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Somerville Linkage Nexus Study

Final Report

to

Mayor's Office of Strategy Planning and Community Development
City of Somerville

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Executive Summary

Somerville established an affordable housing linkage policy in 1990 and a jobs linkage policy in 2016, both of which are codified under Section 12 of Somerville's most recent Zoning Ordinance, adopted in 2019. Under the City's linkage policy, development projects exceeding 30,000 gross square feet (SF) pay a housing linkage fee of $11.23 per square foot on the amount of non-residential space over 30,000 SF. Projects over 15,000 gross SF pay a jobs linkage fee of $2.75 on the amount of non-residential space over 15,000 SF. This report provides an updated nexus study to quantify the impact of future non-residential development on the demand for affordable housing and need for employment and training services in Somerville and the linkage fee rates to mitigate these impacts. It also recommends changes to linkage fee rates, policies and administrative practices.

Housing Demand. Based on projected new development of 2,612,800 square feet over the next ten years and the likely mix of tenant industries, 6,174 new jobs are estimated to be generated in Somerville by this development. Information on the occupations and earnings of these new employees, in combination with data on the distribution of households by size and number of workers and survey results on the share of employees who moved to Somerville or sought housing there when they obtained a job in Somerville, are used to estimate the demand for new affordable housing units from the projected new development and employment. This analysis projected the need for 367 new housing units to address this demand, including 82 low-income units, 71 moderate-income units and 214 middle- income units[1].

Development Costs and Needed Subsidy. A separate analysis of the development costs and needed subsidy for rental and homeownership units was conducted based on 85 ownership units and 282 rental units[2]. Development costs were estimated based on the costs for recent comparable affordable housing projects built in Boston and inner suburbs. For rental projects, the needed subsidy was calculated as the difference between total development costs and the amount of debt and equity that could be supported by the housing cash flow using affordable rents at 30% of household income and comparable operating costs. For ownership projects, the needed subsidy was calculated as the difference between total development costs and the affordable purchase price based on home mortgage payments, insurance and property taxes at 30% of household income and a 5% down payment. The results of this analysis are:

- Total development costs of $211.7 million; and
- Total needed subsidy of $127.8 million with $45 million for the low-income units, $26 million for the moderate-income units and $56.8 million for the middle-income units.

The housing linkage fee needed to provide the full $127.8 million in subsidy is $58.28 per square foot on new non-residential development. However, low- and moderate-income housing development leverages public subsidies from federal and state sources in addition to those provided by local government. The local funding share for the production of affordable rental

[1] A low-income unit is for a household with income at or less than 50% of the Boston metro area median income (AMI), a moderate-income unit is for a household between 50% and 80% of Boston metro AMI and a middle-income unit is for a household with income between 80% and 110% of Boston metro AMI.

[2] This mix is based on 90% of the low-income units and moderate-income units built as rental and 10% as ownership, and 67% of the middle-income units built as rental and 33% as ownership.

housing varies across communities and averaged 11% of the total project costs for 14 rental projects in the Massachusetts Housing Partnership (MHP) portfolio. Middle-income ownership units do not qualify for these subsidies so Somerville would have to cover the full subsidy for these units.

Training Needs and Financing Gap. Somerville's projected development over the next ten years is expected to create over 1,800 jobs in low- and middle-skill occupations that are the most accessible to low-income and moderate-income workers without a four-year college degree. Based on an analysis on occupational demand and training supply by the major industries in new development projects, the funding gap to train Somerville residents for 30% and 40% of these jobs was estimated, along with costs for related education and employment services, including English for Speakers of Other Languages (ESOL), Adult Basic Education (ABE), skill upgrading after employment to help workers advance into higher paying positions and stipends to offset lost income while attending training programs. High- and low-supply estimates for employment and training services were made to account for planned program expansions and the pandemic's impact on participation levels. The estimated total employment training funding gap with 30% resident employment ranged from $4.78 million to $5.91 million for the high- and low-supply scenarios, with resulting warranted linkage fee rates of $1.99 to $2.46. At 40% resident employment, the estimated funding gap is $6.7 million to $8.6 million for the high-supply and low-supply scenarios, with resulting warranted linkage fee rates of $2.80 to $3.58.

Impact on Competitiveness. An important consideration for Somerville in altering its linkage fees is the potential impact of any fee increases on attracting new development and tenants. Somerville's current combined linkage fee is below that of Cambridge ($33.34) and Boston ($15.39)[3]. The maximum combined rate of $61.86, in which linkage fees are set to cover the full funding gap without other subsidy sources, on the other hand, is almost twice Cambridge's fee and four times the rate in Boston. Higher linkage fees will increase development costs, which can impact project economics in several ways, depending on several factors. Consequently, linkage fee increases were analyzed for their potential impact on tenant rents, developer returns and equity investor returns. If the maximum rate increase of $47.88 is fully passed on to tenants, it would increase lab rents by 5%, eliminating Somerville's advantage over Watertown and making it more costly than West Cambridge—two important competing locations. Without any increase in rents, increased development costs would reduce developer returns by up to 27 basis points, potentially making some lab and office projects infeasible. The maximum fee has a larger impact on equity investor returns, reducing them by up to 1.70 percentage points, which would make it more difficult for developers to secure the investment capital to undertake projects. Smaller fee increases in the range of $5 and $20 are unlikely to impact Somerville's competitiveness in attracting tenants and generating new office and lab development, as they would have a small impact on rents, developer returns and equity investor returns.

Recommendations. Recommendations to simplify and update Somerville's linkage policies include: (1) lower the housing linkage project size threshold and exemption to 15,000 SF to match those for jobs linkage; (2) change the housing linkage fee payment schedule to match jobs fee schedule with two equal payments at building permit date and certificate of occupancy date; and

[3] Fees in both of these cities may increase in the near future with the Cambridge City Council having initially approved a petition to raise the fee to $33.34 and Boston recently completing a Nexus Study to adjust its fees.

(3) establish a graduated housing linkage fee in which projects with at least 15,000 square feet (SF) pay 50% of the full housing linkage fee for SF between 15,000 and 30,000 and pay the full housing fee on the amount of SF above 30,000.

It is recommended that Somerville maintain its jobs fee rate at $2.75 and double the housing fee rate from $11.23 to $22.46. The financial analysis conducted in the report indicates that a fee increase of $11.23 is unlikely to impact Somerville's competitiveness in either attracting development investment or tenants.

Introduction

Somerville is experiencing a large increase in non-residential development with progress in implementing the Union Square Neighborhood Plan and new development plans in the Assembly Square area. This new development activity and resulting employment will create new job opportunities for Somerville residents and is likely to increase the demand for housing including affordable housing for low-income, moderate-income and middle-income households. The City commissioned to update its existing affordable housing and jobs linkage fees and policies based on the impact of this new wave of development on job opportunities and affordable housing demand. This report provides a nexus study to inform Somerville as it considers adjusting its linkage fee levels and policies. The report quantifies the impact of future non-residential development on the demand for affordable low-, moderate-, and middle-income housing in Somerville and the demand for workers in occupations accessible to low-income and moderate-income workers, particularly those without a four-year college degree. It then analyzes the proportionate housing and jobs linkage fee rates to mitigate these impacts. It also reviews the legal basis for the City's linkage fees and linkage fees in other communities, analyzes the potential impact of any fee increase on the feasibility of new development and discusses several options to alter current linkage policies. Finally, it recommends fee and policy changes to update Somerville's linkage program.

I. Somerville Development Potential and Future Development

Somerville has experienced considerable new development activity in recent years with a large pipeline of commercial projects under construction and proposed, fueled by strong growth in demand among life science firms for research and development lab space. **Table 1-1** summarizes completed non-residential development by use in Somerville from 2012 through May 31, 2022 along with projects under construction and at different stages of the permitting process, as of May 31, 2021.

Table 1-1. Gross Floor Area in Square Feet for Somerville Non-Residential Development Completed from 2012 to May 2022 and Permitted as of May 2022

Status	Total Square Feet	Retail Square Feet	Commercial Square Feet	Hotel Square Feet
Under 30,000 SF	123,276	76,416	29,302	17,558
30,000 SF +	7,619,734	753,194	6,598,609	267,931
Complete, 2012 to 5/2022	3,011,447	672,155	2,142,099	197,193
Under Construction	1,823,187	53,032	1,770,155	0
Building Permit	69,406	19,404	32,444	17,558
Approved	169,829	17,766	152,063	
Under Review	2,325,788	56,900	2,198,150	70,738
Unknown/Other	343,353	10,353	333,000	0
Total	7,743,010	829,610	6,627,911	285,489
Source: City of Somerville				

Since 2012, over 3 million square feet (SF) of new non-residential development was completed in Somerville, with commercial (office and lab space) accounting for 71% of this new space. Retail constituted the next largest share of new development at 22% followed by hotels at 7% (see **Tables 1-1 and 1-2**). Another 1.82 million SF is under construction—almost all of which (97%) are lab/office buildings targeted to life science firms. Similarly, 95% of the 2.3 million SF in proposed projects under review by the City are planned as life science lab/office buildings. Approved projects, at just over 239,000 SF are more diverse with a mix of office/lab (77% and 185,000 SF); retail (16% and 37,000 SF) and one hotel (7% and 18,000 SF).

Table 1-2. Percentage of Somerville Non-Residential Gross Floor Area by Use, Completed from 2012 to May 2022 and Permitted as of May 2022

Status	Retail Square Feet	Commercial Square Feet	Hotel Square Feet
Complete, 2012 to 5/2022	22.3%	71.1%	6.5%
Under Construction	2.9%	97.1%	0.0%
Building Permit	28.0%	46.7%	25.3%
Approved	10.5%	89.5%	0.0%
Under Review	2.4%	94.5%	3.0%
Unknown/Other	3.0%	97.0%	0.0%
Total	10.7%	85.6%	3.7%
Source: City of Somerville			

Market Demand and Absorption

New employment and the resulting demand for housing will depend on the actual absorption of new real estate space by new and expanding employers and Somerville's success in attracting business growth within the region. Within the Boston metropolitan area, Somerville's Assembly Square district has emerged as a desirable office location that provides a lower-cost alternative to Boston and Cambridge. The selection of Assembly Square for large office headquarters for Mass General Brigham and Puma is indicative of this market position. Data from the real estate firm Colliers (see **Table 1-3**) indicates that the supply of Somerville office space increased by 1.25 million SF from 2012 to 2021 with annual net absorption of new space averaging 119,870 SF. During this period, Somerville also maintained a low office vacancy rate of 4.1%.

Table 1-3. Somerville Office Space Supply, Absorption and Vacancy Rates, 2012 to 2021

Market Indicator	Metric
Office Supply Increase, 2012 to 2021	1,250,000
Average Annual Supply Increase, 2012 to 2021	125,000
Average Annual Absorption, 2012-2021	119,870
Vacancy Rate, 2021	4.1%
Average Vacancy Rate, 2012 to 2021	4.1%
Source: Colliers	

However, as demonstrated by Somerville's development pipeline, developer interest in Somerville has shifted to building lab projects for the life science industry. This pivot reflects the strong market demand and high rents for lab space in recent years and the changed outlooks for office space as vacancies have increased and future demand is uncertain given the impact of the Covid-19 pandemic on remote and hybrid work arrangements. While Somerville is not yet an established center for life science firms, developers view the City as a desirable location that will attract life science companies due to its proximity to Kendall Square, public and highway transportation access, highly educated workforce and the amenities in Union Square and Assembly Square.

