## Belmont MA Population Forecasts and School Enrollment Impact Studies McKibben Demographic Research

The purpose of the project is to determine the potential impact of four proposed building plans on the total population and school age population of the Town of Belmont Massachusetts. The first step in this process is to calculate population estimates/forecasts for the Town of Belmont for age groups 0-4 through 85+, inclusive, for the years 2015, 2020, 2025 and 2030 using four defined building scenarios. The four scenarios are as follows:
A. Scenario 1 - Using the 2010 Decennial Census as a base, calculate a population forecast that includes the impact of the Royal Belmont housing project. The housing project will have 198-1BR, 86-2BR and 14-3BR for 298 total units. Of these units $40-1 B R, 17-2 B R$ and $3-3 B R$ will be considered affordable units.
B. Scenario 2 - Using the results of Scenario 1 as a base, calculate a population forecast that includes the impact of the Cushing Village housing project, assuming it completed and fully occupied by 2022. The housing project will have 9 studio, 56-1BR and 47-2BR for 112 units total. Of these units 1 studio, 51 BR and $6-2 B R$ units will be considered affordable.
C. Scenario 3 - Using the results of Scenario 2 as a base, calculate a population forecasts that includes the impact of the McLean housing project (Version "A"), assuming it is completed and fully occupied by
2025. In Version "A" this project will have 110 non-age restricted units, 28 of which are considered affordable and 40 age restricted units for a total of 150 units.
D. Scenario 4 - Using the results of Scenario 2 as a base, calculate a population forecasts that includes the impact of the McLean housing project (Version "B"), assuming it is completed and fully occupied by 2025. In Version "B" this project will have 50 non-age restricted units, 13 of which are considered affordable and 93 age restricted units for a total of 143 units.

## Methodology and Data

The population forecasts presented in this report are the result of using the CohortComponent Method of population forecasting (Siegel, and Swanson, 2004: 561-601) (Smith et. al. 2004). The difference between a projection and a forecast is in the use of explicit judgment based upon the unique features of the area under study. Strictly speaking, a cohort projection refers to the future population that would result from a mathematical extrapolation of historical trends. Conversely, a cohort-component forecast refers to the future population that is expected because of a studied and purposeful selection of the components of change (i.e., births, deaths, and migration) and forecast models are developed to measure the impact of these changes in each specific geographic area. Each scenario will be calculated using age specific fertility, mortality and migration models built explicitly to reflect the demographic composition and dynamics of Belmont MA.

Four sets of data are required to generate population and enrollment forecasts. These four data sets are:
a. a base-year population (here, the 2010 Census population for the Town of Belmont);
b. a set of age-specific fertility rates for the Town of Belmont to be used over the forecast period;
c. a set of age-specific survival (mortality) rates for the Town of Belmont;
d. a set of age-specific migration rates for the Town of Belmont;

The most challenging aspect of generating the population forecasts is found in deriving the rates of change in fertility, mortality, and migration. From the standpoint of demographic analysis, the Town of Belmont is classified as a "small area" population (as compared to the population of the state of Massachusetts or to that of the United States). Small area population forecasts are more complicated to calculate because local variations in fertility, mortality, and migration may be more irregular than those at the regional, state or national scale. Especially challenging is the forecast of the migration rates for local areas, because changes in the area's socioeconomic characteristics can quickly change from past and current patterns (Peters and Larkin, 2002.)

The population forecasts for the Town of Belmont were calculated using a cohortcomponent method with the populations divided into male and female groups by fiveyear age cohorts that range from 0-to-4 years of age to 85 years of age and older (85+). Age- and sex-specific fertility, mortality, and migration models were constructed to
specifically reflect the unique demographic characteristics of the Town of Belmont. The forecast models were then modified in each scenario to reflect the anticipated changes in the Town of Belmont's demographic dynamics which would occur given the inclusion of the specific impact of the aforementioned building projects.

Birth and death data for the years 2010 through 2018 were obtained from the Massachusetts Registry of Vital Records and Statistics. The net migration values were calculated using Internal Revenue Service migration reports for the years 2010 through 2016. The data used for the calculation of migration models came from the United States Bureau of the Census, 2005 to 2010, and the models were designed using demographic and economic factors. The base age-sex population counts used are from the results of the 2010 Census.

For these forecasts, the mortality probabilities are held constant at the levels calculated for the year 2019. While the number of deaths in an area are impacted by and will change given the proportion of the local population over age 65, in the absence of an extraordinary event such as a natural disaster or a breakthrough in the treatment of heart disease, death rates rarely move rapidly in any direction, particularly at the town level. (This includes the current Corona Virus outbreak) Thus, significant changes are not foreseen in district's mortality rates between now and the year 2029. Any increases forecasted in the number of deaths will be due primarily to the general aging of the district's population and specifically to the increase in the number of residents aged 65 and older.

