Protection Act, including marshes, swamps, coastal banks, dunes, etc. This data was created by aerial photograph interpretation and the delineations are for planning purposes only and therefore do not represent official wetland delineations. Within this data layer, there are 28 categories of wetland that are grouped into one of eleven broader categories: reservoir, marsh, wooded swamp, cranberry bog, salt marsh, open water, tidal flat/rocky shore, beach/dunes, open water (tidal, brackish, salt pond), open water (ocean), and not interpreted.

[Step 2: Link zoning to parcels](#)

The amount of development possible on a property is chiefly determined by the zoning regulations and bylaws in place in that community. Other regulations, such as board of health and general bylaws, together with economic and physical conditions also affect development potential. For the capewide buildout, the Commission focused on the effect of the zoning regulations on development potential. In more discreet areas, other factors may be appropriately included in the analysis, but at a regional scale more fine grained analysis is not possible.

To establish the potential buildout for the region, the Commission chose to use the state zoning layer, which is a simplified set of zoning designations that were specifically created by the state for regional analysis of this kind. This data layer was selected for two reasons. Firstly it allows a uniform set of assumptions to be consistently applied at the regional level and across town boundaries rather than having different assumptions for each local zoning designation. Secondly, using the state zoning layer simplifies the number of assumptions necessary to conduct the buildout. For example, because

formula must be created for each combination of zoning/overlay district, using the local designations would result in a significant number of potential combinations of districts across the region. As the state zoning layer includes 21 zoning categories, this process is simplified. For each town, the state provides a summary table that indicates how each local zoning designation has been categorized in the state zoning system. This summary table allows the Commission to assign appropriate density and dimensional requirements to each based on the local bylaws. The state zoning designations and a description of the category is listed in Table A below.

Table A: State Zoning Classification

Abbreviation	Description
R1	Single Family Residential, >= 80,000 sq. ft.
R2	Single Family Residential, 40,000 - 79,999 sq. ft.
R3	Single Family Residential, 20,000 - 39,999 sq. ft.
R4	Single Family Residential, 15,000 - 19,999 sq. ft. *
R5	Single Family Residential, 5,000 - 14,999 sq. ft.
RA	Residential/Agricultural Mix
ML	Multi-family, low density (3-8 D.U./acre)
MM	Multi-family, medium density (9-20 D.U./acre)
MH	Multi-family, high density (> 20 D.U./acre) *
CP	Conservation/Passive Recreation
MU	Mixed Use
IN	Institutional
LB	Limited Business
GB	General Business
CB	Central Business
LI	Light Industrial
GI	General Industrial
OP	Office Park
HB	Highway Business
HC	Health Care *
NZ	No Zoning

* There are no state zoning categories of this kind on Cape Cod.

Overlay Districts

In many towns on Cape Cod overlay districts exist that modify the underlying zoning, many of which affect the density and coverage standards of the zoning. Therefore, the Commission conducted an extensive review of the local zoning provisions for any overlay districts that might have an effect on the buildout. Many of the local overlay districts have no effect on the density or development potential, or in cases where they do have an affect the regulations are limited to either certain types of development or specific situations which cannot be distributed accurately at a regional level. However, there are several overlay districts that uniformly modify the underlying zoning provisions, and could be mapped easily. In these cases, the state zoning layer was modified to establish new zoning designations that are equivalent to the combined state zoning and applicable

overlay district. In the following table, the overlay districts that were accounted for are listed, together with the modifications to the input assumptions that were assigned to them.

Town	Overlay	Density Changes	Frontage changes	Coverage changes
Barnstable	Groundwater Protection Overlay	-	-	Lot coverage 50%
	Well Protection	-	-	Lot coverage 50%
	Resource Protection	Min lot size 87120	-	-
Bourne	Water Resource District	-	-	Lot coverage 40% max
Brewster	No overlays included	-	-	-
Chatham	No overlays included	-	-	-
Dennis	Quivet Neck Crowes Pasture -- Coles Pond	Min lot size 120000	-	-
	Quivet Neck Crowes Pasture -- Quivet Creek	Min lot size 100000	-	-
	Quivet Neck Crowes Pasture -- Cape Cod Bay	Min lot size 80000	-	-
Eastham	No overlays included	-	-	-
Falmouth	Water Resource Protection	Min lot size: 80000	-	40% lot coverage
Harwich	Six Ponds (A and B)	Min lot size: A=60000, b=100000	b=200	a=30% coverage; B=15% coverage
	Drinking Water Protection	-	-	Lot coverage 40%
Mashpee	No overlays included	-	-	-
Orleans	Groundwater Protection District2	-	-	40% coverage
	Groundwater Protection District3	-	-	40% coverage
Provincetown	No overlays included	-	-	-
Sandwich	Water Resources Overlay	Min Lot size: 87120	-	-
	Three Ponds District	Min Lot Size 87120	Frontage=200	25% impervious
Truro	No overlays included	-	-	-
Wellfleet	Main Street Overlay	-	-	70% coverage (33% building coverage)
Yarmouth	No overlays included	-	-	-

Each parcel was assigned a zoning designation based the zoning designation where the centroid (geometric center) of the parcel is located.

Step 3: Calculate input formulas

To conduct the buildout analysis, the Community Viz software requires certain inputs or assumptions about the residential **density** allowed and the estimated non-residential **floor area ratio** for each of the zoning designations. Therefore, for each of the state zoning designations, the Commission had to establish these inputs for the analysis. The MassGIS methodology provides formula to calculate these inputs which are described briefly below. The complete MassGIS methodology can be reviewed at <http://www.mass.gov/mgis/buildout.htm>.

Residential

To calculate the residential buildout, an estimate of the potential number of dwelling units allowed on a parcel is made based on the minimum lot size, or the density allowed per parcel (dwelling units per acre). As seen in Table A, each of the residential state zoning designations provides a range of either minimum lot size or density (units/acre). However, before the analysis could be completed the Commission had to determine an appropriate density within this range to apply. To accomplish this, the Commission conducted a thorough review of the local bylaws within each category to understand the range of densities that apply. With this information, the Commission selected the most appropriate and commonly occurring density from the range of results. The results of this analysis are shown in Table B below.

The MassGIS methodology provides a formula for calculating the gross lot area that in turn is used to calculate the number of additional housing units that could be accommodated on a site. The gross lot area includes the minimum lot size plus an allowance to account for land consumed by the construction of access roads for subdivisions. The Gross Lot Area in this case is calculated as follows:

$$\text{Gross Lot Area} = \text{Minimum Lot Size} + (\text{Lot Frontage} * (1/2 \text{ right-of-way width}))$$

The following example illustrates this concept. In this example, the diagram shows a zone district with a minimum lot size of 43,560 square feet (1 acre), a minimum frontage requirement of 150 feet, and a requirement for 50-foot-wide road right-of-way for new subdivision roads.



$$\begin{aligned} \text{Gross Lot Area} &= \text{Min. Lot Size} + (\text{Frontage} * (1/2 \text{ right-of-way})) \\ &= 43,560 + (150 * (25)) = 47,310 \text{ sf} \end{aligned}$$

Community Viz estimates potential additional dwelling units by dividing the parcel area by the gross lot area for that district. The net additional units are then calculated by subtracting any existing development on the property from this maximum buildout density. Using this method ensures that any potential development that could occur on under-developed properties (i.e. where there may be a single family home on a very large lot) are accounted for in the analysis. In addition, Community Viz also assumes that if there is a legal lot (i.e. a polygon on the parcel layer) a dwelling unit can be added regardless of whether that parcel meets the minimum lot size currently in that district. The analysis also excluded all parcels with less than 1,000 square feet in area to ensure that polygons that were remnants or “slivers” resulting from the geoprocessing of multiple data layers were not mistaken for parcels.

Non-Residential

To calculate the non-residential buildout, an estimate of the additional square footage possible on each parcel. This estimate is based on the dimensional and parking regulations of the zoning. The MassGIS buildout methodology provides a formula for calculating an “effective Floor Area Ratio (FAR)” for this purpose. (Note: in areas where underground parking is possible, an alternate method is used to estimate effective floor area. The zoning in Hyannis and Buzzards Bay both encourage structured parking, and therefore the method used in these locations is described separately below)

The MassGIS formula for calculating the Effective FAR is as follows:

$$\text{Effective FAR} = \frac{\text{Total floor space of building}}{((\text{Footprint of structure}) + (\# \text{ parking spaces} \times \text{average area/space}))}$$

The Commission reviewed all the underlying local bylaws applicable to each of the state zoning designations and used these as the basis for establishing appropriate dimensional standards for each designation. The Commission also assumed a mix of uses for each zoning district based on typical development patterns seen in these kinds of districts. Typically, the parking requirements are a constraint on development, often limiting the structure to less than the building footprint permitted under zoning as land is consumed for parking areas. For this reason, an appropriate mix of uses for each district was assumed to estimate the parking required, which in turn was used to determine the amount of floor area that can be constructed while still meeting the lot coverage requirements.

For a regional analysis, the Commission assumed a limited range of uses for each of the non-residential districts, with varying proportions of office, retail, restaurant, warehouse/industrial and residential. While this list does not account for all possible uses, the Commission decided that it would account for the majority of uses seen on the Cape and would provide a reasonable estimate of the potential development. In addition, as the mix of uses is used to generate parking demand, any uses that have the same parking requirement would result in an identical outcome for buildout (i.e. offices, professional services, administrative offices, banks and medical offices often have similar parking requirements). A more fine-grained local analysis may explore the effect of additional uses in the mix provided that each use has an appropriate parking generation rate (spaces per square foot). Hotels and motels are particularly challenging to account for in this methodology as the parking requirement is typically based in the number of rooms rather than square footage. A review of hotels on the Cape was conducted to attempt to generate an appropriate FAR, however, there is such wide variation in both the amenities provided (meeting and conference space, restaurants or health clubs) and the size of rooms offered that establishing an appropriate FAR was not pursued. The parking requirements for each of the selected uses were established by reviewing the town bylaw requirements and selecting the most commonly used ratios. All of the density, dimensional and parking assumptions are illustrated in Table B. Modifications to these parameters were made in individual towns based on the overlay district restrictions in place in that community.