Market absorption of lab space in the recent years informs Somerville's likely scale of new development and employment growth over the next decade. **Table 1-4** summarizes recent annual absorption of lab space in Boston, Cambridge and surrounding suburbs. From 2019 to the first quarter of 2022, 4.35 million SF of lab space was absorbed with a 3-year annual average of almost 1.3 million SF. During this time, Boston emerged as a key alternative to Cambridge, accounting for almost one-fourth of new absorption. If Somerville is able to duplicate Boston's success as a competitive alternative to Cambridge for life science companies, then it will be able to support a significant increase in development, occupancy and employment over the next decade.

Table 1-4. Net Absorption of Lab Space in Boston, Cambridge and Suburbs 2019 to First Quarter (Q1), 2022

Year	Total	Boston	Cambridge	Suburbs
2019	610,972	178,433	222,184	210,355
2020	1,242,691	98,762	384,183	759,746
2021	2,037,676	609,966	316,011	1,111,699
2022 , Q1	459,500	176,000	-103,728	387,228
Total	4,350,839	1,063,161	818,650	2,469,028
Average, 3 years	1,297,113	295,720	307,459	693,933

Somerville is one part of a large regional pipeline of planned lab development that greatly exceeds the existing inventory of lab space. According to Newmark's 2021 Life Science report[4], the Boston region has a pipeline of 49.1 million SF of new lab development that includes 14.5 million SF under construction and renovation and another 34.6 million SF of proposed lab buildings. This pipeline is 183% of the 26.8 million SF supply of lab space at the end of 2021, and poses the risk of oversupply with an accompanying increase in vacancies and decline in rents. If such an oversupply materializes over the next few years, it will likely slow the development of proposed lab projects in Somerville. This large pipeline also means that projects in Somerville will be competing with new life science buildings in other communities, especially Boston, with an existing inventory of 6.6 million SF of lab space, another 3.5 million SF under construction and 5.8 million SF permitted, and Watertown, with 1.1 million SF of existing lab space and another 2 million SF under construction.

Future Development and Employment Projection

Based on its market position, pipeline of projects under construction, and rate of absorption and new development over the past decade, **Somerville is projected to absorb and spur new development of 2.612 million SF in office, laboratory, hotel and retail space over the next ten years.** This estimate assumes that the 1.82 million SF of projects under construction will be completed and substantially leased along 25% of the office/lab projects that are approved and under review, which equals 600,000 SF. New ground floor retail development is projected at 98,000 SF or 4.4% of total office/lab space and completion of a new proposed hotel with 70,000 SF. A 10% vacancy rate was applied to the projected office/lab and retail space to result in net new occupied space of 2.358 million SF (see **Table 1-5**).

[4] Newmark, *2021 Year End Life Science Overview and Market Clusters.*

Table 1-5. Summary of Expected Somerville Development by Use, 10 Year Period

Use	Gross Developed SF	Newly Occupied SF	New Employment
Lab/Office	2,445,000	2,200,000	5,623
Retail/Ground Floor	97,800	88,000	516
Hotel	70,000	70,000	35
Total	2,612,800	2,358,000	6,174

Source: Karl F. Seidman Consulting Services

Expected Tenant Businesses

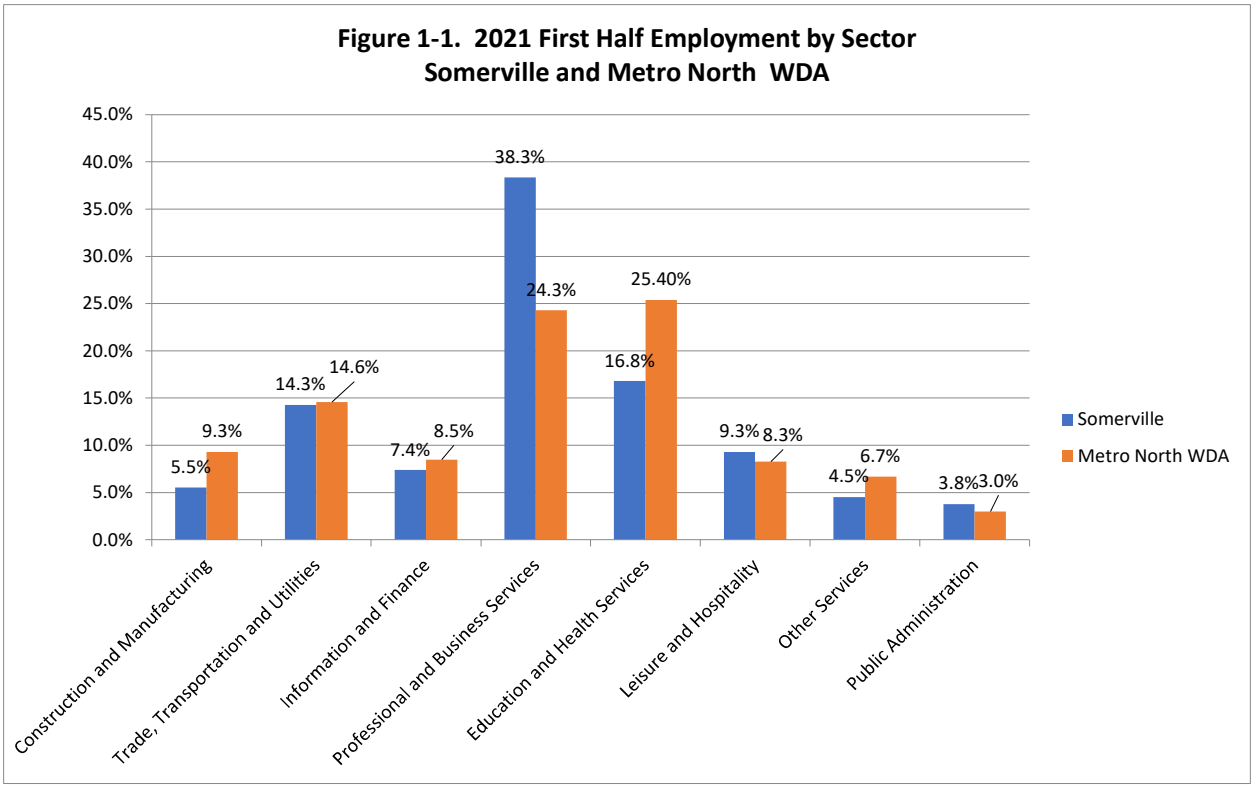
To determine the likely jobs and earnings from this new development, the industries likely to occupy the new large developments need to be projected. Since linkage fees are tied to **new development,** this type of new business and employment growth will differ from Somerville's overall or net job growth, which reflects growth in existing businesses, loss of jobs from firms' contractions and relocations, and new businesses locating in smaller projects, under 30,000 SF.

With developers of all the new projects targeting life science firms (and strong growth and real estate demand within this industry), life science enterprises are likely to occupy the vast majority of space in the projected new development. However, some portion of the new development may be leased to firms in other industries if developers are unable to attract sufficient life science firms to fully lease-up their properties. The large regional pipeline of lab development will increase the number of communities and projects competing with Somerville to attract life science firms, which makes this outcome more likely—prompting developers to look to other industries to lease-up their buildings. To identify the likely industries for Somerville's new development, the employment base and recent employment growth trends for Somerville and the Metro North Workforce Development Area (WDA) were analyzed. The Metro North WDA is the portion of the Boston metropolitan area that includes Cambridge, Somerville and 18 other nearby communities and is the probable source of businesses that will locate in the City's new development[5].

Existing Employment Base

As shown in **Figure 1-1**, Somerville's employment base, which averaged 30,527 jobs in the first half of 2021, was concentrated in three sectors that accounted for 69.4% of total jobs: Professional and Business Services (38.3% and 11,706 jobs), Trade Transportation and Utilities (14.3% and 4,464 jobs) and Education and Health Services (16.8% and 5,127 jobs). The Metro North WDA also has a large share of its job base is these three sectors (64.3%) but with a smaller percentage in Professional and Business Services (24.3%) and a larger share in Education and Health Services (25.4%). Construction and Manufacturing also constitute a larger proportion of jobs for the Metro North WDA (9.3%) than it does for Somerville (5.5%).

[5] The communities within the Metro North WDA are Arlington, Belmont, Burlington, Cambridge, Chelsea, Everett , Malden, Medford, Melrose, North Reading, Reading, Revere, Somerville, Stoneham, Wakefield, Watertown, Wilmington, Winchester, Winthrop, and Woburn.



Source: Massachusetts Department of Labor and Workforce Development ES-202 Data Series

Growth Industries

Recent employment growth is a better indicator of the likely industry composition of new development than the local and regional employment base since growing industries are a more likely source of new tenants than stable or declining ones. **Tables 1-6 and 1-7** present the industries that generated the largest absolute job growth from 2012 to the first half of 2021 for Somerville and the Metro North WDA, respectively. Table 1-6 lists Somerville industries that added at least 100 jobs over this period. For the much larger WDA, industries that added at least 1,000 jobs are included in Table 1-7.

In Somerville, nine industries added over 100 jobs and combined to add 9,252 jobs, which represents 42.5% of the City's overall net job growth during this period. These growth industries are a mix of information and life science technology, health care and retail oriented businesses. Computer Systems Design and Restaurants added the most jobs, at 869 and 846, respectively. Three other industries added over 400 jobs: Scientific Research and Development Services (which are largely life science firms), Software Publishing and Individual & Family Services. The remaining five industries added between 118 and 247 jobs.

Table 1-6. Somerville Industries Adding at Least 100 Jobs, 2010 to First Half, 2021

Industry	Job Growth	% of Citywide Net Job Growth
Computer Systems Design and Rel Services	869	9.4%
Restaurants and Other Eating Places	846	9.1%
Scientific Research and Development Svc	597	6.4%
Software Publishers	508	5.5%
Individual and Family Services	423	4.6%
Other Professional & Technical Services	247	2.7%
Offices of Real Estate Agents & Brokers	148	1.6%
Clothing and Clothing Accessories Stores	182	2.0%
Offices of Dentists	118	1.3%
Total, Nine Industries	9,252	42.5%

Source: Massachusetts Department of Labor and Workforce Development ES-202 Data Series

Twelve industries added at least 1,000 jobs with the Metro North WDA between 2015 and the first half of 2021[6], combining to generate a total of 48,904 new jobs, which was 132% of the region's net job growth for this period. Scientific Research & Development Services was, by far, the largest source of employment growth, adding 18,807 jobs or 51.7% of the MetroNorth WDA's total net job growth. The next two largest sources of new jobs were Management of Companies (i.e., corporate headquarter offices) and Management and Technical Consulting, accounting for 17.9% and 14.4% of regional net job growth, respectively. Three information technology-related industries (Software Publishers, Other Information Services, and Computer Systems Design & Related Services) accounted for another 5,844 in job growth. These six industries, highlighted in bold type in Table 1-7, are regional industries that are most likely to demand new lab and office space over the next decade and provide the source of tenants for new development projects in Somerville. Other regional growth industries in Table 1-7 need industrial space or specialized facilities that are not aligned with the office/lab developments occurring and proposed in Somerville.

[6] The more recent five-year period was used for the MetroNorth WDA to identify current growth trends. Since there were few industries in Somerville that added at least 100 jobs since 2015, a longer time period was used for the city.

Table 1-7. Metro North WDA Industries Adding at least 1,000 Jobs, 2015 to First Half, 2021

Industry	Job Growth	% of WDA Total Net Job Growth
Specialty trade contractors	1,568	4.3%
Nondurable goods wholesalers	1,067	2.9%
Software publishers	**1,520**	**4.2%**
Other information services	**2,035**	**5.6%**
Computer systems design and related services	**2,290**	**6.3%**
Management and technical consulting services	**5,236**	**14.4%**
Scientific research and development services	**18,807**	**51.7%**
Management of companies and enterprises	**6,529**	**17.9%**
Elementary and secondary schools	1,366	3.8%
Colleges and universities	2,423	6.7%
Residential mental health facilities	2,474	6.8%
Traveler accommodation	2,780	7.6%
Total, All Industries	48,094	132.2%

Source: Massachusetts Department of Labor and Workforce Development ES-202 Data Series

Based on regional growth trends, Somerville's market position and developer plans, a large share of the tenants in new development will likely be life science firms, which are projected to account for 70% of the occupied space in new developments. The remaining 30% of occupied space is expected to be leased to the five other Metro North WDA growth industries cited above that are office users.