Similarly, fertility rates are assumed to stay fairly constant for the life of the forecasts. Like mortality rates, age specific fertility rates rarely change quickly or
dramatically, particularly in small areas. Even with the recently reported rise in the fertility rates of the United States, overall fertility rates have stayed within a 15\% range for most of the last 40 years. In fact, the vast majority of year to year change in an area's number of births is due to changes in the number of women in child bearing ages (particularly ages 20-34) rather than any fluctuation in an area's fertility rate.

The resident total fertility rate (TFR), the average number of births a woman will have while living in the Town of Belmont during her lifetime, is estimated to be 1.67 for the total district for the ten years of the population forecasts. A TFR of 2.1 births per woman is considered to be the theoretical "replacement level" of fertility necessary for a population to remain constant in the absence of in-migration. Therefore, in the absence of net in migration, fertility alone would be insufficient to maintain the current level of population and enrollment within the Town of Belmont over the course of the forecast period.

Assumptions: Below is a list of social, economic and demographic assumptions that are used in building the forecasting models specific to the Town of Belmont. These assumptions have been used to modify the population forecast models (particularly in regards to the town's gross and net age-specific migration rates) to more accurately predict the impact of these factors on each area's population change. These assumptions also serve as a set of "parameters', where in if they are not violated, the actual future population of the town will be within $+/-2 \%$ of the forecast total. Specifically, the forecasts for the Town of Belmont assume that throughout the study period:
a. The national, state or regional economy does not go into deep recession at any time during the 10 years of the forecasts; (Deep recession is defined as four consecutive quarters where the GDP contracts greater than 1\% per quarter)
b. Interest rates have reached a historic low and will not fluctuate more than one percentage point in the short term; the interest rate for a 30-year fixed home mortgage stays below 5.0\%;
c. The rate of mortgage approval stays at 2016-2019 levels and lenders do not return to "sub-prime" mortgage practices;
d. There are no additional restrictions placed on home mortgage lenders or additional bankruptcies of major credit providers;
e. The rate of housing foreclosures does not exceed 125\% of the 2016-2019 average of Middlesex County for any year in the forecasts;
f. All currently planned, platted, approved and permitted housing projects are built out and completed by 2024. All housing units are occupied by 2025;
g. The average annual unemployment rates for the Middlesex County and the Greater Boston Metropolitan Area will remain below 7.0\% for the 10 years of the forecasts;
h. The Royal Belmont Apartments will be at least 95\% occupied by December 31, 2020;
i. The Cushing Village project will be at least 95\% occupied by December 31, 2022;
j. The McLean project will be at least 95\% occupied by December 31, 2024;
k. At least 20\% of the age-restricted housing units built in the proposed projects are
occupied by households that currently resides within the Town of Belmont;
I. There is no additional construction and/or opening of any large-scale age restricted housing units (size 100+) developments in any of the towns bordering Belmont in the next five years;
m . There will be no building moratorium within the Town of Belmont;
n. The Town of Belmont will average at least 200 existing home sales annually for the next 10 years.
o. Businesses within Belmont and the Boston Metropolitan area (particularly the western suburbs) will remain viable;
p. The number of existing home sales in the Town of Belmont that are a result of "distress sales" (homes worth less than the current mortgage value) will not exceed 20\% of total homes sales in the Town of Belmont for any given year;
q. Housing turnover rates (sale of existing homes in the Town of Belmont) will remain at their current levels. The majority of existing home sales are made by home owners over the age of 60;
r. The rate of foreclosures for commercial property remains at the 2016-2019 average for Middlesex County;

If a major employer in the district or in the Greater Boston Metropolitan Area (particularly in the western suburban area) closes, reduces or expands its operations, the population forecasts would need to be adjusted to reflect the changes brought about by the change in economic and employment conditions. The same holds true for any type of natural disaster, major change in the local infrastructure (e.g., highway
construction, water and sewer expansion, changes in zoning regulations etc.), a further economic downturn, any additional weakness in the housing market or any instance or situation that causes rapid and dramatic population changes that could not be foreseen at the time the forecasts were calculated.