Table B: Inputs and assumptions for state zoning designations

State Zoning Class	Comments	Residential	Non-residential					
		Minimum Lot Size or density	Lot Coverage (%)	Mix of Uses (%)				
				Office	Retail	Restaurant	Industrial	Residential
R1		87120	-	-	-	-	-	-
R2		43560	-	-	-	-	-	-
R3		25000	-	-	-	-	-	-

R4	None on the Cape	-	-	-	-	-	-	-
R5		10000	-	-	-	-	-	-
RA		60000	-	-	-	-	-	-
ML		3 du/acre	-	-	-	-	-	-
MM		9 du/acre	-	-	-	-	-	-
MH	None on the Cape	-	-	-	-	-	-	-
CP	Assumed not developable	-	-	-	-	-	-	-
MU	Hyannis only	12 du/acre	100/50 *	24	24	12	-	40
IN		-	50	100	-	-	-	-
LB		-	70	35	55	10	-	-
GB		-	70	35	55	10	-	-
CB	Buzzards Bay only	12.44 du/acre	80/40 *	16	18	6	-	60
LI		-	50	30	10	-	60	-
GI		-	50	30	10	-	60	-
OP		-	50	30	10	-	60	-
HB		-	70	35	55	10	-	-
HC	None on the Cape	-	-	-	-	-	-	-
NZ	No assumptions	-	-	-	-	-	-	-
Parking requirements:				1/250 sf	1/200 sf	1/145 sf	1/600 sf	1/2 units
* depending on the overlay district								

Using the MassGIS formula and the assumptions in Table B, the effective FAR is calculated separately for each of the uses assumed to be within the district. This is based on the typical pattern and form of development for each use. For example, warehouses, retail and restaurant uses were all assumed to be 1 story, while offices were assumed to be 2 story. These use-specific effective FARs are then combined based on the percentage mix assumed per district to arrive at a district-wide overall effective FAR.

Finally, the effective FAR calculation is then modified by an “open space factor” that accounts for lot coverage limitations placed on the amount of the lot that can be covered by the building and parking. For this purpose, lot coverage is intended to include the impervious area covered by the building footprint, parking spaces and their associated driveways and aisles.

Parking

For the purposes of the buildout analysis, parking requirements for non-residential uses need to be expressed in spaces per square feet. However, of the uses selected, the restaurant parking requirements are more typically expressed in spaces per seat. For the purposes of the buildout analysis, the restaurant requirement needed to be translated into spaces per square feet. The MassGIS methodology provides a formula for this based on information in the Institute of Transportation Engineers (ITE) Trip Generation Manuals, 8th Edition. The ITE manual provides information on both vehicle trips per square feet and vehicle trips per seat. However, the ITE manual also shows that there are a wide range of traffic generation rates for restaurants, from low traffic generation “low turnover” restaurants to high traffic generating “fast food” restaurants. For this analysis,

the Commission selected a middle range traffic generator restaurant referred to by ITE as a “high turnover sit down restaurant”.

ITE rates for “high turnover sit down restaurants”:
11 trips for 1,000 square feet (pm peak weekday)
0.4 trips per seat (pm peak weekday)

Using these trip generation figures, a number of seats per 1,000 square feet can be calculated:

$$(1 \text{ seat}/0.4 \text{ seats}) * (11 \text{ trips}/1,000 \text{ sf}) = 27.5 \text{ seats per } 1,000 \text{ sf}$$

Following a review of the local bylaws for restaurant parking, the Commission selected the most commonly used parking rate of 1 parking space for every 4 seats (or 0.25 spaces per seat). This figure can then be used to convert the seats/1,000 sf to spaces per square foot:

$$(27.5 * 0.25) \text{ spaces}/1,000 \text{ sf} = \text{one space per } 145 \text{ square feet.}$$

This ratio is used to calculate the restaurant portion of the effective FAR for each district.

A value of 420 square feet per parking space was assumed for this analysis, which includes the stall, aisle, planting strips, and unusable space at corners of the parking areas. This is representative of a more suburban/rural parking field.

Mixed Use

There are two state zoning designations that were determined to be appropriate for a mixed use treatment, the Mixed Use and Central Business designations. The Mixed Use designation only occurs in Hyannis; the Central Business designation only occurs in Buzzards Bay. In both of these locations, the local zoning encourages mixed use development and it was decided that in these locations an account for both the residential units and non-residential floor space should be made.

The residential density in these areas was based on the density allowed under local zoning. As these units are assumed to be multi-family residences rather than detached single-family homes, no factor was applied for space taken up by road rights-of-way for access. The effective FAR was calculated in a similar way as non-residential districts, but the total effective FAR excluded the residential portion of the uses.

Alternate method to calculate effective FAR for Mixed Use and Central Business Districts only.

In areas where structured or underground parking is considered possible, an alternate method of establishing an effective FAR is needed. This is because the formula described thus far assumes at-grade parking and that the entire building is used for non-parking functions. The zoning in the downtown areas of Hyannis and Buzzard’s Bay both contemplate and encourage structured parking. These areas are designated under the state zoning layer as Mixed Use (MU) and Central Business (CB) respectively. As these

areas were uniquely classified under the state zoning, a tailored approach to calculating buildout in the MU and CB districts was possible. This method is described briefly below:

1. The first step in the methodology is to estimate the amount of floor space per use for an illustrative building. For example, the height and the assumed mix of uses can be used to first calculate a theoretical building size, and then divide up that space to reach an assumed amount of space per use, based on an illustrative footprint.
2. Using these square footage amounts, the required parking can be calculated, taking into account any allowed reductions to the parking requirements. Using the same assumptions about the area needed for parking spaces as in the previously buildout, the area needed to accommodate the parking on-site is calculated. At this stage, the parking amount is further reduced as it was assumed that some of these spaces would be accommodated in a centralized parking structure off site.
3. By adding the illustrative building footprint area to the area needed to accommodate parking, a total coverage percentage is calculated and more importantly the ratio between the two areas can be established for that mix of uses. However, this lot coverage only calculates the space needed for accommodating parking and building, it does not account for any limitations to the amount of a lot that can be covered.
4. In order to account for lot coverage limits under zoning, the relative space on a lot available for the combined footprint/parking field needs to be calculated. By accounting for lot coverage limits, and the same efficiencies described in the alternate MassGIS method described above, a new percentage building coverage can be calculated for both the parking field and the building footprint.
5. Using this percent building footprint percentage, and the height limit under zoning and the mix of uses assumed, a calculation of the total FAR and relative effective FAR for each of the non-residential uses can be made.
6. An average is taken of these effective FARs that is used as an input for Community Viz.

Step 4: Create a constraint layer.

Not all parcels on the Cape are developable, or likely to be developed in the planning horizon, and therefore a constraint layer that includes all areas to be excluded from the buildout analysis was created. This single layer includes the following data:

- 1) Wetland. A review of the zoning provisions of each town on the Cape revealed that all town's in the region require some sort of reduction of the gross lot area for wetland features. Most require that 100% of the lot area be contiguous upland, with some requiring that all water bodies be deducted from the gross lot area. Therefore, for the purposes of the buildout the wetland features were excluded from the parcel area to more accurately calculate potential additional development. However, the wetland layer features labeled as "Barrier Beach System", "Barrier Beach- Coastal Dune", & "Coastal Dune" were not excluded as these features are regulated by the Wetland Protection Act but in some instances are developed or developable under local regulations.

- 2) Article 97 Lands. Property protected under this state statute requires that land or easements acquired for natural resources purposes shall not be used for any other purposes unless approved by a two thirds vote of the legislature. Although not technically a permanent restriction, the Commission felt that these properties were unlikely to be used for development purposes in the planning horizon and were therefore excluded.
- 3) Open Space MassGIS has an open space layer that changes continually and this data layer is therefore considered to be under development. Additionally, due to the collaborative nature of this data collection effort, the accuracy and completeness of open space data varies across the state's municipalities. Attributes, while comprehensive in scope, may be incomplete for many parcels. The Cape Cod Commission also maintains a local open space layer that is provided to MassGIS regularly to ensure the state wide layer captures the larger scale local data. CCC segregates open space and open land in the same layer by categories. The categories included in the constraint layer are conservation, conservation restriction, land bank, chapter lands, land trust, and water district. As these all have some degree of permanent protection and are therefore unlikely to be developed in the planning horizon.
- 4) Road rights-of-way. All public and private rights of way were included in the constraint layer to ensure that these areas were not used to calculate additional development potential. The Community Viz software will not distinguish between a parcel and the right-of-way when conducting the analysis, and therefore these areas needed to specifically exclude the right-of-way polygon. Private roads may also cover parts of private property and were also subtracted from the developable area.
- 5) Undevelopable properties. This layer includes all the properties with state class codes that were excluded from the buildout. These codes are described more fully in Appendix A1.

[Step 5: Create existing development datalayer](#)

The Community Viz software calculates the net additional development allowed on a parcel by subtracting any existing development on the property from the gross buildout calculations. A data layer that consists of point data for each parcel with a field for both existing dwelling units and existing non-residential square feet was created for this process. The information used to populate these fields is described below.

Existing Dwelling Units

Information concerning the number of dwelling units on a parcel is not consistently gathered by town Assessors on the Cape and on many occasions it is not captured at all. Several potential sources of this information were explored by the Commission for their accuracy and availability; some of the issues encountered are discussed below.