Retail Tenants

The projections for new ground floor retail space are based on planned projects, employment trends and the ground floor/retail business mix in Somerville. A large share, or 60%, of new ground floor retail space is expected to be occupied by restaurants. The remaining 40% (39,900 SF), is projected to be occupied by a mix of clothing and miscellaneous retail stores (8,000 SF), food and beverage stores (10,000 SF), medical offices (6,000 SF), day care centers (6,000 SF), and bank branches (5,000 SF).

Table 1-8 summarizes the overall projected development by use, tenant type and employment over the next ten years. These projections will be used to estimate occupations and wage levels for new employees working in the expected new buildings. Employment projections assume the amount of space occupied per new employee will be: 300 SF for office users; 450 SF for research and development tenants; 500 SF for food & beverage stores, bank and day care tenants; 675 SF for clothing and other retail stores; 325 SF for medical offices; and 120 SF for restaurants[7].

[7] These figures reflect existing ratios among employers obtained from transportation planning surveys.

Table 1-8. Projected New Somerville Development and Employment by Tenant Type, 2022 to 2031

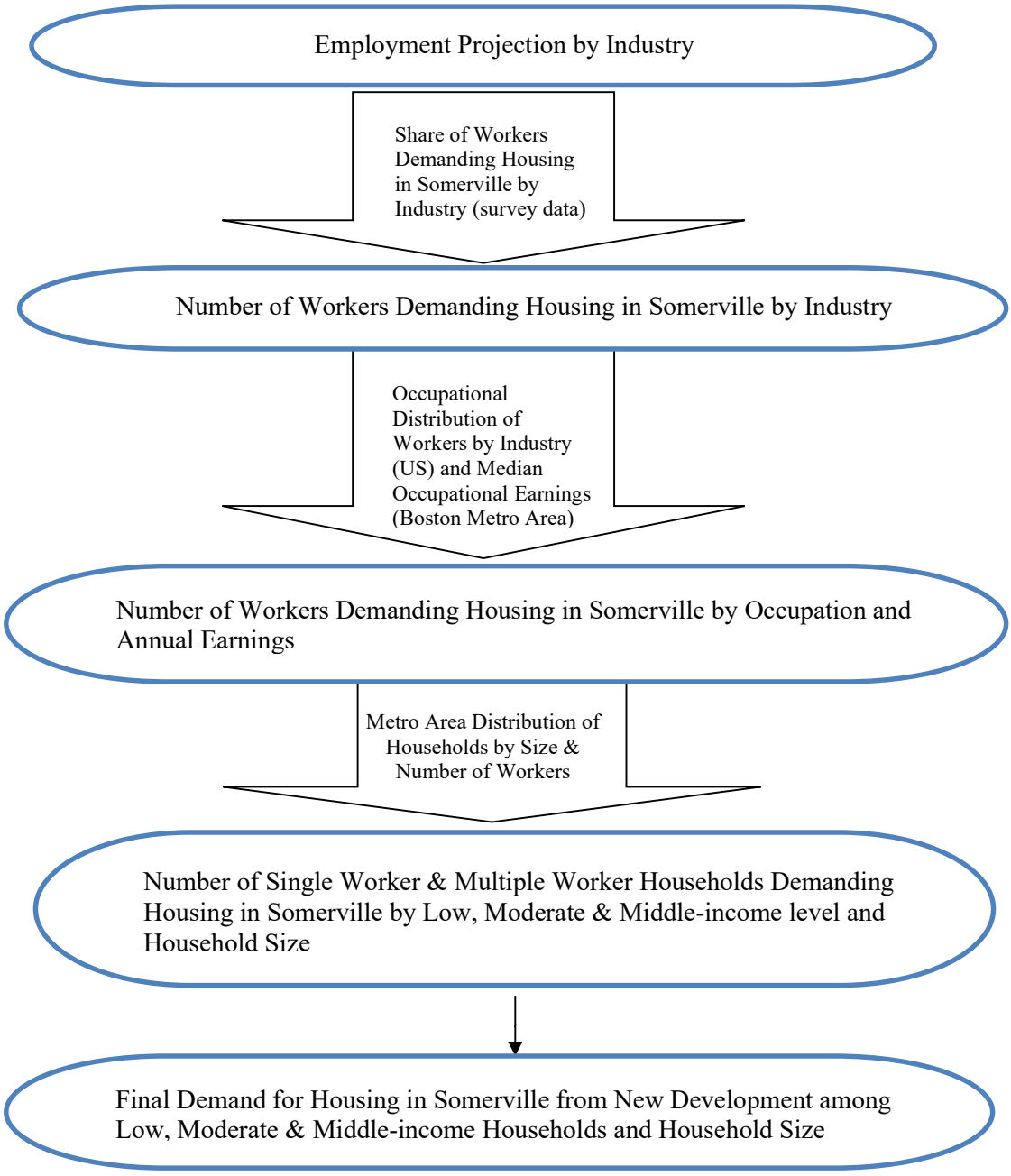
Industry	Square Feet	SF/Employee	Number of Employees
Life science	1,540,000	450	3,422
Computer systems design	110,000	300	367
Software	110,000	300	367
Other Information Services	110,000	300	367
Management & technical consulting	165,000	300	550
Management of companes	165,000	300	550
Ground floor retail	88,000		
Restaurant	53000	120	442
Clothing Stores	8,000	675	12
Food and beverage stores	10,000	500	20
Daycare	6,000	500	12
Bank branches	5,000	500	10
Medical offices	6,000	300	20
Hotel	70,000	2,000	35
Total	2,358,000		6,174

Source: Karl F. Seidman Consulting Services

II. Impact of Large Scale Development on Affordable Housing Demand

Using the 10-year development scenario and employment projections summarized in Table 1-7, this section forecasts the demand for affordable housing in Somerville that will result from this development. Since this analysis utilizes several data sources and assumptions to prepare the forecast, a full explanation of the methodology used is provided along with the results. **Figure 2-1** provides an overview of the analytical steps and data sources for the housing demand projections.

Figure 2-1. Methodology and Data Sources for Housing Demand Analysis



Since demand for affordable housing is tied to household income, the first step projects the distribution of new jobs by earnings. Using 2021 state data for the occupational distribution by industry, the number of new jobs in 22 occupational categories was calculated for each of the 13 industries expected to occupy new development. Earnings were then estimated for these occupations based on the median annual earnings for the respective occupation in May 2021 for the Metro North Workforce Development Area, and adjusted for inflation by the Boston region Consumer Price Index to estimate earnings as of May 2022—corresponding to the date of income figures used to define the annual levels for low, moderate and middle-income households. These calculations yielded the projected number of jobs at different annual earning levels by occupation and industry.

Since new employees will live in a variety of communities, it is necessary to determine the share that will demand housing in Somerville. To estimate the percent of new employees who will demand housing within the City, the results from a survey of employees in office, laboratory, hotel and retail buildings conducted in May and June 2022 were used. This survey measured demand by asking employees whether, as a result of obtaining a job in Somerville, they either moved to the City or sought housing in Somerville but did not move there due to housing costs. Based on the survey results, the percentage of new employees who are expected to demand housing in Somerville is 14.4%. This percentage was multiplied by the gross number of new jobs in each industry to estimate the number of new workers who will demand housing in Somerville, which equals 893. The occupational distribution for each industry was then applied to the number of workers in that industry who were expected to seek housing in Somerville to estimate their earnings distribution.

The next step to project demand for affordable housing units among the 893 employees who are expected to seek housing in Somerville requires estimating the distribution of households for these workers by both the number of wage-earners and size. Since the employees in Somerville's new developments will be drawn primarily from the greater Boston area, data for the distribution of households by number of earners and household size in the Boston metropolitan area were used to estimate the type of households for these employees[8]. Workers in each occupation expected to demand housing in Somerville were first divided into one-, two-, three- and four-or-more-person households based on the metro area distribution[9]. Then each household size group was divided into one-, two- and three-worker households, using the American Community Survey metro area percentages (see **Table 2-1**).

[8] This data was from the 2020 five-year American Community Survey for the Boston-Cambridge-Newton MA-NH Metropolitan Area.

[9] From the 2019 5-year ACS, the ratios are: 27.6% one-person, 33.1% two-person 16.7% three person and 22.6% four or more.

Table 2-1. Household Size by Number of Wage-Earners, Boston-Cambridge-Nashua MA-NH NECTA

Number of Workers	One Worker	Two Workers	Three Workers	Total
One Person Household	100.0%	0.0%	0.0%	100.0%
Two Person Household	40.4%	59.6%	0.0%	100.0%
Three Person Household	30.3%	48.4%	21.2%	100.0%
Four or More Person Household	23.8%	47.4%	28.8%	100.0%

Source: US Census 2020 Five-Year American Community Survey

For single-earner households, the median wage for the occupation was used to estimate their household income and determine if they fell below the low-income, moderate-income or middle-income thresholds for their respective household size. Among the single earner households who are expected to demand Somerville housing, 82 are estimated to be low-income (less than 50% of area median income), 52 are projected to be moderate-income (between 50% and 80% of area median income) and 132 are estimated as middle-income (80% to 110% of area median income) for a total demand of 266 affordable housing units. Projecting affordable housing demand among multiple-earner households required estimating the earnings from the additional wage earners. To simplify this analysis, it was assumed that the second worker's earnings equaled the median annual wage for all occupations in the Metro North Workforce Area, which was $66,465 adjusted for inflation to May 2022. This resulted in an additional 101 dual worker households from new development that will demand housing in Somerville, 19 in the moderate-income level and 82 in the middle-income category. No three-worker households fall within the moderate or middle-income ranges.

Across all household sizes and income groups, the total number of affordable housing units needed to meet the demand generated by new office and retail development is 367 units. **Table 2-2** summarizes the total projected demand for new housing by household size and among low-income, moderate-income and middle-income households.

Table 2-2. New Affordable Housing Demand in Somerville from New Large Non-Residential Developments by Income Type and Household Size, 2022 to 2031

Income Group	One-Person Households	Two-Person Households	Three-Person Households	Four-Person Households	Total
Low-income	34	27	10	11	82
Moderate-income	23	4	13	31	71
Middle-income	51	97	33	33	214
Total	108	128	56	75	367

Source: Karl F. Seidman Consulting Services

III. Subsidy Required to Address Impact of Large-Scale Development

This section builds upon the framework established in the earlier sections to project the total subsidy required to address the projected increased demand for affordable housing generated by large-scale developments in Somerville. Housing affordability is a function of household income and the cost of available rental and for-sale housing units in each real estate market. The City of Somerville and the entire Boston region suffer from a well-known and demonstrated lack of sufficient affordable housing. This section reviews housing conditions in Somerville and calculates subsidy needed to create new affordable housing that satisfies the demand generated by new workers in new commercial and other non-residential development by comparing the total development cost of new affordable housing units to the housing prices that can be supported by low-, moderate-, and middle-income households. Before calculating the projected subsidy required, current housing conditions in Somerville are reviewed to provide background and context.