For the Town of Belmont, the age specific pattern of net migration will be held nearly constant throughout the life of the forecasts. While the number of in and out migrants has changed in past years for the Town of Belmont (and will change again over the next 10 years), the basic age pattern of the migrants has stayed nearly the same over the last 30 years. Based on the analysis of data it is safe to assume this age specific migration trend will remain unchanged into the future. This pattern of migration shows most of the local out-migration occurring in the 18-to-24-year-old age group as young adults leave the area to go to college or move to other urbanized areas. The second group of out-migrants is those householders aged 70 and older who are downsizing their residences. Most of the local in-migration occurs in the 0-to-9 and 2544 age groups (the bulk of the which come from areas within 75 miles of the Town of Belmont) primarily consisting of younger adults and their children. It is safe to assume that the majority of the in-migrants that move into the non-age restricted proposed housing units will be in the aforementioned age groups. If there are no major violations of the aforementioned assumptions the level of the accuracy for the population forecasts are estimated to be $\pm 3.0 \%$ for the life of the forecasts.

Results of the Population Forecasts: The following is the results of each population forecast scenario for the years 2015 (estimate) 2020, 2025 and 2030.

## 1. Scenario One - Belmont, MA Total Population

|  | 2010 |  | 2015 |  | 2020 |  | 2025 |  | 2030 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0-4 | 1554 |  | 1670 |  | 1640 |  | 1680 |  | 1740 |
| 5-9 | 1720 |  | 1910 |  | 2050 |  | 2040 |  | 2100 |
| 10-14 | 1736 |  | 1810 |  | 2000 |  | 2150 |  | 2140 |
| 15-19 | 1472 |  | 1560 |  | 1610 |  | 1750 |  | 1940 |
| 20-24 | 892 |  | 750 |  | 780 |  | 810 |  | 800 |
| 25-29 | 1272 |  | 1160 |  | 1040 |  | 1080 |  | 1120 |
| 30-34 | 1402 |  | 1530 |  | 1440 |  | 1430 |  | 1500 |
| 35-39 | 1701 |  | 1580 |  | 1720 |  | 1640 |  | 1740 |
| 40-44 | 2004 |  | 1690 |  | 1570 |  | 1760 |  | 1730 |
| 45-49 | 2025 |  | 1980 |  | 1670 |  | 1550 |  | 1740 |
| 50-54 | 1987 |  | 2000 |  | 1970 |  | 1650 |  | 1540 |
| 55-59 | 1656 |  | 1940 |  | 1950 |  | 1920 |  | 1620 |
| 60-64 | 1408 |  | 1510 |  | 1780 |  | 1790 |  | 1750 |
| 65-69 | 1136 |  | 1240 |  | 1340 |  | 1590 |  | 1590 |
| 70-74 | 816 |  | 980 |  | 1080 |  | 1160 |  | 1390 |
| 75-79 | 710 |  | 760 |  | 920 |  | 910 |  | 980 |
| 80-84 | 592 |  | 640 |  | 690 |  | 820 |  | 720 |
| 85+ | 646 |  | 700 |  | 760 |  | 820 |  | 930 |
| Total | 24729 |  | 25410 |  | 26010 |  | 26550 |  | 27070 |
| Median Age | 41.5 |  | 42.2 |  | 42.3 |  | 42.0 |  | 41.3 |
| Births |  | 1230 |  | 1160 |  | 1180 |  | 1210 |  |
| Deaths |  | 980 |  | 1060 |  | 1140 |  | 1240 |  |
| Natural Increase |  | 250 |  | 100 |  | 40 |  | -30 |  |
| Net Migration |  | 450 |  | 480 |  | 500 |  | 530 |  |
| Change |  | 700 |  | 580 |  | 540 |  | 500 |  |