The Assessor's data often has no indication of the number of dwelling units, however, the state class codes assigned to the parcel provide some indication. For example, single family residences are given a 101 code and therefore all these properties can be assigned a one for that dwelling unit. Unfortunately, the state class codes for properties with

multiple dwellings (either mixed-use buildings, condominiums, apartments and mobile homes) do not specify the unit count for parcels categorized this way. For example, parcels with a “More than Eight Units (112)” state class code could have a wide range of existing dwelling units resulting in an undercount of the density. For these types of properties, alternate data sources were explored and are briefly described below.

The Commission explored the possibility of using Fire Department address records, however, not all fire departments have a unit number associated with a multi unit parcel. The Commission explored the use of utility company records to determine a number of units per parcel; however, these data sets were not sufficiently accurate for this purpose. In some cases, a multi-unit parcel has only one utility connection which would result in an undercounting of the existing dwellings. In other cases, such as some condominiums, each unit does have an individual connection.

The Commission also contacted existing wastewater treatment facilities to identify if customers on multi-unit parcels were on individual accounts or on a single account for a given parcel. It was determined that customers are billed based on water use and, as explained above, some multi-unit parcels have a connection for every unit and some have a single connection.

All municipalities submit an annual report (Form LA4) to Massachusetts Department of Revenue, Division of Local Services that among other figures reports the number of residential uses in the community. Close examination of this data reveals that this information is mostly a total of the number of parcels with various residential state class codes rather than the number of units on all of those parcels. For example, a 20-unit apartment with a code of 112 would be reported as a single 112 multifamily parcel and not 20 units.

Condos

Often, one large parcel will have many condo units developed on them. For property tax purposes, each unit owner has a record of their units particular information, such as assessed value and square footage of living area. The assessor sends the tax bill to that owner’s address. The tables associated with the parcel layers in the GIS have a field with a map and parcel number combination (“map_par_id”) as do the tables containing records of the unit owner’s mailing address. If one parcel’s map and parcel combination is for example 101-203, and there are ten owners of ten units in the assessor’s table, each record will have the same map_par_id, 101-203. A process named “frequency” in the GIS can be used that produces a report of a table listing the number of occurrences of a field specified by the user, and a sum of the number of times that same set of characters occurs in the table. In this example, the result would look like this:

Map_par_id	Frequency
101-203	10

The frequency table would have a record for each map_par_id in the assessor’s table with the frequency of how many records had the same map_par_id. We use this value as a way to get the number of dwelling units (condo units) per parcel. In the GIS, the frequency table can be added to the parcel attribute table using “join”, and using the frequency value as the value of the number of dwelling units.

Mobile homes.

There is great variation in the number of mobile homes that are permitted for these uses, and often no relationship to the density allowed for residential house lots. Therefore, there is not a one-to-one relationship of residential units to mobile homes for the purposes of buildout. An assumed unit number was assigned to these lots based on specific site research.

Mixed uses.

There are 517 parcels that have a state class code of 13 which is defined under the state classification system as a building with a retail store on the first floor, apartments on the upper floors, and a major portion of the related land is reserved for tenant parking. There are 711 parcels that have a state class code of 31 which is defined under the state classification system as a building with retail use on the first floor, office space on the second and third floors, apartments on the fourth floor and a major portion of the related land is allocated for commercial use.

The assessor’s information generally does not provide a unit count for any of these properties. Based on the state class description, the building area on these properties were assumed to have 50% residential, 50% non-residential for the 13 codes, and 25% residential, 75 % non-residential in the case of the 31 codes. Each residential portion was nominally assigned a single unit.

Following research of all these data sources, the following assumptions were made for the number of units for each of these residential state class codes. In the GIS, a “join” process was used to assign these dwelling unit values to the appropriate state class codes.

State Class Code	Description	Assumed Unit Number
13, 0130, 0131, 013V	Multiple-Use: primarily residential, described as retail on the ground floor with apartments above.	1
31, 0310, 0315, 0316	Multiple-Use: primarily commercial, described as retail on the ground floor, offices on the second and third floor with residential on fourth floor.	1
101, 1010, 1012, 1013, 1014	Residences: Single Family	1
103, 1030	Residences: Mobile Homes	10
104, 1040	Residences: Two-family	2
105, 1050	Residences: Three-family	3
106, 1060	Residences: Accessory Land with Improvement	0
109, 1090, 1093	Residences: Multiple Houses	2
111, 1110	Apartments: Four to Eight Units	6
112, 1120	Apartments: Eight or more	10
121,1210	Rooming and Boarding Houses	10
123	Residence Halls and Dormitories	10

State Class Code	Description	Assumed Unit Number
125	Other Congregate Housing	10
140	Child Care Facility	1

Existing non-residential Floor Area

As with the existing dwelling unit data, accurate information concerning the amount of gross floor area on the site is inconsistently collected. The Assessor's data includes several entries with square footage information, including gross building, living area, and effective area. Of these entries, the living square footage was used as it excludes areas such as basements and storage areas from the total.

For all parcels with non-residential state class codes, the living square footage was assumed to be non-residential floor area. As described above, mixed use categories were divided 50% residential, 50% non-residential (13 codes) and 25% residential, 75 % non-residential (31 codes).

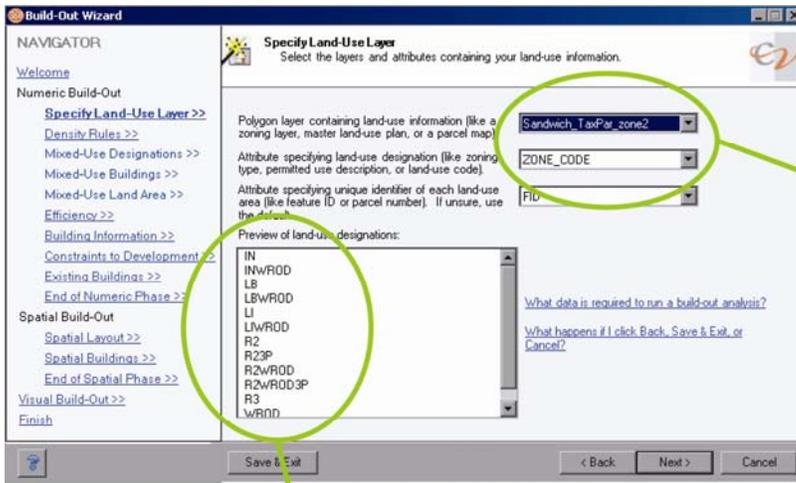
In some municipalities, there was no entry for square footage in the Assessor's data. In these cases, building footprint data was used in combination with height information (number of stories) to calculate an existing square footage.

Step 6: Run Buildout

The Community Viz buildout function allows all the input assumptions and constraints used in the calculations to be entered in a series of forms. Each of these steps are briefly described below, and accompanied by annotated screen shots of the software. The buildout function allows three kinds of buildout to be conducted: Numeric, Spatial and Visual. The numeric buildout uses the dimensions of the lot to estimate the buildout potential, the spatial buildout allows additional constraints to be used to refine the buildout and places a point representing a building location on each property, and the visual buildout places a three dimensional structure on this building point for a visualization. For the Cape wide analysis, only a numeric buildout was conducted to simplify the processing requirements.

a. Specify Land Use Layer

The parcel layer is identified as the layer upon which the buildout is conducted. This layer contains an attribute that also identifies the state zoning code/overlay district designation applicable to the property. The software automatically lists all the combinations of zoning present in the applicable parcel layer.

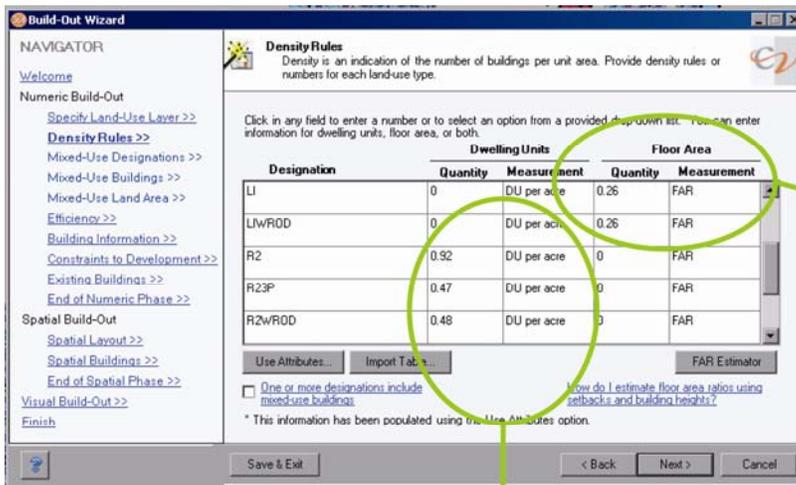


The land use layer used for the analysis is selected (parcel layer) and the field containing the zoning information is identified.

The zoning designations found in the parcel layer are listed automatically. These are a combination of the state zoning designations as modified by the overlay districts.

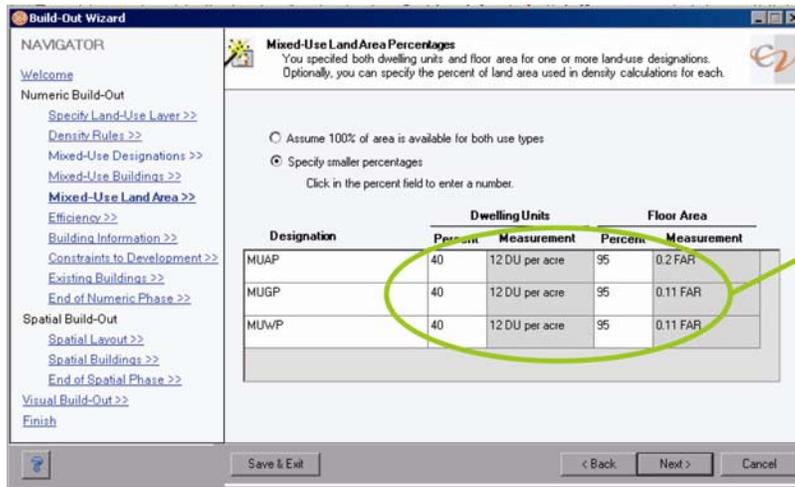
b. Density Rules

The density assumptions calculated in Step 3 above are input for each zoning combination in the parcel layer. For the mixed use designations, a value is entered into both the residential density and the floor area columns. In these cases, an additional screen allows a percentage mix of residential/non-residential uses to be input.