Housing Conditions in Somerville

Combined with City and regional growth in employment, especially in high wage industries, Somerville, like many cities in and towns in the Boston region, is experiencing an affordable housing shortage, because demand for affordable units is outstripping the supply of housing affordable to very-low-, low- and moderate-income households. The Somerville Housing Needs Assessment published by the City of Somerville in December 2021 includes a demographic profile, housing supply and demand analysis, a review of housing policy, and a review of stakeholder perspectives.

Housing Stock Key Drivers

Important drivers of housing demand in Somerville are employment, population growth and household composition. In 2019, Somerville had 81,000 residents. According to the American Community Survey, there were almost 35,000 residential units in the City in 2019, of which about 95 percent were occupied. About one-third of housing units were owner-occupied units and about two-thirds were renter-occupied.

As of 2021, the City of Somerville had 3,250 units of affordable housing eligible for the Massachusetts General Laws (MGL) Chapter 40B Subsidized Housing Inventory, about 310 units created for the City's Inclusionary Zoning Ordinance (not eligible for SHI), and homes created through the 100 Homes Initiative established by the City and Somerville Community Corporation. The City's 2015 Housing Needs Assessment found there were 3,258 units of affordable housing (SHI eligible) – with a net loss of 8 units during the six-year period. The City approved the construction of a total of 2,500 new housing units since 2014, of which about 82 percent of units are unrestricted market-rate housing.

Buyer and Household Demographics

Somerville is a highly desirable community in the inner core of the Boston area. The City has recently experienced an influx of well-educated young professionals, and this group has increased its share of the total population. In line with state and national trends, smaller household sizes result in higher demand for smaller housing units. The largest age group in the population of Somerville was young adults in their 20s and 30s. There are also a high number of college and graduate students living in Somerville, including about 1,339 students living off campus at Tufts University in 2020 and 1,436 students from Harvard University in 2019.

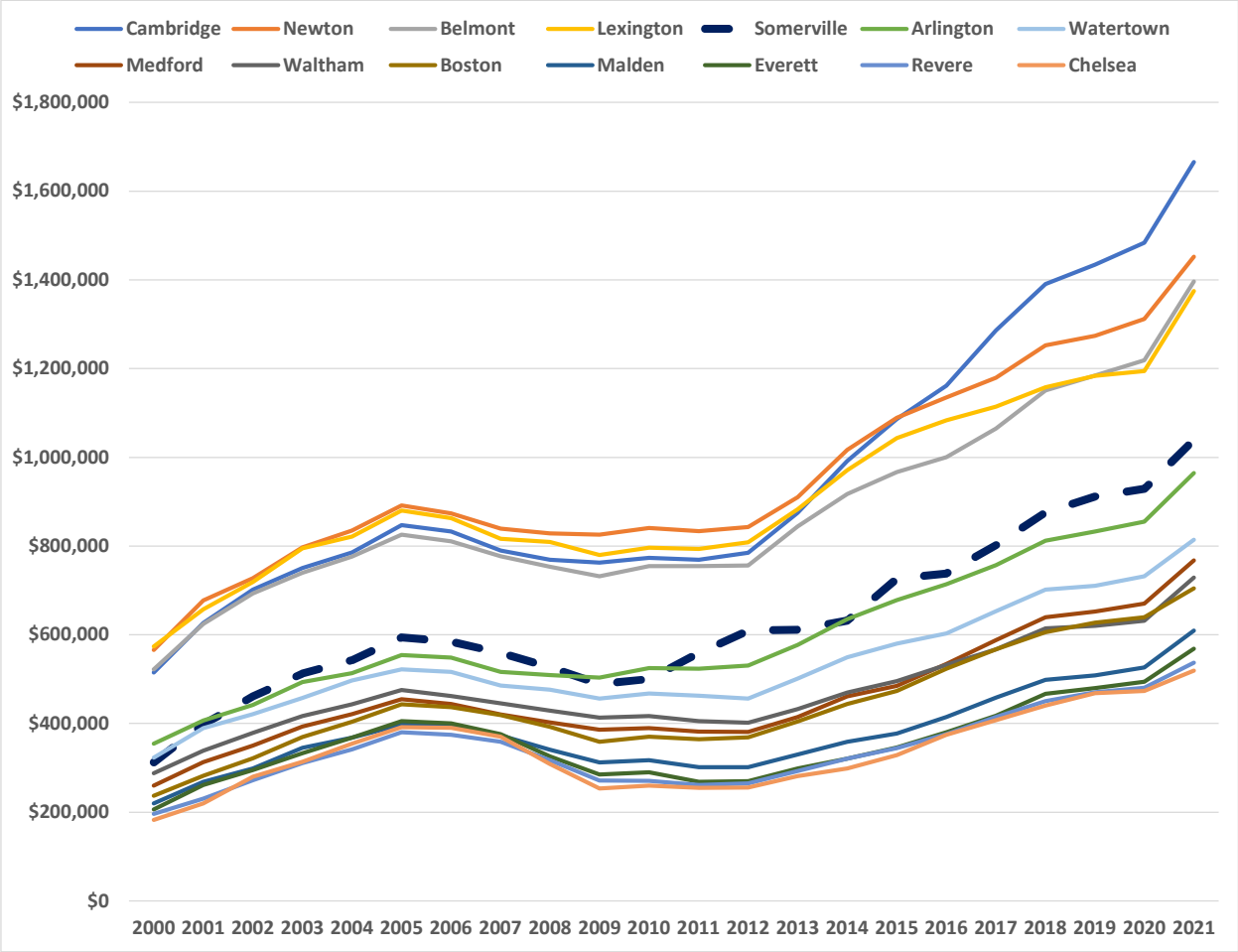
The median household income for households in Somerville was $97,328 (2019 ACS 5-Year Estimate), which is 5 percent below that of Middlesex County ($102,603) but 20 percent above that of the state ($81,215). The median household income in Somerville has increased by nearly 60 percent from its 2010 level of $61,731 in 2010 – during this period the share of households in Somerville earning $100,000 or more increased from 26 percent to 49 percent. The median renter income was $85,000 and median owner income was $121,000 in 2019.

Despite the rapid increase in household income, there is still a gap between what many families in Somerville can afford to pay for housing and the median sales prices and rental rates for residential units. About 29 percent of Somerville households earned less than 50% of area median income (AMI), about 19 percent earned between 50% and 80% of AMI, and 11 percent of households earned between 80% and 100% of AMI. About 37 percent of all renters and 28 percent of all homeowners in Somerville are considered "cost-burdened" in that they spend more than 30 percent of gross income on housing.

Home and Condominium Sales

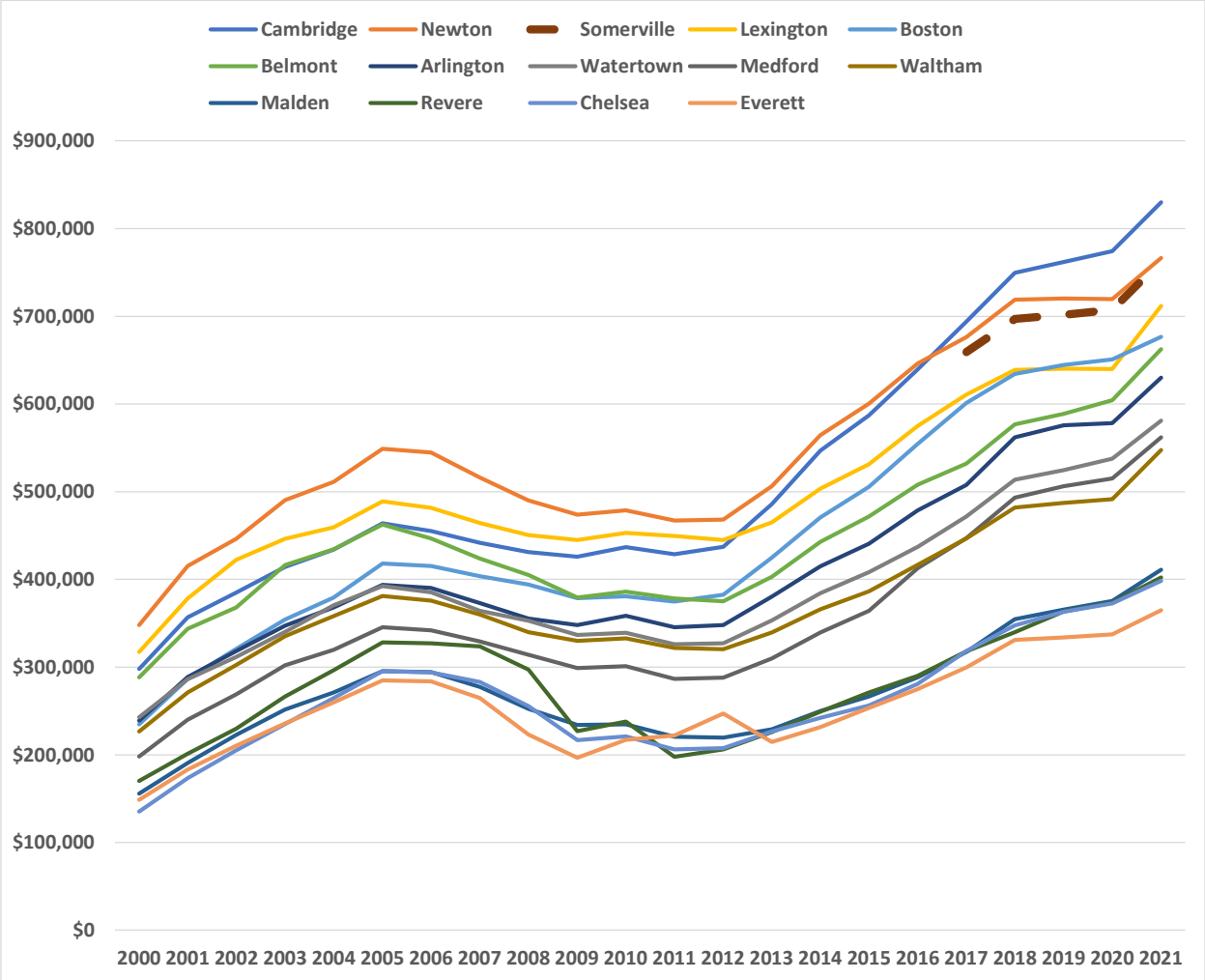
Despite an increase in residential units, home and condo prices continue to increase in Somerville and the Greater Boston area, as shown by data in **Figure 3-1** and in **Figure 3-2**. The American Community Survey reported a net increase of 772 units in Somerville between 2010 and 2019 and a 2019 homeowner vacancy rate of 0.6 percent. According to Zillow, the median value of a single-family home in 2021 was $1.4 million and the median value of a condo was $763,000. Between 2017 (when Zillow began reporting condo prices in Somerville) and 2021, condo housing prices increased 16 percent, or an average annual rate of 3.9 percent. From 2010 to 2021, single family housing prices increased 108 percent in Somerville, or an average annual rate of 9.8 percent.

Figure 3-1. Median Single-Family Value, Zillow Home Value Index, 2000 to 2021, in Somerville and Surrounding Cities and Towns



Note: Zillow Home Value Index (ZHVI): A smoothed, seasonally adjusted measure of the median estimated home value across a given region and housing type. It is a dollar-denominated alternative to repeat-sales indices.
Source: Zillow and ConsultEcon, Inc.