Scenario Two - Belmont, MA Total Population

|  | 2010 |  | 2015 |  | 2020 |  | 2025 |  | 2030 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0-4 | 1554 |  | 1670 |  | 1640 |  | 1700 |  | 1740 |
| 5-9 | 1720 |  | 1910 |  | 2070 |  | 2060 |  | 2120 |
| 10-14 | 1736 |  | 1810 |  | 2070 |  | 2210 |  | 2170 |
| 15-19 | 1472 |  | 1560 |  | 1480 |  | 1710 |  | 2000 |
| 20-24 | 892 |  | 750 |  | 800 |  | 910 |  | 860 |
| 25-29 | 1272 |  | 1160 |  | 1160 |  | 1300 |  | 1220 |
| 30-34 | 1402 |  | 1530 |  | 1560 |  | 1780 |  | 1720 |
| 35-39 | 1701 |  | 1580 |  | 1770 |  | 1800 |  | 2090 |
| 40-44 | 2004 |  | 1690 |  | 1570 |  | 1760 |  | 1770 |
| 45-49 | 2025 |  | 1980 |  | 1670 |  | 1550 |  | 1740 |
| 50-54 | 1987 |  | 2000 |  | 1970 |  | 1650 |  | 1540 |
| 55-59 | 1656 |  | 1940 |  | 1950 |  | 1920 |  | 1620 |
| 60-64 | 1408 |  | 1510 |  | 1880 |  | 1740 |  | 1800 |
| 65-69 | 1136 |  | 1240 |  | 1270 |  | 1570 |  | 1550 |
| 70-74 | 816 |  | 980 |  | 1130 |  | 1000 |  | 1370 |
| 75-79 | 710 |  | 760 |  | 920 |  | 920 |  | 830 |
| 80-84 | 592 |  | 640 |  | 690 |  | 820 |  | 820 |
| 85+ | 646 |  | 700 |  | 760 |  | 820 |  | 930 |
| Total | 24729 |  | 25410 |  | 26360 |  | 27220 |  | 27890 |
| Median Age | 41.5 |  | 42.2 |  | 42.0 |  | 40.4 |  | 40.1 |
| Births |  | 1230 |  | 1190 |  | 1310 |  | 1370 |  |
| Deaths |  | 980 |  | 1060 |  | 1150 |  | 1230 |  |
| Natural Increase |  | 250 |  | 130 |  | 160 |  | 140 |  |
| Net Migration |  | 450 |  | 810 |  | 710 |  | 530 |  |
| Change |  | 700 |  | 940 |  | 870 |  | 670 |  |

Scenario Three - Belmont, MA Total Population

|  | 2010 |  | 2015 |  | 2020 |  | 2025 |  | 2030 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0-4 | 1554 |  | 1670 |  | 1640 |  | 1790 |  | 1810 |
| 5-9 | 1720 |  | 1910 |  | 2070 |  | 2110 |  | 2210 |
| 10-14 | 1736 |  | 1810 |  | 2070 |  | 2280 |  | 2220 |
| 15-19 | 1472 |  | 1560 |  | 1480 |  | 1640 |  | 1960 |
| 20-24 | 892 |  | 750 |  | 800 |  | 960 |  | 940 |
| 25-29 | 1272 |  | 1160 |  | 1160 |  | 1420 |  | 1280 |
| 30-34 | 1402 |  | 1530 |  | 1560 |  | 1840 |  | 1800 |
| 35-39 | 1701 |  | 1580 |  | 1770 |  | 1920 |  | 2170 |
| 40-44 | 2004 |  | 1690 |  | 1570 |  | 1760 |  | 1910 |
| 45-49 | 2025 |  | 1980 |  | 1670 |  | 1550 |  | 1740 |
| 50-54 | 1987 |  | 2000 |  | 1970 |  | 1650 |  | 1540 |
| 55-59 | 1656 |  | 1940 |  | 1950 |  | 1960 |  | 1620 |
| 60-64 | 1408 |  | 1510 |  | 1880 |  | 1780 |  | 1840 |
| 65-69 | 1136 |  | 1240 |  | 1270 |  | 1610 |  | 1580 |
| 70-74 | 816 |  | 980 |  | 1130 |  | 950 |  | 1410 |
| 75-79 | 710 |  | 760 |  | 920 |  | 800 |  | 770 |
| 80-84 | 592 |  | 640 |  | 690 |  | 780 |  | 730 |
| 85+ | 646 |  | 700 |  | 760 |  | 820 |  | 910 |
| Total | 24729 |  | 25410 |  | 26360 |  | 27620 |  | 28440 |
| Median Age | 41.5 |  | 42.2 |  | 42.0 |  | 39.6 |  | 39.6 |
| Births |  | 1230 |  | 1190 |  | 1340 |  | 1430 |  |
| Deaths |  | 980 |  | 1060 |  | 1150 |  | 1200 |  |
| Natural Increase |  | 250 |  | 130 |  | 190 |  | 230 |  |
| Net Migration |  | 450 |  | 810 |  | 1070 |  | 540 |  |
| Change |  | 700 |  | 940 |  | 1260 |  | 770 |  |