For each non-residential zoning designation, a floor area ratio is entered.

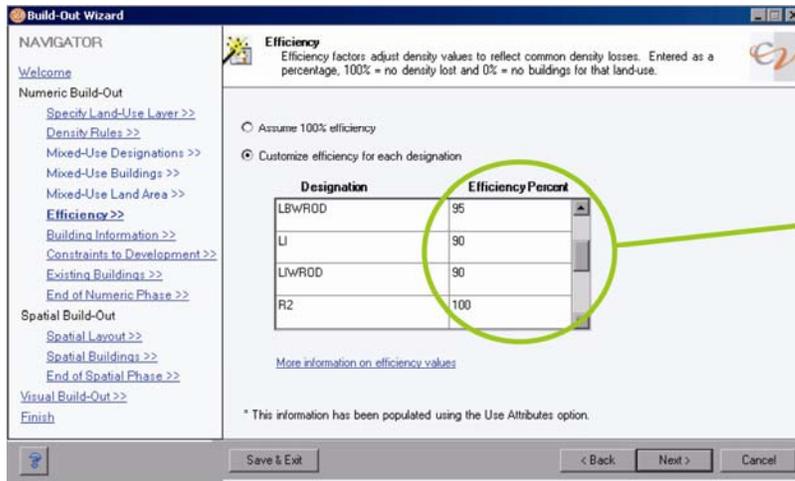
For each residential zoning designation, a density value is entered (dwelling units/acre). In the case of a mixed use, an entry is made in both the dwelling units and floor area columns.



For zoning designations with both a residential density and effective FAR entry (mixed use designations), an additional screen appears in which the percentage mix of uses can be entered.

c. Efficiency

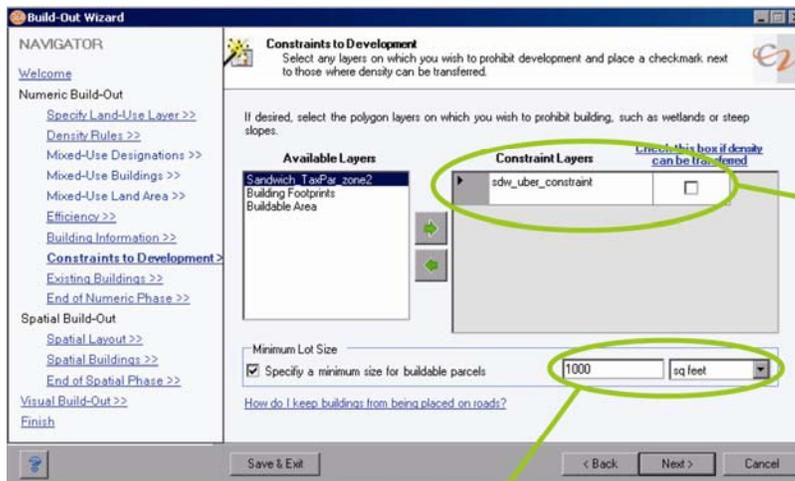
The software allows adjustments to be made to account for common losses to development potential resulting from a variety of factors. For instance, the non-residential development effective FAR assumes that the only impervious areas on the site are either the parking or the building footprint. In reality, there may be other impervious areas commonly associated with development such as patios, sidewalks, driveways, storage and loading areas. In industrial areas, large commercial complexes and institutional uses, large areas of the property may be devoted to loading areas and turnaround for delivery vehicles. In some instances, the setback requirements may also limit the area of the lot available for development, particularly on corner lots. Accommodating other requirements of bylaws such as stormwater retention, landscaping and fire access may also limit the space available for development. For these reasons, the Commission assumed a 95% efficiency for all non-residential development, and assumed a 90% efficiency for all industrial and institutional designations to account for additional space for outdoor storage and larger delivery/loading areas. The residential density was assumed to be 100%, as the density figures already account for roadway construction and are therefore already lower than the minimum lot size prescribed by the underlying zoning.



An efficiency factor is entered to account for common density losses resulting from requirements for setbacks, loading and storage areas, storm-water retention, etc.

d. Constraints to Development

As described in Step 4 above, a constraint layer is used to exclude several areas from the buildout analysis, including protected open space, wetlands, road rights-of-way and specific state class codes. This single layer prohibits building calculations being made. In addition, a 1,000 square foot minimum lot size is included to prevent buildout being calculated on “sliver” polygons that are remnants of the geoprocessing of several data layers.

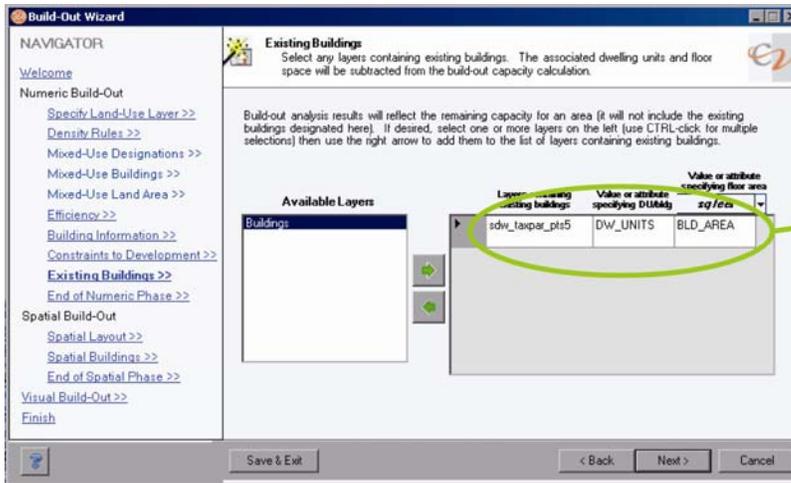


The constraint layer that prohibits buildout in specific locations is identified.

To avoid buildout inadvertently occurring on “sliver” polygons, a 1,000 sf minimum was entered to prevent additional buildout occurring.

e. Existing Buildings

The data layer with information on the existing dwelling units and square footage is identified, the information on this layer is subtracted from the gross buildout calculations to establish the net new square footage.



The datalayer containing information about the existing buildings is identified, as well as the attribute specifying the existing dwelling units and floor area.

f. Run analysis

Once all these inputs have been entered, the buildout analysis is run. Community Viz established new attributes that include the additional dwelling units and the additional floor area estimated on each lot.

Appendix A: State Class Codes and Local Adjusted Codes

A summary of the excluded and included state class codes is provided below, followed by a table with a complete list of the categorization of every state class code combination found in the region. All statistics quoted relate to queries conducted on the 2009 parcel data layer. For reference, the Cape has approximately 161,000 parcels and 251,688 acres of land area.

A1: State Class Codes excluded from the buildout analysis

- 1) **Undevelopable Residential (132)**. There are 5,906 parcels coded 132 in Barnstable County, totaling 2.8% of the County (6,525 acres). These properties may be undevelopable for a variety of reasons, either because they are less than the minimum lot size, do not have required frontage, are land-locked, are open space surrounding a subdivision or a combination of these or other factors. Many also include significant wetlands and could be classified by the Assessor as undevelopable due to additional constraints resulting from the local wetland buffer requirements. It is possible that some of these properties could in the future be made developable by land assembly, or by providing access through adjacent properties. However, for the buildout analysis, the Commission concluded that it would be problematic to try to re-categorize these properties based on their likely potential for future development. Therefore, they were excluded from the analysis.



Examples of parcels coded 132 in Barnstable (above) and Mashpee (below)

- 2) **Underwater Land or Marshes (202 (residential), 221 (commercial), 231 (industrial))**. There are no parcels with a state class code of 221 or 231 on Cape Cod. There are seven (7) instances of 202 state class codes on Cape Cod, totaling 11 acres. All have significant areas of wetland, and most are completely within the wetland constraint layer and therefore already excluded.



Example of a parcel coded 202 in Falmouth

- 3) **Residential Open Land (201)**. There are 501 parcels coded 201 on Cape Cod, totaling 2,002 acres. These areas mostly consist of land held in common ownership that are associated with a residential subdivision, often times resulting from a cluster subdivision. They only occur in five of the Cape towns, Dennis, Mashpee, Falmouth, Bourne and Yarmouth and are similar to some of the parcels coded as 132. As these areas are usually required as open space by local zoning and are not typically developed, they were excluded. See following image for an example from Falmouth (red outline indicates parcel coded 201).



Example of a parcel coded 201 in Falmouth

- 4) **Wet land, scrub and rock land** (290 (Open space non-productive land), 720 (Chapter 61, 61A and 61B non-productive land)). There are no parcels with a state class code of 290 on Cape Cod. There are 27 parcels coded 720 on Cape Cod, totaling 71 acres. Large parts of these properties include wetlands, with significant amounts of the remaining upland area consisting of isolated slivers of land. Given the limitations on development resulting from the wetlands and its buffers, and the relatively small amount of upland area involved, these were excluded from the analysis.



Examples of Wet land, scrub and rock land in Falmouth (left) and Orleans (right)

- 5) **Undevelopable Lands** (392-commercial, 442-industrial). There are 137 parcels coded 392 on Cape Cod, totaling 0.1% of Barnstable County (123 acres). There are 45 parcels coded 442 on Cape Cod, totaling 0.1% (120 acres) of Barnstable County. According to the Assessor, these properties are currently undevelopable and as they represent such a small percentage of the region, they were excluded.