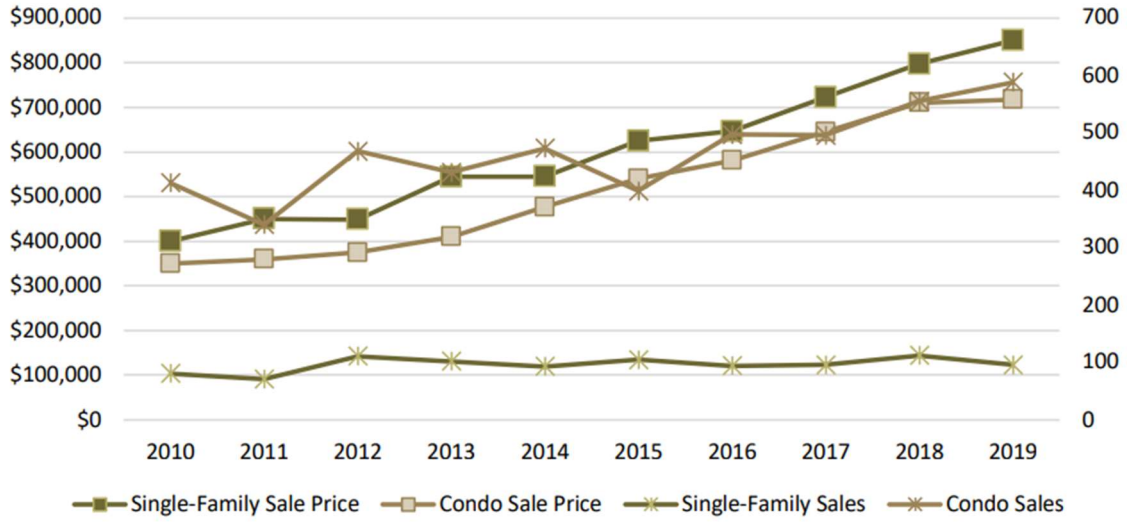
Figure 3-2. Median Condominium Value, Zillow Home Value Index, 2000 to 2021, in Somerville and Surrounding Cities and Towns



Note: Zillow Home Value Index (ZHVI): A smoothed, seasonally adjusted measure of the median estimated home value across a given region and housing type. It is a dollar-denominated alternative to repeat-sales indices. Condominium data was only available for Somerville starting in October 2017.
Source: Zillow and ConsultEcon, Inc.

Somerville's housing is mainly renter-occupied, and the City has been working to increase homeownership. Along with Boston and Cambridge, there is high demand in Somerville for homeownership units from incoming residents with higher incomes than city residents historically. According to the Somerville Housing Needs Assessment, about 1,130 rental units were converted to condos from 2010 to 2017, including both larger developments and two- or three-unit multifamily buildings. **Figure 3-3** shows Somerville Single-Family and Condo Sales from 2010 to 2019.

Figure 3-3. Housing Sales in Somerville Single-Family and Condo Sales, 2010 to 2019



Source: Somerville Housing Needs Assessment, December 2021.

According to data from the Somerville Assessor's Office, there were 381 home sales in 2021, with a median sale price of $1,100,000. This figure was driven by the high concentration of multifamily sales, which accounted for 51 percent of all sales during the year, and a median sale price of $1,236,000. Single family sales represented 21 percent of sales and had a median price of $1,030,000. Condominiums accounted for 28 percent of sales and had a median price of $835,000. Multi-family structures tend to be much larger, with a median size of 3,001 SF. As such, the median sale price per square foot was $412/SF for multi-family units, compared with $663 for single-family units and $733/SF for condos. The median lot size for single- and multi-family homes was about 3,500 SF. **Table 3-1** summarizes 2021 home sales in Somerville.

Table 3-1. Somerville Home Sales, 2021

2021 Home Sales	Number of Sales	Percent of Total	Median Sale Price	Median Square Footage	Median Lot Size	Median Price per Square Foot
Single-Family Sales	79	21%	$1,030,000	1,553	3,212	$663
Multi-Family Sales	195	51%	$1,236,000	3,001	3,703	$412
Condo Sales	107	28%	$835,000	1,139	NA	$733
All 2021 Home Sales	381	100%	$1,100,000	2,138	3,528	$514

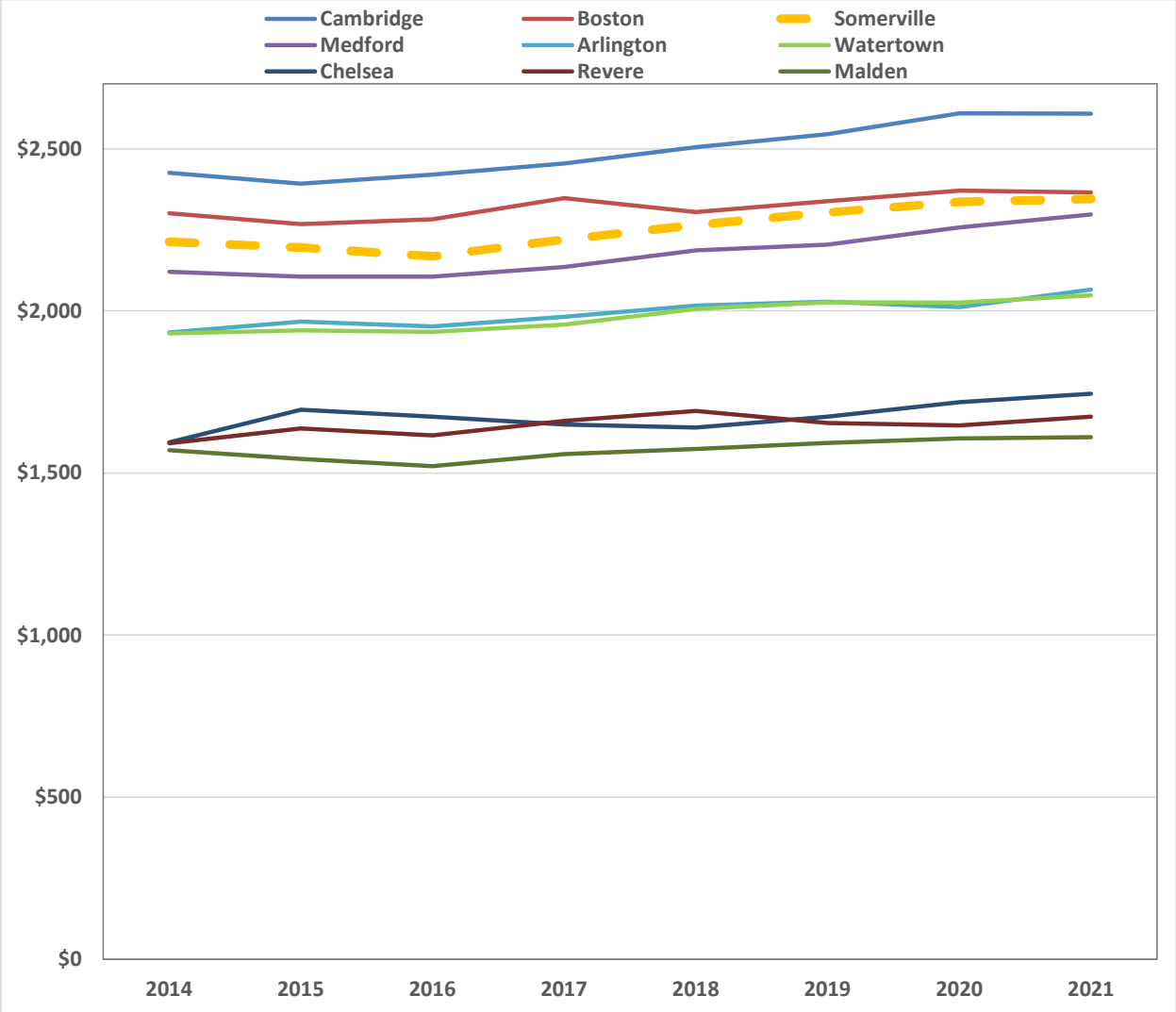
Source: Somerville Assessor's Office and ConsultEcon, Inc.

Rental Housing

Somerville and surrounding areas have had a relatively low rental vacancy rates in recent years. As reported by the U.S. Census Bureau, the American Community Survey estimates that in 2019, Somerville had a rental vacancy rate of 1.9 percent. A low vacancy rate in rental housing continues to be a factor in the availability and cost of housing in Somerville. Data from the Census Bureau also indicates that the median gross monthly rent for Somerville renting households has increased 62 percent from $1,297 in 2010 to $2,095 in 2019. If affordable housing costs represent 30 percent or less of household income, the median monthly rental housing cost in 2019 was affordable to households earning $84,000 or more annually.

According to data from Zillow, the median market rent in Somerville between 2014 and 2021 is shown in **Figure 3-4**. The median Somerville rent increased 6 percent from $2,213 in 2014 to $2,345 in 2021. Somerville rent increases were higher than in Boston, Revere, and Malden, and were lower than in Cambridge, Medford, Arlington, Watertown, and Chelsea. It should be noted that other sources of rents may report different values, but this source is used to show the long-term change in rents over time, which is not as dramatic as the increase in sales.

Figure 3-4. Median Market Rent, Zillow Rent Index, 2014 to 2021, in Somerville and Surrounding Cities and Towns



Note: Zillow Rent Index (ZRI): A smoothed measure of the median estimated market rate rent across a given region and housing type. ZRI is a dollar-denominated alternative to repeat-rent indices. Rent data was not available for Belmont, Everett, Lexington, Newton, or Waltham.
Source: Zillow and ConsultEcon, Inc.

Housing Costs as a Percent of Household Income

Due to the high cost of housing, many Somerville households devote a large portion of their incomes to housing, as shown by data in **Table 3-2**. Thirty-four percent of all occupied housing units in Somerville in 2019 were "cost-burdened ," which means the household was paying more than 30 percent of its income on housing costs. Housing is typically considered affordable if housing costs are no more than 30 percent of household incomes. In Somerville, homeowners were less cost-burdened than renters. According to the census data, Somerville had 32,800 occupied housing units in 2019. Of those, 34 percent were owner-occupied units and 66 percent were renter-occupied units. In 2019, about 28 percent of homeowners were cost-burdened , and 37 percent of renters were cost-burdened .

Table 3-2. Renter- and Owner-Occupied Housing Costs as a Percent of Household Income in Somerville and Massachusetts, 2019

Somerville	Owner-Occupied Housing		Renter-Occupied Housing		All Occupied Housing	
Percent of Income	Housing Units	Percent to Total	Housing Units	Percent to Total	Housing Units	Percent to Total
Less than 20 percent	5,359	49%	6,441	30%	11,800	36%
20 to 29 percent	2,493	23%	6,593	30%	9,086	28%
30 percent or more	3,110	28%	8,120	37%	11,230	34%
Zero or negative income	74	1%	127	1%	201	1%
No cash rent	NA	NA	485	2%	485	1%
Total	**11,036**	**100%**	**21,766**	**100%**	**32,802**	**100%**
Massachusetts	**Owner-Occupied Housing**		**Renter-Occupied Housing**		**All Occupied Housing**	
Percent of Income	**Housing Units**	**Percent to Total**	**Housing Units**	**Percent to Total**	**Housing Units**	**Percent to Total**
Less than 20 percent	800,420	49%	237,804	24%	1,038,224	40%
20 to 29 percent	389,132	24%	231,305	23%	620,437	24%
30 percent or more	434,455	27%	459,710	47%	894,165	34%
Zero or negative income	8,758	1%	21,981	2%	30,739	1%
No cash rent	NA	NA	33,932	3%	33,932	1%
Total	**1,632,765**	**100%**	**984,732**	**100%**	**2,617,497**	**100%**

Sources: U.S. Census Bureau, American Community Survey, 2015-2019, 5-Year Estimates; and ConsultEcon, Inc.

Affordable housing eligibility is often based on a household's income relative to the Area Median Income (AMI). Data in **Table 3-3** shows Somerville households by household income relative to AMI. About 29 percent of households had household income of less than 50 percent of AMI, while another 19 percent of households had household income between 50 percent and 80 percent of AMI, and 11 percent of households had household income from 80 percent to 100 percent of AMI. The remaining 42 percent had household income above AMI. Moderate-income households are eligible for community housing funds through CPA but are not included on the state's subsidized housing inventory.