Scenario Four - Belmont, MA Total Population

|  | 2010 |  | 2015 |  | 2020 |  | 2025 |  | 2030 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0-4 | 1554 |  | 1670 |  | 1640 |  | 1740 |  | 1750 |
| 5-9 | 1720 |  | 1910 |  | 2070 |  | 2120 |  | 2170 |
| 10-14 | 1736 |  | 1810 |  | 2070 |  | 2290 |  | 2220 |
| 15-19 | 1472 |  | 1560 |  | 1480 |  | 1630 |  | 1980 |
| 20-24 | 892 |  | 750 |  | 800 |  | 930 |  | 860 |
| 25-29 | 1272 |  | 1160 |  | 1160 |  | 1400 |  | 1320 |
| 30-34 | 1402 |  | 1530 |  | 1560 |  | 1820 |  | 1820 |
| 35-39 | 1701 |  | 1580 |  | 1770 |  | 1920 |  | 2140 |
| 40-44 | 2004 |  | 1690 |  | 1570 |  | 1760 |  | 1910 |
| 45-49 | 2025 |  | 1980 |  | 1670 |  | 1550 |  | 1740 |
| 50-54 | 1987 |  | 2000 |  | 1970 |  | 1650 |  | 1540 |
| 55-59 | 1656 |  | 1940 |  | 1950 |  | 1960 |  | 1620 |
| 60-64 | 1408 |  | 1510 |  | 1880 |  | 1820 |  | 1840 |
| 65-69 | 1136 |  | 1240 |  | 1270 |  | 1630 |  | 1620 |
| 70-74 | 816 |  | 980 |  | 1130 |  | 940 |  | 1410 |
| 75-79 | 710 |  | 760 |  | 920 |  | 840 |  | 750 |
| 80-84 | 592 |  | 640 |  | 690 |  | 820 |  | 750 |
| 85+ | 646 |  | 700 |  | 760 |  | 820 |  | 930 |
| Total | 24729 |  | 25410 |  | 26360 |  | 27640 |  | 28370 |
| Median Age | 41.5 |  | 42.2 |  | 42.0 |  | 39.9 |  | 39.8 |
| Births |  | 1230 |  | 1190 |  | 1330 |  | 1420 |  |
| Deaths |  | 980 |  | 1060 |  | 1150 |  | 1230 |  |
| Natural Increase |  | 250 |  | 130 |  | 180 |  | 190 |  |
| Net Migration |  | 450 |  | 810 |  | 1090 |  | 550 |  |
| Change |  | 700 |  | 940 |  | 1270 |  | 740 |  |

Scenario 1 measures the impact of the Royal Belmont complex, along with all the other demographic dynamics of the Town of Belmont over the last 10 years and the next 10 years. That is, not only do the forecasts reflex the population change in the town due to the Royal Belmont complex, but also the general demographic trends of the town as a whole. This includes, but are not limited to, out-migration of graduating high school seniors (most of whom go off to college), the outmigration of downsizing senior households, the in-migration of families moving into existing housing (both owner and rental) and internal migration trends within the town (mostly households moving from rental units within the town to owner occupies housing units within Belmont.

The primary demographic variable to is the decline of the town median age from 2020 to 2030 (in this scenario it declines from 42.3 to 41.3) While part of this decline will be undoubtable due to the additional the 298 units in the Royal Belmont complex (which will contain mostly young adults and some children) the bulk of this decline will be due to the downsizing and outmigration of senior households (most over the age of 70) from existing housing units and being replaced with households with young adults and children. We assume in these forecasts that the Town of Belmont will continue to have an average of at least 200 existing home sales annually for the next 10 years.

Note: These forecasts are based on decennial census results. In all census numbers, college students are counted where they go to school, not at the parent's residence (even if the parent's home is still the student's legal address). Belmont, like many municipalities in Massachusetts, conducts an annual local census. In these local population counts college students tend to still be counted at there parent's home. Thus, the local population counts tend to be higher that the decennial census counts.

Scenario 2 use the results of Scenario 1 as the base for the calculations. By doing this, we can measure what impact the Cushing Village complex will have on the town's population independently of other factors. Again, the key demographic statistic is the change in median age. Since the occupant of Cushing Village will be almost exclusively young adults and some children, the town's median age declines even further (42.0 in 2020 to 40.1 in 2030).

Given that all of the housing units in this complex are rental, the median age of the occupants will stay roughly at the same level. As there will be some outmigration from the complex over time after it is completed, the new residences will again be young adults with some children. Further, since there will be many young couples living in the housing units in family formation ages (25-34 year old) there will be some additional births each year.

Scenario 3 use the results of Scenario 2 as the base for the calculations. By doing this, we can measure what impact the McLean Complex (version "A") will have on the town's population independently of other factors. It is important to note that in these forecasts, we assume that approximately $20 \%$ of the age-restricted units will be occupied by elder households that move in from housing units that are withing the Town of Belmont.

Because roughly one third of the proposed housing units are age restricted the net effect of this complex on the towns median age is less than would be seen from the Cushing Village complex. None the less, the town's median age will still decline from 42.0 in 2020 to 39.6 in 2030.

Scenario 4 also uses the results of Scenario 2 as the base for the calculations. By doing this, we can measure what impact the McLean Complex (version "B") will have on the town's population independently of other factors. The major difference here is that in Version "B" roughly two thirds of the proposed housing units will be age restricted. Again, we assume that approximately $20 \%$ of the age-restricted units will be occupied by elder households that move in from housing units that are withing the Town of Belmont.

