

# **Thought Process for Carlisle’s Potential MBTA Communities Approach: MF Conservation Cluster**

Updated 11/12/24

## **STEP 1: The Codes**

### 310 CMR 15: Title 5

Nitrogen Sensitive Area: An area of land and/or natural resource area so designated by the Department in accordance with 310 CMR 15.214.

### 310 CMR 15.214:

(1) The following areas have been determined by the Department to be particularly sensitive to the discharge of pollutants from on-site sewage disposal systems and are therefore designated Nitrogen Sensitive Areas:

#### **(a) Public and Private Water Supply Protection Areas**

1. Department-approved Zone IIs for wells or wellfields used by public water systems as defined in 310 CMR 22.02 and, in the absence of a Department- approved Zone II, the Interim Wellhead Protection Area (IWPA) for a public water system’s well or wellfield as defined in 310 CMR 22.02; and
2. Any areas where the use of both on-site systems and wells that are not regulated as public water supplies under 310 CMR 22.00: *Drinking Water* serve facilities.

**→Most properties in Carlisle rely on on-site septic and well and are Nitrogen Sensitive Areas.**

### MBTA Communities Guidelines

**“Excluded Land”** means land areas on which it is not possible or practical to construct multi-family housing. For purposes of these guidelines, excluded land is defined by reference to the ownership, use codes, use restrictions, and hydrological characteristics in MassGIS and consists of the following:

- (i) All publicly-owned land, except for lots or portions of lots determined to be developable public land.
- (ii) All rivers, streams, lakes, ponds and other surface waterbodies.
- (iii) All wetland resource areas, together with a buffer zone around wetlands and waterbodies equivalent to the minimum setback required by Title 5 of the state environmental code.
- (iv) Protected open space and recreational land that is legally protected in perpetuity (for example, land owned by a local land trust or subject to a conservation restriction), or that is likely to remain undeveloped due to functional or traditional use (for example, cemeteries).
- (v) All public rights-of-way and private rights-of-way.
- (vi) Privately-owned land on which development is prohibited to protect private or public water supplies, including, but not limited to, Zone I wellhead protection areas and Zone A surface water supply protection areas.**
- (vii) Privately-owned land used for educational or institutional uses such as a hospital, prison, electric, water, wastewater or other utility, museum, or private school, college, or university.

### Minimum Gross Density

- a. District-wide gross density

For the purposes of determining compliance with Section 3As gross density requirement, the **EOHLC compliance model will not count in the denominator any excluded land located within the multi-family zoning district**, except public rights-of-way, private rights-of-way, and publicly-owned land used for recreational, civic, commercial, and other nonresidential uses.

**→Nitrogen Sensitive Areas required for the protection of private or public water supplies are excluded from the denominator of the gross density calculation.**

## STEP 2: The Math

### 310 CMR 15: Title 5

- On-site septic & well = Nitrogen Sensitive Area
- Nitrogen Loading Cap= 440 gpd/acre
- Based on 110 gpd/bedroom
- 440 gpd/acre = 4 bedrooms
- 1 acre = 4 bedrooms

### MBTA Communities Guidelines

- Minimum Gross Density = 15 units per acre
- Gross Density excludes land required to protect public or private water supplies (Nitrogen Sensitive Areas)
- Minimum Land Area: In adjacent small towns, there is no minimum land area...
- Minimum Unit Capacity: 95 units<sup>1</sup>

### Public Water Supply threshold

The DEP requirement for a Public Water Supply is triggered by 25 people for 60+ days per year. The number of people is determined as 2x the bedroom count. To keep developments under the threshold for a Public Water Supply,<sup>2</sup> they would be limited to 12 bedrooms (24 people), which is the number of bedrooms you could get under Title 5 on a 3-acre site. **The MBTA Communities Subcommittee was exploring a 3-acre 12-bedroom strategy but revised it to a 2-acre 8-bedroom strategy after discussion on 9/17/24, to leave a buffer between potential future developments and the need for a Public Water Supply.** The local BOH is responsible for alerting the DEP when a property use or project triggers the need for a Public Water Supply, which can be a monitoring and enforcement burden for the BOH, and the remedy for non-compliance a prohibitive or costly endeavor for future residents. Moreover, the law requires the Town to zone for housing for families, so the Subcommittee prefers to avoid potential scenarios for which the total number of people living in a development is restricted.

### Carlisle Approach: Multi-Family Conservation Clusters on 2-Acre Lots

Due to the difference between a survey acre (43,560 SF) and a Title 5 acre (40,000 SF), each acre has 3,560 SF of non-nitrogen loading land (or 8.2% of its land) available for housing.

Here is the math:

- 2 survey acres = 87,120 SF
- 2 Title 5 acres = 80,000 SF (land excluded as nitrogen sensitive)
- Non-nitrogen loading land = 7,120 SF (non-excluded land where housing would be clustered)

Density Scenarios:

- Minimum (3 units per 2-acre lot, pursuant to definition of multi-family):
  - Calculated Density: 8 bedrooms in 3 units → 3 units/7,120 SF or **36.7 units per acre**
  - Actual Density: 3 units on 2 acres = **1.5 units per acre**
- Maximum (4 units per 2-acre lot, recommended by Subcommittee):
  - Calculated Density: 8 bedrooms in 4 units → 4 units/7,120 SF or **48.9 units per acre**
  - Actual Density: 4 units on 2 acres = **2 units per acre**

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<sup>1</sup> 95 units at 15 units/acre = 6 1/3 acres. This is the land area needed if the Town were to pursue compliance on one site.

<sup>2</sup> To be clear, the Interim Wellhead Protection Area and/or Zone II around a Public Water Supply is also considered nitrogen sensitive and would thus be excluded from the denominator of the gross density calculation. The issue is that these areas vary based on hydrogeology, do not always cover an entire parcel, are unknowable in advance, and are thus not conducive to airtight zoning language.

#### Other Considerations:

- Local BOH Septic Design Flow Requirements:
  - 8 BR x 165 GPD = 1,320 GPD system, which would need to be sited on the property
- Private Well:
  - Setback and radius requirements would have to be met
- Total Acreage for 95 Units:
  - Assuming developments with 3 units per 2-acres → **we need 32 2-acre sites (64 acres)**

#### Summary

We can identify locations throughout Town and craft zoning that sets parameters on property size, unit size, maximum units per lot, maximum density, setbacks, access, height, housing typologies, what is allowed in the 'non-excluded land' versus the 'excluded land' and what is required for the 'open space area', etc.

#### Benefits of this approach:

- Carlisle-appropriate MF scale (b/c # of bedrooms/units controlled by Title 5 nitrogen loading limitations)
  - Spreads the burden throughout Town versus aiming for compliance with larger buildings on one or a few sites (which may not pass Town Meeting and is unpopular in the survey)
  - Allows for SF conversion to MF as one way to achieve cluster concept (this idea is popular in the survey)
  - Many lots in Carlisle are already 2 acres, so the zoning is intuitive and achievable
  - Larger lots could take advantage of this strategy, via subdivision into 2-acre lots – the draft zoning language will set parameters for what a 'Multi-Family Conservation Cluster Subdivision' would look like
  - Similar in concept to the conservation clusters allowed under current zoning, with some key differences:
    - Greater focus on clustering of housing units
    - Preservation of open space that results in meaningful ecological conservation
- Creating a new conservation cluster is a Master Plan recommendation