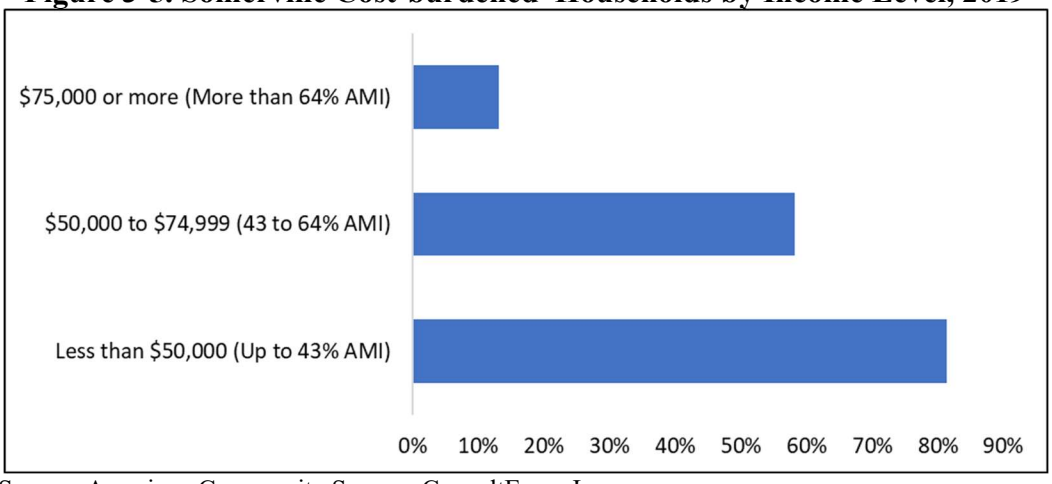
Table 3-3. Somerville Households by Income Level, 2019

	Somerville	
	Households	Percent of Total Households
Moderate-Income Households *Between 80 and 100% of AMI*	3,533	10.77%
Low-Income Households *Between 50 and 80% of AMI*	6,140	18.72%
Very-Low-Income Households *Between 30 and 50% of AMI*	3,499	10.67%
Extremely Low-Income Households *At of Less than 30% of AMI*	6,006	18.31%

Source: American Community Survey; and ConsultEcon, Inc.

The cost burden for Somerville households varies considerably by income level. Data in **Figure 3-5** shows Somerville cost-burdened households by income level. As of 2019, 81 percent of Somerville households earning below $50,000 (up to 43% of AMI) spent 30 percent or more of their incomes on housing and were considered cost-burdened . Among middle-earning households ($50,000 to $74,999, or 43-64% AMI), 58 percent were cost-burdened, while just 13 percent of households earning $75,000 (64% AMI or more) were cost-burdened.

Figure 3-5. Somerville Cost-burdened Households by Income Level, 2019



Source: American Community Survey; ConsultEcon, Inc.

National Housing Market Trends

Somerville's market experience can be evaluated in the context of national and regional trends. According to The State of the Nation's Housing, 2021, the national housing market is seeing high demand and tight supply, pushing up prices, bouncing back quickly after a mid-2020 pause. Homeowners became reluctant to sell during the COVID pandemic, tightening the supply. For 2020, the number of existing home sales increased 5.6 percent and new single-family home sales increased 20.4 percent – total home sales were at their highest level since the peak of the housing boom in 2006. Low interest rates and rising prices gave a boost to new residential construction, with an estimated 1 million single-family units constructed in the year after August 2020. This trend may be changing with the recent shift in Federal Reserve policy and rising mortgage interest rates. The national homeownership rate is on an upward trajectory, driven by the aging of Millennials and income gains for this age group. For younger households, the rising national price-to-income ratio (at its highest since 2006) presents a roadblock to home ownership, as accumulating the down payment and closing costs to buy homes could take years.

The pandemic led to early rental vacancies in urban areas, with people seeking to have more space, but the strengthening economy and easing of restrictions brought demand right back. Rental vacancy rates in prime urban neighborhoods went from 7.2 percent in the first quarter of 2020 to 10 percent in the fourth quarter, and back to 9.6 percent in the first quarter of 2021. For suburban areas, vacancy rates went from 7.2 percent in Q1 2020, to 6.3 percent in Q4 2020 and 6 percent in Q1 2021. Vacancy rates are higher for higher-end units, while the markets for moderate- and lower-quality apartments remained tight, with little change in vacancies. Over 20 million renters (46 percent) paid more than 30 percent of their incomes for housing that year, including 10.5 million severely burdened households. Renters were disproportionately impacted by rising housing costs and lost income during the pandemic. Even before the pandemic the number of people experiencing homelessness was rising, mostly in the Western and Sunbelt states.

Regional Housing Market

The 2021 Greater Boston Housing Report Card reinforces many of the national trends. In the Boston region, affordability of housing is a greater problem than ever. The pandemic exacerbated many long-term challenges to housing and the wealth gap has widened. At its April 2020 peak, the Massachusetts unemployment rate was 16.4 percent and has steadily declined since then, falling to 3.6% in August 2022. The gap between wages and housing costs and inadequate housing production are the region's largest and most pressing housing issues. Some rents have increased, home prices have risen, and vacancies/homes available for sale are at record lows. Changes in zoning laws meant to target the need for more production have been implemented at the state level, with a focus on transit-oriented development.

Vacancy rates in Greater Boston were lower than "healthy" rates for both homeowners and rentals in the years leading up to the pandemic, and it's expected that the rates will continue to go down. The surge in demand combined with limited inventory put an upward pressure on home sale prices. By 2019, home sale prices in Greater Boston were among the highest in the nation, with home price increases outpacing income growth. Homeownership is therefore becoming unattainable for a larger percentage of households. The increases in home prices during the pandemic are likely unsustainable and will plateau eventually.

The rental market was also steadily increasing after the 2008 recession, and cost burden levels increased from 2000 to 2019. The pandemic caused the rental market to drop overall, in contrast to the sales market. Rental prices fell during the early pandemic but have begun rising back up alongside home prices. The issues of housing, mobility, and employment are highly interconnected, and the MBTA has played an important role for many during the pandemic, even with lower year over year ridership.

Estimate of Required Affordable Housing Subsidy Contribution

The previous section projected the demand for affordable housing from new commercial development as 367 units for low-, moderate-, and middle-income households ranging in size from one-person to four- or more persons. This section determines the projected subsidy required to construct housing that is affordable for those households.

Following is a summary of data and analyses used in calculating the total per square foot subsidy from new non-residential development required to support development of new affordable housing for workers. The subsidies would be for low-, moderate- and middle-income households whose jobs would be in Somerville's new commercial buildings over the next 10 years.

The analyses establish that affordable rents and affordable sales prices do not currently support development of new affordable housing production due to high development costs. Therefore, to stimulate affordable housing development, subsidies or other incentives must be provided. This analysis estimates the amount of subsidy required to meet new affordable housing demand created by employees in the new commercial development. The total required subsidy is the estimated difference between the total development costs of producing new affordable housing units and the capitalized value of affordable rent and unit sale proceeds. The required subsidy is presented as a per square foot housing linkage fee for projected non-residential development over a 10-year period.

Methodology

The following methodology was used to calculate the subsidy required to produce sufficient housing to satisfy projected ten-year affordable housing demand generated by new development non-residential buildings.

- Estimate the number of low-income, moderate-income, and middle-income households moving to or seeking to live in Somerville that would be generated by new nonresidential development.
- Specify demand by number of persons in the household, number of bedrooms, and by tenure (i.e., renter-occupied units and owner-occupied units).
- Estimate the total development costs of affordable units to satisfy the demand generated based on recent unit costs of new affordable housing development projects under construction and applying for funding in the City of Boston.
- Estimate the potential capitalized revenue due to annual rents and sales proceeds of affordable units segmented by middle-income, moderate-income, and low-income households.

- Calculate the difference between the total development costs and the capitalized revenue that is internally generated by renters and owners. This amount is the total subsidy required to produce the targeted new affordable units created by demand from new workers in new non-residential developments.
- Divide the total subsidy required by the total projected non-residential square feet subject to the housing linkage fees. This amount is the per square foot subsidy projected to be required to produce the new affordable units created by demand from new workers in new nonresidential developments.

Most state and federal funding programs for affordable housing are targeted to low-income and moderate-income households. The state has a new workforce housing initiative that funds middle-income housing as well. Nonetheless, federal and state tax credits are the largest subsidy source for new affordable housing projects, and they prioritize creation of units for households below 50 percent AMI and 60 percent AMI. Therefore, because of the targeting of available subsidy sources of funding, it is likely that much of the new affordable housing created in Somerville will be targeted to these income levels. As the following analysis shows, the amount of subsidy required to create housing for low-income households is substantial. Yet moderate-income and middle-income households are also increasingly finding housing to be unaffordable in Somerville's housing market.

The following key assumptions were made to calculate the housing subsidy required.

Unit Distribution for New Affordable Housing

The distribution of households by number of persons and income levels was derived in the prior section. The household sizes range from one-person to four- or more persons. All one-person households are assumed to be one-bedroom units. Two-person households are allocated as 20 percent to one-bedroom units and 80 to two-bedroom units. Three-person households are allocated 80 percent to two-bedroom units and 20 percent to three-bedroom units. Four-or-more-person households are allocated to three-bedroom units. Data in **Table 3-4.** show the estimated distribution of housing units by size and income levels (low-moderate-middle).

Mix of Rental and Ownership Units

New affordable housing has primarily been supplied through rental housing, due to the available subsidy from federal and state sources. This analysis assumes that the affordable housing to be supplied will be a mix of rental and ownership units. The estimated required subsidy in this analysis assumes that:

- 33 percent of units for middle-income households will be ownership units and the remaining 67 percent will be rental.
- 10 percent of units for moderate-income households will be ownership units and the remaining 90 percent will be rental.
- 10 percent of units for low-income households will be ownership units and the remaining 90 percent will be rental.

Data in **Table 3-5** show the distribution of rental and ownership housing units by size and income level.

Table 3-4. Distribution of New Affordable Housing Demand by Number of Bedrooms and Household Income

	Households by Size				
	One-Person	Two-Person	Three-Person	Four-Person	Total
Total New Housing Units Needed Based on New Non-Residential Construction					**367**
Distribution of Units					
Low-Income	34	27	10	11	82
Moderate-Income	23	4	13	31	71
Middle-Income	51	97	33	33	214
Total	**108**	**128**	**56**	**75**	**367**
Distribution of Units by Number of Bedrooms					
One-Bedroom	100%	20%	0%	0%	36%
Two-Bedrooms	0%	80%	80%	0%	40%
Three-Bedrooms	0%	0%	20%	100%	24%
	100%	100%	100%	100%	100%
Units by Number of Bedrooms					
Low-Income					
One-Bedroom	34	5	0	0	39
Two-Bedrooms	0	22	8	0	30
Three-Bedrooms	0	0	2	11	13
Moderate-Income					
One-Bedroom	23	1	0	0	24
Two-Bedrooms	0	3	10	0	13
Three-Bedrooms	0	0	3	31	34
Middle-Income					
One-Bedroom	51	19	0	0	70
Two-Bedrooms	0	78	26	0	104
Three-Bedrooms	0	0	7	33	40
Units by Size, Number of Bedrooms					
One-Bedroom	108	25	0	0	133
Two-Bedrooms	0	103	44	0	147
Three-Bedrooms	0	0	12	75	87
Total Units	**108**	**128**	**56**	**75**	**367**

NOTE: ROUNDING MAY AFFECT TOTALS.