Examples of Undevelopable Commercial (Mashpee) and Undevelopable Industrial (Chatham)

- 6) **Outdoor recreation uses** (beaches (383) and marinas (384)). There are 68 parcels coded 383 on Cape Cod, totaling 58 acres. These areas include private beaches on the ocean, lakes or estuaries and their associated parking/access. Many are either totally or partially covered with wetlands. There are 68 parcels coded 384 on Cape Cod, totaling 113 acres. These parcels include private boat yards, storage and

marinas and were considered to be unlikely to be redeveloped in the planning horizon being considered.



Example of parcels coded as 384

- 7) **Utility Properties** (420-428), these include Tanks, Liquid Natural Gas Tanks, Electric Transmission Right-of-Way, Electricity Regulating Substations, Gas Production Plants, Gas Pipeline Right of Way, Natural or Manufactured Gas Storage and Gas Pressure Control Stations. There are 68 parcels with these state class codes on Cape Cod, totaling 200 acres. The majority of these parcels are electrical substations and transmission facilities, with fuel storage for home delivery or gas distribution storage making up most of the remainder. It was assumed that these were unlikely to be redeveloped in the planning horizon under consideration.



Example of a property coded 423 in Eastham

- 8) **Communications** (430-433), these include Telephone Exchange Stations, Telephone Relay Towers, Cable TV Transmitting Facilities and Radio, Television Transmission Facilities. There are 55 parcels with these state class codes on Cape Cod, totaling 202 acres. The majority of these parcels are developed with transmission towers of various kinds (either cable, radio or cell service) and associated equipment shelters and constitutes relatively small parcels in isolated locations. Due to the nature of these sites and the relatively small size of the individual properties, they were assumed to be unlikely to be developed in the planning horizon.



Example of property coded 432 in Bourne

- 9) **Electrical Generation** (450-452), these include Electric Generation Plants, Electric Generation Plants, Transition Value and Electric Generation Plants, Agreement Value. There are 15 parcels with these state class codes on Cape Cod, totaling 133 acres. All 15 parcels are located in the vicinity of the Canal Station Power Plant in Sandwich and include the plant itself and surrounding areas of fuel storage, electrical transmission infrastructure and transmission right-of-way. These areas were excluded from the analysis as they were assumed to be unlikely to redevelop in the planning horizon being considered.



Canal Power Plant

- 10) **Personal Property** (501-552), there are no state class codes of this type on Cape Cod and these codes were excluded.

- 11) **Chapter 61, 61A, 61B Property – Recreational (800-815)**. Two of the codes under this category were excluded from the buildout analysis. There are 5 adjacent parcels (47 acres) identified as “Target Shooting” (814) on the MMR. There are three parcels identified for “Boating” (804, 6 acres), located in Falmouth which constitute parcels associated with a neighborhood association playground and common area. Both were excluded as they were considered unlikely to be developed in the planning horizon. The remaining codes in this category were included in the buildout analysis.



Example of a property coded 804 in Falmouth

- 12) **Public Service Properties (900-901)**. These include properties owned by the US Government. There are 773 properties on Cape Cod coded this way, totaling 29, 211 acres. Parcels coded this way include much of the Massachusetts Military Reservation, Cape Cod National Seashore and property around the Cape Cod Canal. These were all excluded as they were unlikely to be developed in the planning horizon under consideration.



Federal Property in Provincetown

- 13) **Commonwealth Land (910-928)**. These are properties owned by a state agency, there are 371 properties with this state class code, totaling 16,281 acres. Parcels coded this way include state parks and beaches on the cape, parts of the Massachusetts

Military Reservation and the Cape Cod Community College. These were all excluded as they were unlikely to be developed in the planning horizon under consideration.



Commonwealth Land (Nickerson State Park)

14) **Municipal or County** (930-939). There are 2,335 parcels with these codes, ranging from public schools, public safety, town and county office facilities, totaling 16,029 acres. Although some of these parcels are potentially developable if a town sells the property, it was decided to exclude them from the buildout as they were unlikely to be developed in the planning horizon under consideration.



Dennis Transfer Station

15) **Educational Private** (940-949). There are only 6 parcels of this type on Cape Cod. A single 36-acre parcel in Bourne that is the site of the Massachusetts Maritime Academy, and 5 parcels in Sandwich that are part of the Riverview School Campus.

These were all excluded as they were unlikely to be developed in the planning horizon under consideration.



Massachusetts Maritime Academy, Bourne

- 16) **Charitable** (950-959). There are a total of 406 parcels within these state class codes on Cape Cod, totaling 2,436 acres. There are 274 Vacant, Conservation Organization parcels (code 950, 1,326 acres) and 27 Cemeteries (code 953, 108 acres) that were excluded from the buildout analysis as they were unlikely to be developed in the planning horizon being considered. The remaining state class codes in this range were included in the buildout analysis.



Cemetery in Harwich

- 17) **Religious Groups** (960, 961), these include “Church, Mosque, Synagogue, Temple, etc.” (960) and “Rectory or Parsonage, etc.” (961). These were excluded as they were unlikely to be developed in the planning horizon being considered.



18) **Transportation Authority** (972). There is one parcel in Dennis coded as 972, this is the Regional Transit Authority Maintenance Facility that is currently developed and was therefore excluded.



RTA Maintenance Facility, Dennis

19) **Land Held by other towns** (980-989). There are three parcels totaling approximately 7 acres with these codes. They include property in municipal ownership, they are assumed not to be developable within the planning horizon being considered.

20) **Other** (990-997).

- a) There are no 121A Corporation (990), Vacant, County or Regional (991), Improved County or Regional Correctional (993), or Improved County or Regional Association Commission (994) on the Cape. These codes were all excluded.
- b) There is one Improved County or Regional, Deeds or Administration (992) coded parcel at the Cape Cod Regional Technical High School in Harwich. This was

excluded as it was unlikely to be developed in the planning horizon under consideration.

- c) Other (997), there are 10 properties coded this way, totaling 230 acres. These include the Old Indian Meetinghouse in Mashpee, part of the Bourne Transfer Station and a large parcel owned by the Mashpee Wampanoag Council. These properties were excluded as they were unlikely to be the location of significant future development.



Bourne Transfer Station

21) Discontinued codes

- a) Some parcels remain coded with a discontinued code for “Commonwealth of Massachusetts” (901). The latest revisions of the state class codes assign these parcels to 910 through 929. As the 910-929 codes were excluded from buildout, the 901 codes were also excluded.



Commonwealth property coded as 901 in Brewster

- b) Some parcels remain coded with a discontinued code for “County” (902) and “Municipalities” (903). The latest revisions of the state class codes assign these parcels to 930 through 939. As the 930-939 codes were excluded from buildout, the 902 and 903 codes were also excluded.



Barnstable County Complex, coded 902

- c) Some parcels remain coded with a discontinued code for “Colleges, Schools (private)” (904). The latest revisions of the state class codes assign these parcels to 940 through 949. As the 940-949 codes were excluded from buildout, the 904 code was also excluded.



Latham School, Brewster

- d) Some parcels remain coded with a discontinued code for “Churches, Synagogues and Temples” (906). The latest revisions of the state class codes assign these parcels to 960. As the 960 code was excluded from buildout, the 906 code was also excluded.



Community of Jesus, Orleans

22) **Other codes.** 909 is an undocumented code (i.e. not on the state class code list) that is used by several towns on the Cape, each town using it for different purposes. There are 233 properties coded this way, totaling 1,489 acres. In Barnstable, 909 is used as a code for Fire District lands; in Bourne, 909 is used for town owned property (either selectmen or conservation owned); in Brewster, 909 is used for residential open space; in Mashpee, 909 represents land trust property; and, in Yarmouth, 909 is used for charity (church). All these are similar to land uses on properties that have been excluded from the buildout analysis, and therefore all these 909 codes were also excluded.



Properties coded 909 in Barnstable

23) **Zeros.** All parcels with a zero as state class code were excluded. There are 1,969 parcels with a zero as a state class code, all but 131 of these are excluded due to one of the other constraints. The area that remains is approximately 147 acres, constituting 0.1% of Barnstable County. As no information is available about the land use of these parcels and their status for development is unknown, they were excluded.



Properties coded zero in Sandwich

A2: State Class Codes Included in the Buildout Analysis

All remaining state class codes were included in the analysis. Some of these are discussed further below to clarify why they were included and how they are treated under the buildout analysis:

- 1) **Cranberry Bogs** (270 (Open Space - Productive Land), 710 (Chapter 61, 61A, 61B Property – Agricultural)). There are no 270 codes on Cape Cod. The parcels coded as 710 comprise 0.4% of the land area of the region (1,015 acres). These land use categories were left in the buildout analysis as they are potentially developable, however the wetland portion of these sites (the cranberry bogs themselves) are excluded from the lot area prior to the buildout calculation.



Parcels coded 710 in Bourne, showing a mix of upland and wetland

- 2) **Chapter 61, 61A, 61B Property – Recreational (801-815).** There are 72 parcels with these state class codes on Cape Cod, totaling 779 acres. Of that total, 23 parcels are private golf courses (805) which accounts for 330 acres of the area. There are 28 parcels coded as Nature Study - areas specifically for nature study or observation (803), totaling 295 acres. These properties include some wetland, but are zoned for residential development and have no permanent protection. The remaining parcels are coded as Hiking - trails or paths (801: 2 parcels, 5 acres), Camping - areas with sites for overnight camping (802: 6 parcels, 32 acres), Horseback Riding - trails or areas (806, 4 parcels, 54 acres) and Hunting - areas for the hunting of wildlife (807, 1 parcel, 10 acres). These were all included in the analysis as they have no permanent protection. There are no 808, 809, 810, 811, 812 or 813s on Cape Cod.