Not surprisingly, the results of Scenario 4 show slightly less population growth and a smaller decline in the town's median age. Most (if not all) of the age restricted households will have two people or less in them. Thus, the population yield of the complex in this version will be smaller. Additionally, the age-restricted households will bring in more people over the age of 65 , which will not help reduce the town's median age. However, the forecasted median age will still decline from 42.0 in 2020 to 39.8 in 2030.

## Enrollment Impact of the Four Building Scenarios:

Focusing on the 0-4, 5-9, 10-14 and 15-19 age groups establish the impact that each housing scenario will have on the number of total school age children in the city for the years 2020, 2025 and 2030. Below are the results of the calculations of the impact of each housing scenario on total school population. It is important to note that these calculations include all school age children (both public and non-public) and represent the maximum impact the building projects could potential have on local public school enrollment.

Table 1: Royal Belmont Enrollment Impact of 298 Units --(198@1BR, 86 @ 2 BR, 14 @ 3 BR)

|  | Average Yield <br> Factor | 2020-21 School <br> Year | 2025-26 School <br> Year |
| :--- | :---: | :---: | :---: |
| Grade Level | 0.12 | 36 |  |
| Preschool | 0.11 | 33 | 32 |
| K-5 | 0.06 | 18 | 45 |
| 6-8 | 0.04 | 12 | 23 |
| 9-12 |  | 63 | 10 |
| Total K-12 |  |  | 78 |

Using data from the Town of Belmont census e calculated average yield rates for the pre-school, K-5, 6-8 and 9-12 categories. These yields were then applied to the number of housing units in the complex for the 2020-21 school year. Using the results of the population forecasts and the housing turnover rate for housing units of this type and price, we calculated the impact for the school year 2025-26. The results for 2025-26 reflect not only the impact of in and out migration from the complex, but also the impact of non-migrating children ageing through the school system. The Royal Belmont is scheduled to be completed by 2020.

Table 2: Cushing Village Enrollment Impact of 112 Units --(9 @ studio, 56 @ 1 BR, 47 @ 2 BR)

| Grade Level | Average Yield <br> Factor | 2025-26 School <br> Year | 2030-31 School <br> Year |
| :--- | :---: | :---: | :---: |
| Preschool | 0.14 | 15 |  |
| K-5 | 0.08 | 8 | 17 |
| 6-8 | 0.04 | 4 | 13 |
| 9-12 | 0.01 | 1 | 6 |
| Total K-12 |  | 13 | 3 |

The Cushing Village project is scheduled to be completed by 2022. For these yields we examined similar housing complex's with in Belmont and in surrounding town with similar sizes and rent level. The results show that the complex should have approximately 13 school age children in 2025-26. However, even with in and out migration, the ageing of the existing residence will increase the number of school age children to a total of 22 by 2030-31

Table 3: McLean Version "A" Enrollment Impact of 150 Units --(110 @ non-age restricted, 40 @ agerestricted)

|  | Average Yield <br> Factor | 2025-26 School <br> Year | 2030-31 School <br> Year |
| :--- | :---: | :---: | :---: |
| Grade Level | 0.36 | 39 |  |
| Preschool | 0.25 | 28 | 35 |
| K-5 | 0.09 | 10 | 38 |
| 6-8 | 0.04 | 4 | 18 |
| 9-12 |  | 42 | 9 |
| Total K-12 |  |  | 65 |

If approved, the McLean Project (version $A$ ) is scheduled to be completed by 2025. Again, we examined similar housing complex's with in Belmont and in surrounding town with similar sizes and rent level. However, for these calculations, we assume that the child yield for the age-restricted housing units will be zero. In effect, we are examining the impact of the 110 non-restricted units only. The results show that under this version, the complex will yield 42 school age children in the 2025-26 school year. But again, with the ageing of the existing households, even with some in and out migration, the number of school age children will increase to 65 by 2030-31.