Source: City of Somerville; Karl F. Seidman Consulting Services; and ConsultEcon, Inc.

Table 3-5. New Affordable Housing Demand in Somerville by Renter- and Owner-Occupied Units

	Households by Size				
	One-Person	Two-Person	Three-Person	Four-Person	Total
Distribution of Units					
Low-Income	34	27	10	11	82
Moderate-Income	23	4	13	31	71
Middle-Income	51	97	33	33	214
Total Units	**108**	**128**	**56**	**75**	**367**
Percent of Households Occupying Ownership Housing					
Low-Income	10%	10%	10%	10%	
Moderate-Income	10%	10%	10%	10%	
Middle-Income	33%	33%	33%	33%	
Number of Ownership Units					
Low-Income	3	3	1	1	8
Moderate-Income	2	0	1	3	6
Middle-Income	17	32	11	11	71
Total	**22**	**35**	**13**	**15**	**85**
Percent of Households Occupying Rental Housing					
Low-Income	90%	90%	90%	90%	
Moderate-Income	90%	90%	90%	90%	
Middle-Income	67%	67%	67%	67%	
Number of Rental Units					
Low-Income	31	24	9	10	74
Moderate-Income	21	4	12	28	65
Middle-Income	34	65	22	22	143
Total	**86**	**93**	**43**	**60**	**282**
Units by Tenure (rounded)					
Ownership	22	35	13	15	85
Rental	86	93	43	60	282
Total	**108**	**128**	**56**	**75**	**367**
Rental Units by Number of Bedrooms					
One-Bedroom	86	19	0	0	105
Two-Bedrooms	0	74	34	0	109
Three-Bedrooms	0	0	9	60	69
Total Rental	**86**	**93**	**43**	**60**	**282**
Ownership Units by Number of Bedrooms					
One-Bedroom	22	7	0	0	29
Two-Bedrooms	0	28	10	0	38
Three-Bedrooms	0	0	3	15	18
Total Ownership	**22**	**35**	**13**	**15**	**85**
Total Housing	**108**	**128**	**56**	**75**	**367**

NOTE: ROUNDING MAY AFFECT TOTALS.

Source: City of Somerville; Karl F. Seidman Consulting Services; and ConsultEcon, Inc.

Calculation of Needed Subsidy

The following presents the analysis of estimated total development costs, supportable financing, and needed subsidy for affordable housing units that must be created to satisfy the new demand generated by workers in new commercial developments in Somerville over the next 10 years. The analysis only presents selected tables that summarize the calculation of the needed subsidy. Additional tables in the Appendix detail all assumptions and intermediate calculations that underlie required subsidy calculation.

Development Project Costs

Since Somerville has not recently had new 100% affordable housing developments, there are no direct comparative development costs in the City.[10] The unit costs used to calculate the Total Development Cost (TDC) are affordable housing projects under construction in the City of Boston as well as construction cost estimates included in recent funding applications to the City of Boston. Data in **Table 3-6** estimates the aggregate and unit costs for the construction of 367 new affordable housing units in Somerville. It is likely, however, that housing development costs will vary considerably according to the particulars of individual projects and may change over time. Housing construction costs and site acquisition costs have steadily increased at rates over inflation for the past decade. In addition, the pandemic has exacerbated the costs considerably over the past 2 years. For the purposes of this analysis, ownership units construction costs are higher because they are larger units on average than the rental units.

[10] The major source of new affordable units is the City's inclusionary zoning ordinance for housing. The cost structure is different for mixed affordable and market rate development projects than it is for 100% affordable units. For the purposes of this analysis, the cost of new affordable units is for 100% affordable projects only.

Table 3-6. Calculation of Total Development Costs of Affordable Rental and Ownership Housing Units in Somerville

Project Assumptions	Rental Units	Owner Units
Number of Units	282	85
Average Unit Size GSF	1,234	1,365
Total Project GSF	348,000	116,000
Cost Assumptions [1/]		
Land/Acquisition per Unit Costs	$40,000	$40,000
Construction per GSF Costs	$310	$310
Soft Costs, including Design, Permitting, Overhead, Profit, and Contingency, as a Percent of Construction Cost	37%	37%

Development Costs	Amount	Percent to Total	Amount	Percent to Total
Land/Acquisition	$11,280,000	7.1%	$3,400,000	6.5%
Construction	$107,880,000	67.8%	$35,960,000	68.3%
Soft Costs, including Design, Permitting, Overhead, Developer's Fee, and Contingency	$39,916,000	25.1%	$13,305,000	25.3%
Total Development Costs (TDC)	**$159,076,000**	**100.0%**	**$52,665,000**	**100.0%**
TDC per Unit (rounded to nearest $1000)	***$564,000***		***$620,000***	
TDC per GSF (rounded to nearest $1)	***$457***		***$454***	

1/ Acquisition costs and construction costs based on 30 affordable housing devleopment projects under construction in Boston. Recent Boston construction cost estimates in affordable housing funding applications indicate an average of $310 per SF. Soft costs are based on ratio of soft costs to construction costs of affordable housing development projects in Cambridge, MA.

Source: City of Somerville; Karl F. Seidman Consulting Services; and ConsultEcon, Inc.

Development Project Revenue

Project revenue generation and the underlying development economics are different for rental and ownership housing.

Rental Housing

An important step in calculating the subsidy required to create new affordable housing units is to define the rental housing development project's revenue that will be used to support the development and operations of new affordable housing. This analysis assumes that the new rental housing will be solely supported by rental income from tenant households and ownership housing will be supported by the sales of affordable units. Affordable rents and sales prices are derived based on household income. In prior sections of this report, annual occupational wages were the input for establishing the demand for affordable housing among low-, moderate- and middle-income households of new workers in new commercial development in Somerville. The weighted

average annual household income for each income level[11], as shown by the data in **Table 3-7**, is the basis for calculating affordable rents and sales prices that in turn support the development of affordable housing.

Table 3-7. Weighted Average Household Income by Income Group and Household Size, Households of Workers in Projected Non-Residential Development

	Households by Number of Persons			
	One-Person	Two-Person	Three-Person	Four-Person
Distribution of Weighted Average Income, current dollar				
Low-Income	$37,873	$38,412	$43,113	$43,970
Moderate-Income	$53,255	$60,291	$92,364	$102,226
Middle-Income	$93,760	$107,406	$110,757	$116,933

Source: Bureau of Labor Statistics, Karl F. Seidman Consulting Services; and, ConsultEcon, Inc.

The needed subsidy for new affordable rental housing is calculated first, followed by the calculation of the needed subsidy for affordable ownership housing.

Affordable Rent Levels

The affordable rents for rental units are based on the estimated annual income of workers in the new commercial developments in Somerville. Construction of the 282 rental units of affordable housing projected in this analysis are supported by rental revenue from tenants with subsidies used to fill the gap between rental revenue and the cost to develop the housing. In general, the federal Department of Housing and Urban Development (HUD) is a source of many affordable housing subsidies. HUD defines housing costs as affordable to a household when the total cost of shelter consumes no more than 30 percent of gross (total) income. For this analysis, households are assumed to pay 30 percent of household income in rent. Data in **Table 3-8** detail the assumed income levels of households used to derive the total gross rental revenue for the 282 units, based on the distribution of households by size and income. Total annual gross rental revenue for the units is estimated at $7.0 million.

[11] This average is based on the weighted average for annual household earnings based on median annual earnings for the occupations projected for low-, moderate- and middle-income household as discussed in section two on the Impact of New Development on Affordable Housing Demand.

Table 3-8. Annual Rental Revenue by Household Income and Size of Household

Household Size	Annual Income [1/]	Applicable Monthly Rent [2/]	Number of Households	Total Annual Rent
Low-Income Households				
1-Person	$37,873	$947	31	$352,284
2-Persons	$38,412	$960	24	$276,480
3-Persons	$43,113	$1,078	9	$116,424
4-Persons	$43,970	$1,099	10	$131,880
Moderate-Income Households				
1-Person	$53,255	$1,331	21	$335,412
2-Persons	$60,291	$1,507	4	$72,336
3-Persons	$92,364	$2,309	12	$332,496
4-Persons	$102,226	$2,556	28	$858,816
Middle-Income Households				
1-Person	$93,760	$2,344	34	$956,352
2-Persons	$107,406	$2,685	65	$2,094,300
3-Persons	$110,757	$2,769	22	$731,016
4-Persons	$116,933	$2,923	22	$771,672
Total Households / Housing Units			**282**	
Total Annual Rent				**$7,029,468**

Aggregate Annual Rent by Income Level	Number of Units	Total Annual Rent (Rounded)	Percent of Total Rent	Average Monthly Rent
Low-Income	74	$877,068	12.5%	$988
Moderate-Income	65	$1,599,060	22.7%	$2,050
Middle-Income	143	$4,553,340	64.8%	$2,653
Total	**282**	**$7,029,468**	**100.0%**	**$2,077**

1/ Weighted average annual earnings based on anticipated mix of occupations and wages in new non-residential development in Somerville.

2/ Assumed at 30% of monthly income. Rents are rounded to nearest $1.

Note: Rounding may affect totals.

Source: City of Somerville; Karl F. Seidman Consulting Services; and ConsultEcon, Inc.

To calculate the rental revenue available to support the total development costs described above, the gross rents must be adjusted to reflect lost revenue due to periodic vacancies and the operating costs of maintaining and managing housing. As shown by data in **Table 3-9**, vacancy is assumed at 3 percent of gross rental revenue. Operating costs typically include such items as building management, janitorial services, trash removal, building maintenance, landscaping, marketing and other administrative costs. For this analysis, the full cost of utilities is also included.

Massachusetts Housing Partnership has a portfolio of affordable housing projects that they have financed which contains operating expense comps from 32 comparable urban metro Boston projects from 2020-2021 property financial audits or operating statements. The average was $12,833 per unit in operating cost. For the purposes of this analysis, it is assumed that the newer and more efficient construction would have lower operating costs, assuming 80 percent of the MHP operating costs for this analysis. Total operating costs were calculated as $10,880 per unit or $3.1 million total. Net rental income after deducting vacancy and operating costs is estimated at $3.8 million.

Rental Affordability Gap and Needed Subsidy

The next step is to find the gap in project finance between the permanent mortgage and developer equity that the net rental income can support and the total development costs of the 282 rental units. In general, the loan amount that lenders will approve is based on the income stream from the project. In this case, the annual net income from rents is $3.8 million. However, lenders prefer to build into their mortgage calculations a cushion between projected net income from rents and the annual debt service needed to pay down the loan. The debt coverage ratio (ratio of net income to allowable debt) reduces the effective amount of net income that can be used to support a mortgage. This analysis assumes a debt coverage ratio of 1.15, based on permanent financing programs offered by MHP. After adjusting the net income by the debt coverage ratio, the project has $3.3 million in annual net income with which to pay the debt service on a permanent mortgage.

The total allowable permanent loan is calculated by dividing the net income by the mortgage constant, based on a 6.471 percent mortgage constant, (assuming the available current MHP financing rate amortized over a 30-year period). The permanent loan that could be supported by the resident households is $50.4 million. The annual revenue not required for the mortgage is then available to support equity investment. Based on a required return of 8 percent, this revenue would support $6.1 million in equity investment. Given the total development costs of $159.0 million, the subsidy required to create 282 new affordable rental housing units is $102.6 million, approximately 65 percent of the total development cost (TDC).