Private golf course coded 805 in Yarmouth

- 3) **Charitable** (951, 952, 954-959). There are 105 parcels with these state class codes on Cape Cod, totaling 1,000 acres. These categories were all left in the analysis as the properties are held by private charitable organizations and are therefore subject to sale and/or potential development.
- 4) **Authorities** (970-975). There are 32 parcels coded as Housing Authority (970), three parcels in Mashpee coded Utility Authority, Electric, Light, Sewer, Water (971), and four parcels coded as Vacant, Housing Authority (973). These were all included as they have no permanent protection and are potentially developable over the planning horizon.
- 5) **Other (995 and 996)**
 - a) There are 20 Other, Open Space (995) properties on the Cape which have no permanent protection and are therefore included in the buildout analysis.
 - b) Other, Non-Taxable Condominium Common Land (996). There are 132 parcels with this code on the Cape (totaling 451 acres), all within Mashpee or Falmouth. These properties appear in both residential and non-residential districts and appear to be potentially developable and were therefore included in the buildout analysis.
- 6) **Discontinued Codes.**
 - a) Formerly Charitable Organizations, private hospitals (905) which are now coded as 955. As the 955 codes were included in the buildout, the 905 codes were also included.
 - b) Formerly 121A Corporations (907) which are now coded as 990. There are 11 properties totaling 53 acres. These consist of Private Lodges, the Veterans Association in Chatham, one parcel owned by the Boy Scouts of America and several churches/cemeteries. These were excluded as they were considered to be unlikely to re-develop within the planning horizon being considered.
 - c) Formerly Housing Authority (908) which are now coded as 970-975 . As the 970-975 codes were included in the buildout, the 908 codes were also included.

Complete list of state class codes

Below is a complete listing of all the state class codes that are assigned in the region. For each code, the description is included together with its status as it relates to the buildout analysis.

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
13	Multiple-Use, primarily Residential A building with a retail store on the first floor, apartments on the upper floors, and a major portion of the related land is reserved for tenant parking.	IN
013	Mixed use primarily residential	IN
0134	PRI RS C/I	IN
013c	PRI RES MDL-94	IN
013m	PRI RES MDL-03	IN
013v	Mixed Use (Primarily Residential, some Commercial)	IN
013r	PRI RES MDL-01	IN
0130	Mixed use primarily residential	IN
014	Mixed Use (Primarily Residential, some Industrial)	IN
0140	Mixed Use (Primarily Residential, some Industrial)	IN
016	Mixed Use (Primarily Residential, some Forest)	IN
0160	Mixed Use (Primarily Residential, some Forest)	IN
017	Mixed Use (Primarily Residential, some Agriculture)	IN
0170	Mixed Use (Primarily Residential, some Agriculture)	IN
018	Mixed Use (Primarily Residential, some Recreation)	IN
0180	Mixed Use (Primarily Residential, some Recreation)	IN
019	Mixed Use (Primarily Residential, some Tax-Exempt)	IN
0190	Mixed Use (Primarily Residential, some Tax-Exempt)	IN
021	Mixed Use (Primarily Open Space, some Residential)	IN
030	Mixed Use (Primarily Open Space, some Residential)	IN
0300	Mixed Use (Primarily Commercial, some Other)	IN
031	Mixed Use (Primarily Commercial, some Other)	IN
0310	Mixed Use (Primarily Commercial, some Residential)	IN
31	Multiple-Use, primarily Commercial A building with retail use on the first floor, office space on the second and third floors, apartments on the fourth floor and a major portion of the related land is allocated for commercial use.	IN
031D	Mixed Use Comm 06	IN
031I	Store/shop M96	IN
031R	mu primary comm	IN
0322	STORE/APTS LARGE	IN
0325	STORE/APTS MDL-94	IN
034	MU COM INDUST	IN
0340	MU COM INDUST	IN
036	MU COMM FOREST	IN
0360	MU COMM FOREST	IN
37	Multiple-Use, primarily Commercial with part of land designated under Chapter 61A use A farm property with land and buildings predominantly used for commercial farming with part of land (at least 5 acres) designated horticulture/agricultural under Chapter 61A.	IN

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
037	MU COMM AG	IN
0370	MU COMM AG	IN
038	MU COMM REC	IN
0380	MU COMM REC	IN
21	Multiple-Use, primarily Open Space A single-family house with substantial acreage designated open space by the assessors.	IN
040	Mixed Use (Primarily Industrial, some Other)	IN
0400	Mixed Use (Primarily Industrial, some Other)	IN
041	Mixed Use (Primarily Industrial, some Residential)	IN
0410	Mixed Use (Primarily Industrial, some Residential)	IN
043	Mixed Use (Primarily Industrial, some Commercial)	IN
0430	Mixed Use (Primarily Industrial, some Commercial)	IN
046	Mixed Use (Primarily Industrial, some Forest)	IN
0460	Mixed Use (Primarily Industrial, some Forest)	IN
047	Mixed Use (Primarily Industrial, some Agriculture)	IN
0470	Mixed Use (Primarily Industrial, some Agriculture)	IN
048	Mixed Use (Primarily Industrial, some Recreation)	IN
0480	Mixed Use (Primarily Industrial, some Recreation)	IN
061	Mixed Use (Primarily Forest, some Residential)	IN
0610	Mixed Use (Primarily Forest, some Residential)	IN
063	Mixed Use (Primarily Forest, some Commercial)	IN
0630	Mixed Use (Primarily Forest, some Commercial)	IN
064	Mixed Use (Primarily Forest, some Industrial)	IN
0640	Mixed Use (Primarily Forest, some Industrial)	IN
067	Mixed Use (Primarily Forest, some Agriculture)	IN
0670	Mixed Use (Primarily Forest, some Agriculture)	IN
068	Mixed Use (Primarily Forest, some Recreation)	IN
0680	Mixed Use (Primarily Forest, some Recreation)	IN
071	Mixed Use (Primarily Agriculture, some Residential)	IN
0710	Mixed Use (Primarily Agriculture, some Residential)	IN
073	Mixed Use (Primarily Agriculture, some Commercial)	IN
0730	Mixed Use (Primarily Agriculture, some Commercial)	IN
074	Mixed Use (Primarily Agriculture, some Industrial)	IN
0740	Mixed Use (Primarily Agriculture, some Industrial)	IN
076	Mixed Use (Primarily Agriculture, some Forest)	IN
0760	Mixed Use (Primarily Agriculture, some Forest)	IN
078	Mixed Use (Primarily Agriculture, some Recreation)	IN
0780	Mixed Use (Primarily Agriculture, some Recreation)	IN
081	Mixed Use (Primarily Recreation, some Residential)	IN
0810	Mixed Use (Primarily Recreation, some Residential)	IN
083	Mixed Use (Primarily Recreation, some Commercial)	IN
0830	Mixed Use (Primarily Recreation, some Commercial)	IN
084	Mixed Use (Primarily Recreation, some Industrial)	IN
0840	Mixed Use (Primarily Recreation, some Industrial)	IN
086	Mixed Use (Primarily Recreation, some Forest)	IN
0860	Mixed Use (Primarily Recreation, some Forest)	IN

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
087	Mixed Use (Primarily Recreation, some Agriculture)	IN
0870	Mixed Use (Primarily Recreation, some Agriculture)	IN
101	Single Family	IN
0101	Single Family MDL-01	IN
1010	Single Family	IN
1012		IN
1013	SRF Water MDL	IN
1014		IN
101M	SFR w-inlaw	IN
101v		IN
102	Condominium	IN
1020		IN
1021		IN
1022		IN
1023		IN
102v		IN
103	Mobile Home (includes land used for purpose of a mobile home park)	IN
1030		IN
104	TWO FAMILY MDL	IN
104	Two-Family	IN
1040		IN
104m		IN
105	Three-Family	IN
0105	Three-Family MDL-94	IN
1050		IN
106	Accessory Land with Improvement - garage, etc.	IN
1060		IN
106v		IN
109	Multiple Houses on one parcel (for example, a single and a two-family on one parcel)	IN
0109	Multiple Houses on one parcel MDL 01	IN
1092	MULTI HSES OCN	IN
1093	MULTI WTR	IN
111	Four to Eight Units	IN
1110		IN
0111	Apartments up to 4	IN
011C	APT 4-UNIT MDL9	IN
111R		IN
112	More than Eight Units	IN
0112	Apt over 8	IN
1120		IN
121	Rooming and Boarding Houses	IN
1210		IN
122	Fraternity and Sorority Houses	IN
1220		IN

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
123	Residence Halls or Dormitories	IN
1230		IN
124	Rectories, Convents, Monasteries	IN
1240		IN
125	Other Congregate Housing which includes non-transient shared living arrangements	IN
1250		IN
1260	BED & BRKFAST	IN
130	Developable Land	IN
1300		IN
131	Potentially Developable Land	IN
0131	res aclnpo	IN
1310		IN
132	Undevelopable Land	OUT
1320		OUT
132C		OUT
140	Child Care Facility (M.G.L. Chapters 59 §3F; 40A §9C) (see also Code 352)	IN
1400		IN
201	Residential Open Land	OUT
2010		OUT
202	Underwater Land or Marshes not under public ownership located in residential area (typically, privately owned ponds, lakes, salt marshes or other wetlands of non-commercial use)	OUT
2020		OUT
210	Non-Productive Agricultural Land (that part of an operating farm not classified as Chapter 61A Agricultural/Horticultural or Chapter 61 Forest Land)	IN
2100		IN
211	Non-Productive Vacant Land	IN
2110		IN
220	Commercial Vacant Land (acreage without site improvements and not in commercial use)	IN
2200		IN
221	Underwater Land or Marshes not under public ownership located in commercially zoned area	OUT
2210		OUT
230	Industrial Vacant Land (acreage without site improvements and not in commercial or industrial use)	IN
2300		IN
231	Underwater Land or Marshes not under public ownership located in industrial area	OUT
2310		OUT
261	All land designated under Chapter 61	IN
2610		IN
262	Christmas Trees	IN