Table 4: McLean Version "B" Enrollment Impact of 142 Units --(50 @ non-age restricted, 93 @ agerestricted)

|  | Average Yield <br> Factor | 2025-26 School <br> Year | 2030-31 School <br> Year |
| :--- | :---: | :---: | :---: |
| Grade Level | 0.36 | 18 |  |
| Preschool | 0.25 | 13 | 16 |
| K-5 | 0.09 | 5 | 19 |
| 6-8 | 0.04 | 2 | 12 |
| 9-12 |  | 20 | 3 |
| Total K-12 |  |  | 34 |

If approved, the McLean Project (version B) is scheduled to be completed by 2025. Using the same yield factors as in version "A" the number of school age students for 2025-26 were calculated. Again, we assume that the child yield for the age-restricted housing units will be zero. However, in this version, there are less than half the number of non-age restricted housing units as in version A. The yield calculations for this version show a forecasted 20 school age children in the 2025-26 school year, increasing to 34 by 2030-31

## REFERENCES

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Scenario One Belmont, MA Total Population - 2010 Census ${ }^{\text {DRAFT }}$


Scenario One Belmont, MA Total Population - 2015 Census ${ }^{\text {DRAFT }}$


Scenario One Belmont, MA Total Population - 2020 Census ${ }^{\text {DRAFT }}$


Scenario One Belmont, MA Total Population - 2025 Census ${ }^{\text {DRAFT }}$


Scenario One Belmont, MA Total Population - 2030 Census ${ }^{\text {DRAFT }}$


Scenario Two Belmont, MA Total Population - 2025 Census ${ }^{\text {DRAFT }}$


Scenario Two Belmont, MA Total Population - 2030 Census ${ }^{\text {DRAFT }}$


Scenario Three Belmont, MA Total Population - 2025 Census ${ }^{\text {RAFT }}$


Scenario Three Belmont, MA Total Population - 2030 Census ${ }^{\text {RAFT }}$


## Scenario Four Belmont, MA Total Population - 2025 Census ${ }^{\text {DRAFT }}$



Scenario Four Belmont, MA Total Population - 2030 Census ${ }^{\text {DRAFT }}$


McLean Development - Northland Option 1

| Annual Revenue Rate Increase =2.5\% Annual Cost Inflation Rate $=\mathbf{3 . 0 \%}$ |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |  |
| Year | RE Taxes | CPA Surcharge | Excise Tax | Ambulance | Total Revenue | Police | Seniors | Education | Total Costs | Net Impact |
| FY20* | \$1,096,980 | \$13,829 | \$45,938 | \$4,782 | \$1,161,529 | \$1,037 | \$1,596 | \$598,332 | \$600,965 | \$560,564 |
| FY21 | \$1,124,405 | \$14,175 | \$47,086 | \$4,902 | \$1,190,567 | \$1,068 | \$1,644 | \$616,282 | \$618,994 | \$571,573 |
| FY22 | \$1,152,515 | \$14,529 | \$48,264 | \$5,024 | \$1,220,331 | \$1,100 | \$1,693 | \$634,770 | \$637,564 | \$582,768 |
| FY23 | \$1,181,327 | \$14,892 | \$49,470 | \$5,150 | \$1,250,840 | \$1,133 | \$1,744 | \$653,814 | \$656,691 | \$594,149 |
| FY24 | \$1,210,861 | \$15,265 | \$50,707 | \$5,278 | \$1,282,111 | \$1,167 | \$1,796 | \$673,428 | \$676,391 | \$605,719 |
| FY25 | \$1,241,132 | \$15,646 | \$51,975 | \$5,410 | \$1,314,163 | \$1,202 | \$1,850 | \$693,631 | \$696,683 | \$617,480 |
| FY26 | \$1,272,160 | \$16,037 | \$53,274 | \$5,546 | \$1,347,018 | \$1,238 | \$1,906 | \$803,795 | \$806,939 | \$540,079 |
| FY27 | \$1,303,964 | \$16,438 | \$54,606 | \$5,684 | \$1,380,693 | \$1,275 | \$1,963 | \$913,959 | \$917,197 | \$463,496 |
| FY28 | \$1,336,564 | \$16,849 | \$55,971 | \$5,826 | \$1,415,210 | \$1,314 | \$2,022 | \$1,024,123 | \$1,027,458 | \$387,752 |
| FY29 | \$1,369,978 | \$17,271 | \$57,370 | \$5,972 | \$1,450,591 | \$1,353 | \$2,082 | \$1,134,287 | \$1,137,722 | \$312,868 |
| FY30 | \$1,404,227 | \$17,702 | \$58,805 | \$6,121 | \$1,486,855 | \$1,394 | \$2,145 | \$1,244,453 | \$1,247,992 | \$238,864 |
| FY31 | \$1,439,333 | \$18,145 | \$60,275 | \$6,274 | \$1,524,027 | \$1,435 | \$2,209 | \$1,281,787 | \$1,285,431 | \$238,595 |
| FY32 | \$1,475,316 | \$18,598 | \$61,782 | \$6,431 | \$1,562,127 | \$1,479 | \$2,276 | \$1,320,240 | \$1,323,994 | \$238,133 |
| FY33 | \$1,512,199 | \$19,063 | \$63,326 | \$6,592 | \$1,601,181 | \$1,523 | \$2,344 | \$1,359,848 | \$1,363,714 | \$237,466 |
| FY34 | \$1,550,004 | \$19,540 | \$64,909 | \$6,757 | \$1,641,210 | \$1,569 | \$2,414 | \$1,400,643 | \$1,404,626 | \$236,584 |
| FY35 | \$1,588,754 | \$20,029 | \$66,532 | \$6,926 | \$1,682,240 | \$1,616 | \$2,487 | \$1,442,662 | \$1,446,764 | \$235,476 |
|  |  |  |  |  |  |  |  |  |  |  |
| *See attached worksheet for supporting information |  |  |  |  |  |  |  |  |  |  |
| FY 30 Education Cost reflects increase in enrollment in 2030 |  |  |  |  |  |  |  |  |  |  |