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
2620		IN
270	Cranberry Bog	OUT
2700		OUT
271	Tobacco, Sod	IN
2710		IN
272	Truck Crops - vegetables	IN
2720		IN
273	Field Crops - hay, wheat, tillable forage cropland etc.	IN
2730		IN
274	Orchards - pears, apples, grape vineyards etc.	IN
2740		IN
275	Christmas Trees	IN
2750		IN
276	Necessary related land-farm roads, ponds, land under farm buildings	IN
2760		IN
277	Productive Woodland - woodlots	IN
2770		IN
278	Pasture	IN
2780		IN
279	Nurseries	IN
2790		IN
290	Wet land, scrub land, rock land	OUT
2900		OUT
280	Productive woodland -woodlots	IN
2800		IN
281	Hiking - trails or paths, Camping - areas with sites for overnight camping, Nature Study - areas specifically for nature study or observation	IN
2810		IN
282	Boating - areas for recreational boating and supporting land facilities	IN
2820		IN
283	Golfing - areas of land arranged as a golf course	IN
2830		IN
284	Horseback Riding - trails or areas	IN
2840		IN
285	Hunting - areas for the hunting of wildlife and Fishing Areas	IN
2850		IN
286	Alpine Skiing - areas for "downhill" skiing and Nordic Skiing - areas for "cross-country" skiing	IN
2860		IN
287	Swimming Areas and Picnicking Areas	IN
2870		IN
288	Public Non-Commercial Flying - areas for gliding or hand-gliding	IN
2880		IN
289	Target Shooting - areas for target shooting such as archery, skeet or	IN

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
	approved fire-arms	
2890		IN
300	Hotels	IN
3000		IN
301	Motels	IN
3010		IN
301R		IN
301V		IN
3011	MOTL CONDO MO5	IN
3012	COTTG CNDO MO5	IN
302	Inns, Resorts or Tourist Homes	IN
302	INNS	IN
3020		IN
3030	TIMESHARE	IN
303M	COTTAGE COLONY	IN
303R	COTTAGE COLONY	IN
304	Nursing Homes - includes property designed for minimal care with or without medical facilities	IN
3040		IN
305	Private Hospitals	IN
3050		IN
306	Care and Treatment Facilities - designed and used on a transient basis, including half-way houses or other types of facilities that service the needs of people	IN
3060		IN
3070	MOTEL CONDO MDL-6	IN
310	Tanks Holding Fuel and Oil Products for Retail Distribution, either Above Ground or Underground (Underground tanks of service stations would be real estate; however, above ground tanks that rest on concrete saddles or steel frames that can be separated without damage are personal property.)	IN
3100		IN
310V		IN
311	Bottled Gas and Propane Gas Tanks	IN
3110		IN
312	Grain and Feed Elevators	IN
3120		IN
313	Lumber Yards	IN
3130		IN
314	Trucking Terminals	IN
3140		IN
315	Piers, Wharves, Docks and related facilities that are used for storage and transit of goods	IN
3150		IN

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
0315	dockyards	IN
316	Other Storage, Warehouse and Distribution facilities (see also Industrial Code 401)	IN
0316	commercial warehouse	IN
3160		IN
316I		IN
316V		IN
317	Farm Buildings - barns, silo, utility shed, etc.	IN
3170		IN
318	Commercial Greenhouses	IN
3180		IN
3190		IN
321	Facilities providing building materials, hardware and farm equipment, heating, hardware, plumbing, lumber supplies and equipment	IN
0321	HARWARE	IN
3210		IN
322	Discount Stores, Junior Department Stores, Department Stores	IN
3220		IN
3221		IN
3222		IN
322I		IN
3220		IN
323	Shopping Centers/Malls	IN
3230		IN
0323	Shopping Centers/Malls	IN
324	Supermarkets (in excess of 10,000 sq. ft.)	IN
3240		IN
325	Small Retail and Services stores (under 10,000 sq. ft.)	IN
3250		IN
325I		IN
326	Eating and Drinking Establishments - restaurants, diners, fast food establishments, bars, nightclubs	IN
0326	REST/CLUBS	IN
3260		IN
326F		IN
327	RETAIL CONDO	IN
3270	RETAIL CONDO	IN
3270	RETAIL CONDO	IN
330	Automotive Vehicles Sales and Service	IN
0330		IN
3300		IN
331	Automotive Supplies Sales and Service	IN
3310		IN
332	Auto Repair Facilities	IN
0332		IN
3320		IN

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
3321	AUTO REPR M 96	IN
333	Fuel Service Areas - providing only fuel products	IN
3330		IN
333I		IN
334	Gasoline Service Stations - providing engine repair or maintenance services, and fuel products	IN
0334		IN
3340		IN
334C		IN
335	Car Wash Facilities	IN
3350		IN
336	Parking Garages	IN
3360		IN
337	Parking Lots - a commercial open parking lot for motor vehicles	IN
3370		IN
338	Other Motor Vehicles Sales and Services	IN
3380		IN
338V		IN
340	General Office Buildings	IN
3400		IN
3401	OFF CNDO MO6	IN
341	Bank Buildings	IN
3410		IN
342	Medical Office Buildings	IN
0342	PROF OFFICE	IN
3420		IN
3421		IN
343		IN
3430		IN
350	Property Used for Postal Services	IN
3500		IN
351	Educational Properties	IN
3510		IN
352	Day Care Centers, Adult (see also Code 140)	IN
3520		IN
353	Fraternal Organizations	IN
3530		IN
354	Bus Transportation Facilities and Related Properties	IN
3540		IN
3541	AIRPORT	IN
3542	Bus Transportation Facilities and Related Properties	IN
354I	Bus Transportation Facilities and Related Properties	IN
355	Funeral Homes	IN
355	FUNERAL HM	IN
3550		IN
356	Miscellaneous Public Services - professional membership organizations, business associations, etc.	IN

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
3560		IN
360	Museums	IN
3600		IN
361	Art Galleries	IN
3610		IN
362	Motion Picture Theaters	IN
3620		IN
363	Drive-In Movies	IN
3630		IN
364	Legitimate Theaters	IN
3640		IN
365	Stadiums	IN
3650		IN
366	Arenas and Field Houses	IN
3660		IN
367	Race Tracks	IN
3670		IN
368	Fairgrounds and Amusement Parks	IN
3680		IN
369	Other Cultural and Entertainment Properties	IN
3690		IN
370	Bowling	IN
3700		IN
371	Ice Skating	IN
3710		IN
372	Roller Skating	IN
3720		IN
373	Swimming Pools	IN
3730		IN
374	Health Spas	IN
3740		IN
375	Tennis and/or Racquetball Clubs	IN
3750		IN
376	Gymnasiums and Athletic Clubs	IN
3760		IN
377	Archery, Billiards, other indoor facilities	IN
3770		IN
380	Golf Courses	IN
3800		IN
381	Tennis Courts	IN
3810		IN
381V		IN
382	Riding Stables	IN
3820		IN

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
383	Beaches or Swimming Pools	OUT
3830		OUT
383V	BEACHES MOO	OUT
384	Marinas - including marine terminals & associated areas primarily for recreational marine craft	OUT
0384	Marinas - including marine terminals & associated areas primarily for recreational marine craft	OUT
3840		OUT
385	Fish and Game Clubs	IN
3850		IN
386	Camping Facilities - accommodations for tents, campers or travel trailers	IN
3860		IN
387	Summer Camps - children's camps	IN
3870		IN
388	Other Outdoor facilities - e.g., driving ranges, miniature golf, baseball batting ranges, etc.	IN
3880		IN
389	Structures on land classified under Chapter 61B Recreational Land	IN
3890		IN
390	Developable Land	IN
3900		IN
391	Potentially developable Land	IN
3910		IN
392	Undevelopable Land	OUT
3920		OUT
393	Agricultural/Horticultural Land not included in Chapter 61A	IN
3930		IN
393V		IN
400	Buildings for manufacturing operations	IN
4000		IN
400C		IN
401	Warehouses for storage of manufactured products	IN
4010		IN
401C		IN
402	Office Building - part of manufacturing operation	IN
4020		IN
4021		IN
4022		IN
403	Land - integral part of manufacturing operation	IN
4033		IN
404	Research and Development facilities	IN
4040		IN
410	Sand and Gravel	IN
4100		IN
410V		IN
411	Gypsum	IN
4110		IN

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
412	Rock	IN
4120		IN
413	Other	IN
4130		IN
420	Tanks	OUT
4200		OUT
421	Liquid Natural Gas Tanks	OUT
4210		OUT
422	ELECTRIAL PLANT	OUT
4220		OUT
423	Electric Transmission Right-of-Way	OUT
4230		OUT
424	Electricity Regulating Substations	OUT
4240		OUT
425	Gas Production Plants	OUT
425V		OUT
4250		OUT
426	Gas Pipeline Right-of Way	OUT
4260		OUT
427	Natural or Manufactured Gas Storage	OUT
4270		OUT
428	Gas Pressure Control Stations	OUT
4280		OUT
430	Telephone Exchange Stations	OUT
4300		OUT
431	Telephone Relay Towers	OUT
4310		OUT
432	Cable TV Transmitting Facilities	OUT
4320		OUT
433	Radio, Television Transmission Facilities	OUT
4330		OUT
440	Developable Land	IN
4400		IN
441	Potentially Developable Land	IN
4410		IN
441V		IN
442	Undevelopable Land	OUT
4420		OUT
450	Electric Generation Plants	OUT
4500		OUT
451	Electric Generation Plants, Transition Value	OUT
4510		OUT
452	Electric Generation Plants, Agreement Value	OUT