McLean Development - Northland Option 3

| Annual Revenue Rate Increase = 2.5\% Annual Cost Inflation Rate = 3.0\% |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year | RE Taxes | CPA Surcharge | Excise Tax | Ambulance | Total Revenue | Police | Seniors | Education | Total Costs | Net Impact |
| FY20* | \$1,064,304 | \$13,461 | \$43,794 | \$5,266 | \$1,126,825 | \$989 | \$3,819 | \$284,920 | \$289,728 | \$837,097 |
| FY21 | \$1,090,912 | \$13,798 | \$44,889 | \$5,398 | \$1,154,996 | \$1,019 | \$3,934 | \$293,468 | \$298,420 | \$856,576 |
| FY22 | \$1,118,184 | \$14,142 | \$46,011 | \$5,533 | \$1,183,871 | \$1,049 | \$4,052 | \$302,272 | \$307,372 | \$876,498 |
| FY23 | \$1,146,139 | \$14,496 | \$47,161 | \$5,671 | \$1,213,467 | \$1,081 | \$4,173 | \$311,340 | \$316,594 | \$896,874 |
| FY24 | \$1,174,792 | \$14,858 | \$48,340 | \$5,813 | \$1,243,804 | \$1,113 | \$4,298 | \$320,680 | \$326,091 | \$917,713 |
| FY25 | \$1,204,162 | \$15,230 | \$49,549 | \$5,958 | \$1,274,899 | \$1,147 | \$4,427 | \$330,300 | \$335,874 | \$939,025 |
| FY26 | \$1,234,266 | \$15,611 | \$50,788 | \$6,107 | \$1,306,772 | \$1,181 | \$4,560 | \$394,429 | \$400,170 | \$906,601 |
| FY27 | \$1,265,123 | \$16,001 | \$52,057 | \$6,260 | \$1,339,441 | \$1,216 | \$4,697 | \$458,558 | \$464,472 | \$874,969 |
| FY28 | \$1,296,751 | \$16,401 | \$53,359 | \$6,416 | \$1,372,927 | \$1,253 | \$4,838 | \$522,687 | \$528,778 | \$844,149 |
| FY29 | \$1,329,170 | \$16,811 | \$54,693 | \$6,577 | \$1,407,250 | \$1,290 | \$4,983 | \$586,816 | \$593,090 | \$814,160 |
| FY30 | \$1,362,399 | \$17,231 | \$56,060 | \$6,741 | \$1,442,431 | \$1,329 | \$5,132 | \$650,945 | \$657,407 | \$785,024 |
| FY31 | \$1,396,459 | \$17,662 | \$57,462 | \$6,909 | \$1,478,492 | \$1,369 | \$5,286 | \$670,474 | \$677,129 | \$801,363 |
| FY32 | \$1,431,371 | \$18,104 | \$58,898 | \$7,082 | \$1,515,454 | \$1,410 | \$5,445 | \$690,588 | \$697,443 | \$818,011 |
| FY33 | \$1,467,155 | \$18,556 | \$60,371 | \$7,259 | \$1,553,341 | \$1,452 | \$5,608 | \$711,306 | \$718,366 | \$834,974 |
| FY34 | \$1,503,834 | \$19,020 | \$61,880 | \$7,441 | \$1,592,174 | \$1,496 | \$5,777 | \$732,645 | \$739,917 | \$852,257 |
| FY35 | \$1,541,430 | \$19,496 | \$63,427 | \$7,627 | \$1,631,979 | \$1,541 | \$5,950 | \$754,624 | \$762,115 | \$869,864 |
|  |  |  |  |  |  |  |  |  |  |  |
| * See attached worksheet for supporting information |  |  |  |  |  |  |  |  |  |  |
| FY 30 Education Cost reflects increase in enrollment in 2030 |  |  |  |  |  |  |  |  |  |  |