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
4520		OUT
501	Individuals, Assoc and trusts	OUT
5010		OUT
502	Domestic Business Corporations or a Foreign Corporations, as defined in Chapter 63 §30	OUT
5020		OUT
503	Domestic and Foreign Corporations Classified Manufacturing, as defined in Ch. 63, §38C & §42B	OUT
5030		OUT
504	Public Utilities -- Transmission and Distribution	OUT
5040		OUT
505	Machinery, Poles, Wires and Underground Conduits, Wires and Pipes of all Telephone and Telegraph Companies, as determined by the Commissioner of Revenue.	OUT
5050		OUT
508	Cellular/Mobile Wireless Telecommunications Companies	OUT
5080		OUT
506	Pipelines Of 25 Miles Or More In Length For Transmitting Natural Gas Or Petroleum, as determined by the Commissioner of Revenue.	OUT
5060		OUT
550	Electric Generation Plants Personal Property	OUT
5500		OUT
551	Electric Generation Plant P.P., Transition Value	OUT
5510		OUT
552	Electric Generation P. P., Agreement Value	OUT
5520		OUT
601	All land designated under Chapter 61	IN
6010		IN
602	Christmas Trees	IN
6020		IN
710	Cranberry Bog	IN
7100		IN
711	Tobacco, Sod	IN
7110		IN
712	Truck Crops - vegetables	IN
7120		IN
713	Field Crops - hay, wheat, tillable forage cropland etc.	IN
7130		IN
714	Orchards - pears, apples, grape vineyards etc.	IN
7140		IN
715	Christmas Trees	IN
7150		IN
716	Necessary Related Land-farm roads, ponds,	IN
7160		IN
717	Productive Woodland - woodlots	IN
7170		IN
718	Pasture	IN
7180		IN

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
719	Nurseries	IN
7190		IN
720	Wet land, scrub land, rock land	OUT
7200		OUT
801	Hiking - trails or paths	IN
8010		IN
802	Camping - areas with sites for overnight camping	IN
8020		IN
803	Nature Study - areas specifically for nature study or observation	IN
8030		IN
804	Boating - areas for recreational boating and supporting land facilities	OUT
8040		OUT
805	Golfing - areas of land arranged as a golf course	IN
8050		IN
805V	61B GOLF MOO	IN
806	Horseback Riding - trails or areas	IN
8060		IN
807	Hunting - areas for the hunting of wildlife	IN
8070		IN
808	Fishing Areas	IN
8080		IN
809	Alpine Skiing - areas for "downhill" skiing	IN
8090		IN
810	Nordic Skiing - areas for "cross-country" skiing	IN
8100		IN
811	Swimming Areas	IN
8110		IN
812	Picnicking Areas	IN
8120		IN
813	Public Non-Commercial Flying - areas for gliding or hand-gliding	IN
8130		IN
814	Target Shooting - areas for target shooting such as archery, skeet or approved fire-arms	OUT
8140		OUT
815	Productive Woodland - woodlots	IN
8150		IN
900	United States Government	OUT
9000		OUT
900C		OUT
900R		OUT
901	(Intentionally left blank)	OUT
9010		OUT
902	discontinued County Land - now 930s	OUT
9020		OUT
903	discontinued municipal - now 930	OUT
9030		OUT

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
903V	MUNICIPAL MOO	OUT
9032	FIRE	OUT
9033	PUB SCHOOL MDL-94	OUT
9035	TOWN PROP	OUT
903B		OUT
903C		OUT
903I		OUT
903J		OUT
903R		OUT
904	discontinued colleges/schools private - now 940	OUT
9040		OUT
905	discountingued charitable organizations	IN
9050		IN
905R		IN
905U		IN
905V	P/HOS CHAR MOO	IN
906	discountingued Churches, synagogues and temples	OUT
9060		OUT
906C		OUT
906R		OUT
907	discontinued 121A Corporations	IN
9070		IN
907J		IN
907V	121A CORP MOO	IN
908	discontinued Housing Authority	IN
9080		IN
908C		IN
908R	HSNG AUTH MO1	IN
908V		IN
909		OUT
9090		OUT
909V	RELIGIOUS MOO	OUT
910	Department of Conservation and Recreation, Division of State Parks and Recreation	OUT
9100		OUT
911	Division of Fisheries and Wildlife, Environmental Law Enforcement	OUT
911R	EXEMPT NI MO1	OUT
911U	EXEMPT NI MO5	OUT
911V	EXEMPT STATE OW	OUT
9110		OUT
9111	EXEMPT NL M94	OUT
912	Department of Corrections, Division of Youth Services	OUT

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
9120		OUT
913	Department of Public Health, Soldiers' Homes	OUT
9130		OUT
914	Department of Mental Health, Department of Mental Retardation	OUT
9140		OUT
915	Department of Conservation and Recreation, Division of Water Supply Protection	OUT
9150		OUT
916	Military Division – Campgrounds	OUT
9160		OUT
917	Education – Univ. of Mass, State Colleges, Community Colleges	OUT
9170		OUT
918	Department of Environmental Protection, Low-level Radioactive Waste Management Board	OUT
9180		OUT
919	Other	IN
9190		IN
920	Department of Conservation and Recreation, Division of Urban Parks and Recreation	OUT
920R	NON PROFIT M01	OUT
920V	NON PROFIT MOO	OUT
9200		OUT
921	Division of Fisheries and Wildlife, DFW Environmental Law Enforcement, Department of Environmental Protection	OUT
9210		OUT
922	Department of Corrections, Division of Youth Services, Mass Military, State Police, Sheriffs' Departments	OUT
9220		OUT
923	Department of Public Health, Soldiers' Homes, Department of Mental Health, Department of Mental Retardation	OUT
9230		OUT
924	Mass Highway Dept	OUT
9240		OUT
925	Department of Conservation and Recreation Division of Water Supply Protection (conservation restrictions and sewer easements), Urban Parks	OUT
9250		OUT
926	Judiciary	OUT
9260		OUT
927	Education – Univ. of Mass, State Colleges, Community Colleges	OUT
9270		OUT
928	Division of Capital Asset Management, Bureau of State Office Buildings	OUT
9280		OUT
929	Other	OUT
9290		OUT
929I		OUT
929V		OUT

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
930	Vacant, Selectmen or City Council	OUT
930V	SELECTMEN VAC	OUT
9300		OUT
931	Improved, Selectmen or City Council	OUT
931R	SELECTMEN RES	OUT
9310		OUT
932	Vacant, Conservation	OUT
932V	CONSERVATION MO	OUT
9320		OUT
933	Vacant, Education	OUT
933V	EDUCATION VAC	OUT
9330		OUT
934	Improved, Education	OUT
934C	EDUCATION IMP C	OUT
9340		OUT
935	Improved, Municipal Public Safety	OUT
9350		OUT
936	Vacant, Tax Title/ Treasurer	OUT
9360		OUT
937	Improved, Tax Title/ Treasurer	OUT
9370		OUT
938	Vacant, District	OUT
9380		OUT
939	Improved, District	OUT
9390		OUT
940	Elementary Level	OUT
9400		OUT
941	Secondary Level	OUT
9410		OUT
942	College or University	OUT
9420		OUT
943	Other Educational	OUT
9430		OUT
944	Auxiliary Athletic	OUT
9440		OUT
945	Affiliated Housing	OUT
9450		OUT
946	Vacant	OUT
946V	EDUCATION VAC	OUT
9460		OUT
947	Other	OUT
9470		OUT
949	EDUCATIONAL PRIVATE	OUT
950	Vacant, Conservation Organizations	OUT
9500		OUT
951	Other	IN

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
9510		IN
952	Auxiliary Use (Storage, Barns, etc.)	IN
9520		IN
953	Cemeteries	OUT
9530		OUT
954	Function Halls, Community Centers, Fraternal Organizations	IN
9540		IN
955	Hospitals	IN
955I	HOSPITAL	IN
955R	HOSPITAL RES	IN
955V	HOSPITAL VAC	IN
9550		IN
956	Libraries, Museums	IN
9560		IN
957	Charitable Services	IN
9570		IN
958	Recreation, Active Use	IN
958V	RECREA ACTV VAC	IN
9580		IN
959	Housing, Other	IN
959R	HOUSING RES	IN
9590		IN
960	Church, Mosque, Synagogue, Temple, etc.	OUT
9600		OUT
960R		OUT
961	Rectory or Parsonage, etc.	OUT
9610		OUT
962	Other	IN
9620		IN
969	RELIGIOUS GROUP	IN
970	Housing Authority	IN
970R		IN
9700		IN
971	Utility Authority, Electric, Light, Sewer, Water	IN
9710		IN
972	Transportation Authority	OUT
9720		OUT
973	Vacant, Housing Authority	IN
9730		IN
974	Vacant, Utility Authority	IN
9740		IN
975	Vacant, Transportation Authority Revised June 2009 10 Property Type Classification Codes	IN
9750		IN
975R		IN

State Class Codes & local combinations	Description	Buildout Status (either in or out of analysis)
980	Vacant, Selectmen or City Council, Other City or Town	OUT
9800		OUT
981	Improved, Selectmen or City Council, Other City or Town	OUT
9810		OUT
982	Vacant, Conservation	OUT
9820		OUT
985	Improved Municipal or Public Safety, Other City or Town	OUT
9850		OUT
988	Vacant, Other District	OUT
9880		OUT
989	Improved, Other District	OUT
9890		OUT
990	121A Corporations	OUT
9900		OUT
991	Vacant, County or Regional	OUT
9910		OUT
992	Improved, County or Regional, Deeds or Administration	OUT
9920		OUT
993	Improved County or Regional Correctional	OUT
9930		OUT
994	Improved, County or Regional Association Commission	OUT
9940		OUT
995	Other, Open Space	IN
9950		IN
996	Other, Non-Taxable Condominium Common Land	IN
9960		IN
997	Other	OUT
9970		OUT
9990		OUT
999U		OUT
032Y		IN
0910	Charitable	IN
1111	apt 8+	IN