Table 3-9. Summary of Required Affordable Housing Subsidy Rental Units

			By Household Type		
		All Units	Low-Income	Moderate-Income	Middle-Income
10 Year Development Costs					
Number of Units		282	74	65	143
Percent to Total			26%	23%	51%
Total Development Costs (TDC) (Rounded)		**$159,076,000**	**$41,743,348**	**$36,666,454**	**$80,666,199**
Net Rental Income	**Unit Factor**	**Amount**	**Amount**	**Amount**	**Amount**
Gross Annual Rent		$7,029,468	$877,068	$1,599,060	$4,553,340
Less Vacancies [1/]	3% of Gross Rent	($210,884)	($26,312)	($47,972)	($136,600)
Less Total Operating Costs [2/]	$10,880 per Unit	($3,068,160)	($805,120)	($707,200)	($1,555,840)
Net Operating Income (NOI)		**$3,750,424**	**$45,636**	**$843,888**	**$2,860,900**
Mortgage / Supportable Debt Calculation		**Amount**	**Amount**	**Amount**	**Amount**
Net Operating Income (NOI)		$3,750,424	$45,636	$843,888	$2,860,900
Debt Coverage Ratio		1.15	1.15	1.15	1.15
Available for Debt Service		$3,261,238	$39,683	$733,816	$2,487,739
Mortgage Constant [3/]		6.471%	6.471%	6.471%	6.471%
Permanent Mortgage / Supportable Debt (Rounded)		**$50,396,000**	**$613,000**	**$11,340,000**	**$38,443,000**
Supportable Equity Calculation		**Amount**	**Amount**	**Amount**	**Amount**
Required Return on Equity		8.0%	8.0%	8.0%	8.0%
Revenue Available for Return to Equity		$489,186	$5,953	$110,072	$373,161
Supportable Equity Investment (Rounded)		**$6,115,000**	**$74,000**	**$1,376,000**	**$4,665,000**
Financing Gap Calculation		**Amount**	**Amount**	**Amount**	**Amount**
Total Development Costs		$159,076,000	$41,743,348	$36,666,454	$80,666,199
Less Permanent Mortgage / Supportable Debt		($50,396,000)	($613,000)	($11,340,000)	($38,443,000)
Less Supportable Equity		($6,115,000)	($74,000)	($1,376,000)	($4,665,000)
Financing Gap (TDC-Mortgage-Equity)		**$102,565,000**	**$41,056,348**	**$23,950,454**	**$37,558,199**
Financing Gap as a Percent of TDC		*64.5%*	*98.4%*	*65.3%*	*46.6%*

1/ Source: City of Somerville staff input, informed by recent affordable housing project operating pro forma budgets.

2/ Based on 85% of Massachusetts Housing Partnership average operating expenses per unit ($12,800) for affordable multi-family developments in portfolio in Metro Boston. Costs are typical of CAM expenses--Administrative, Utilities, Maintenance, Insurance, Property Taxes--that would be charged to the renter or the building owner would absorb.

3/ Source: ConsultEcon calculation of mortgage constant based on 5.04% interest rate as of August 8, 2022 for the Massachusetts Housing Partnership Direct Lending, $5 million for 20 year term and 35 year amortization.

Note: Rounding may affect totals.

Source: City of Somerville; Karl F. Seidman Consulting Services; and ConsultEcon, Inc.

Ownership Housing Development Project Revenue
Based on the analysis, 85 affordable ownership units in Somerville are projected. Of the total, 8 units are for low-income households, 6 units are for moderate-income households and 71 units are for middle-income households.

As shown by analysis in **Table 3-10**, the "affordable" sales price is derived based on 30 percent of gross income spent on housing and estimates of housing costs, the same as rental housing. Housing costs for ownership units include mortgage payments based on 4% or 7% down payment on the home, real estate taxes and condo fees. (Private Mortgage Insurance is not included in this analysis as it is waived through a housing lending program offered by MHP.)

Table 3-10. Aggregate Affordable Ownership Unit Sales by Household Income and Size of Unit

Household Size	Annual Income [1/]	Monthly Housing Costs [2/]	Number of Households	Supportable Sales Price [3/]	Total Supportable Sales
Low-Income					
One-Bedroom	$34,166	$854	4	$109,830	$439,319
Two-Bedrooms	$42,226	$1,056	3	$135,867	$407,602
Three-Bedrooms	$52,593	$1,315	1	$169,246	$169,246
Total Low-Income					**$1,016,166**
Moderate-Income Households					
One-Bedroom	$53,255	$1,331	2	$171,209	$342,418
Two-Bedrooms	$73,891	$1,847	1	$237,664	$237,664
Three-Bedrooms	$108,383	$2,710	3	$348,740	$1,046,220
Total Moderate-Income					**$1,626,302**
Middle-Income Households					
One-Bedroom	$99,188	$2,480	23	$326,393	$7,507,039
Two-Bedrooms	$106,407	$2,660	35	$350,092	$12,253,220
Three-Bedrooms	$117,687	$2,942	13	$387,130	$5,032,690
Total Middle-Income					**$24,792,949**
Total Households / Housing Units			**85**		
Total Sales					**$27,435,417**

Aggregate Sales by Income Level	Number of Units	Total Sales	Percent of Total	Average Supportable Sales Price
Low-Income	8	$1,016,166	3.7%	$127,021
Moderate-Income	6	$1,626,302	5.9%	$271,050
Middle-Income	71	$24,792,949	90.4%	$349,196
Total	**85**	**$27,435,417**	**100.0%**	**$322,770**

1/ Unlike rental analysis where income is based on household size in persons, the sales analysis converts households by size into housing units by size, one, two and Three-Bedroom units to determine the sales price for various income levels, as shown in Table A-3 and Table A-4.

2/ Assumed at 30% of monthly income. Rounded to nearest $1.

3/ See sales price analysis in Appendix A-4. Rounded to nearest $1.

Note: Rounding may affect totals.

Source: City of Somerville; Karl F. Seidman Consulting Services; and ConsultEcon, Inc.

Ownership Housing Needed Subsidy

The affordability gap in project financing of ownership units is the difference between the TDC and the estimated sale proceeds from the required 85 ownership units. Based on the mix of units and the assumed sales prices, the total estimated sales proceeds are $27.4 million. Assuming TDC of $52.7 million, the estimated financing gap for 85 affordable home ownership units is $25.2 million, which is approximately 48 percent of the TDC. Data in **Table 3-11** summarize the subsidy needed for ownership units.

Table 3-11. Summary of Subsidy Required for Affordable Ownership Housing

				By Household Type		
			All Units	Low-Income	Moderate-Income	Middle-Income
Potential Development Costs						
Number of Units			85	8	6	71
Percent to Total				*9.4%*	*7.1%*	*83.5%*
Total Development Costs (TDC) (Rounded)			**$52,665,000**	**$4,956,706**	**$3,717,529**	**$43,990,765**
				Sales Proceeds		
Aggregate Unit Sales Proceeds	**Units**	**Average Price**	**Sales Proceeds**	**Low-Income**	**Moderate-Income**	**Middle-Income**
Low-Income	8	$127,021	$1,016,166	$1,016,166		
Moderate-Income	6	$271,050	$1,626,302		$1,626,302	
Middle-Income	71	$349,196	$24,792,949			$24,792,949
Total Sales Proceeds (Rounded)	**77**	**$322,770**	**$27,435,417**	**$1,016,166**	**$1,626,302**	**$24,792,949**
Financing Gap Calculation			**Amount**	**Amount**	**Amount**	**Amount**
Total Development Costs			$52,665,000	$4,956,706	$3,717,529	$43,990,765
Less Sales Proceeds			($27,435,417)	($1,016,166)	($1,626,302)	($24,792,949)
Financing Gap (TDC-Sales Proceeds)			**$25,229,583**	**$3,940,539**	**$2,091,227**	**$19,197,816**
Financing Gap as a Percent of TDC			*47.9%*	*79.5%*	*56.3%*	*43.6%*

Note: Rounding may affect totals.

Source: City of Somerville; Karl F. Seidman Consulting Services; and ConsultEcon, Inc.

Subsidy Needed to Satisfy Ten-Year Affordable Housing Demand

The total development costs for rental and ownership units in Somerville that satisfy the demand for new affordable housing from workers in new non-residential developments is $211.7 million. The total subsidy needed is $127.8 million, approximately 60 percent of the TDC. The total subsidy is then divided by the total estimated commercial development building area to produce a per square equivalent.

Based on an estimated 2.6 million square feet of non-residential space projected over 10 years, the total subsidy required is estimated at $58.28 per SF of non-residential development, as shown by data in **Table 3-12**. This represents the maximum housing linkage fee level that is warranted based on the legal test that linkage fees must be proportional to the cost required to mitigate their impact.

Table 3-12. Unadjusted Calculation of Subsidy Required for new Affordable Rental and Ownership Units per Square Foot of Projected Non-Residential Development

	All Units	Low-Income	Moderate-Income	Middle-Income
Total Development Cost	$211,741,000	$46,700,000	$40,384,000	$124,657,000
Total Financing Gap Required	$127,795,000	$44,997,000	$26,042,000	$56,756,000
Percent TDC that is the Financing Gap	60.4%	96.4%	64.5%	45.5%
Derivation of Commercial Square Footage Subject to Linkage Fee				
Total Commercial Square Footage	2,612,800	2,612,800	2,612,800	2,612,800
Square Footage Exempt from the Linkage Fee under Current Policy [1/]	420,000	420,000	420,000	420,000
Commercial Square Footage Subject to the Linkage Fee	2,192,800	2,192,800	2,192,800	2,192,800
Financing Gap per Square Foot of New Commercial Development [2/]	**$58.28**	**$20.52**	**$11.88**	**$25.88**

1/ Per the City of Somerville Linkage Policy, the first 30,000 SF of commercial building area is exempt from the linkage fee. It is assumed that there are 14 commercial projects based on the average of past projects. Across all projects, 420,000 SF is assumed to be exempt from the linkage fee, per the current ordinance.

2/ Total Financing Gap divided by the total commercial square footage subject to the Linkage Fee.

Note: Rounding may affect totals.

Source: City of Somerville; Karl F. Seidman Consulting Services; and ConsultEcon, Inc.

Modified Subsidy Required Based on Other Subsidy Sources

The nexus calculation indicates the full cost of subsidizing the housing demand generated by workers of households in projected non-residential developments in the City of Somerville. Somerville has relatively high affordable housing development costs, given the scarcity of vacant land, and high acquisition and construction costs. The purpose of affordable housing is to limit the rental or mortgage payments of low-, moderate and middle-income households as they have a limited income stream to cover the costs to finance the development. Therefore, the City and developers are challenged to find multiple sources of subsidy to fill the gap between the rents and sales proceeds that low-, moderate- and middle-income families can afford and the development financing that would be incurred by affordable housing developers. In addition to the local share funded by a linkage fee or other City funds, affordable housing developers will seek to layer other sources to fill the $127.8 million needed subsidy.

Somerville's future supply of affordable housing subsidies is likely to reflect the diversity of the programs utilized by recent projects in other communities. The primary non-City funding sources available for future new affordable housing development in Somerville will likely be Low-Income Housing Tax Credits, Federal HOME and CDBG Funds, Massachusetts Housing Stabilization Funds, and Massachusetts Affordable Housing Trust Funds. Since state sources are often awarded competitively, Somerville is not guaranteed funding from all these programs. Moreover, projects do not typically receive funding from all these sources. Nonetheless, it is reasonable to assume that future affordable housing projects will receive multiple sources of subsidy in addition to the linkage fee on new commercial development.

Because there are other sources of subsidy available for development of new affordable housing in Somerville, the linkage fee does not have to provide all of the funds needed to subsidize affordable housing. However, since Somerville has limited recent history with funding affordable housing projects, it is important to look at experience elsewhere to estimate the local share likely to be needed. The current linkage fee represents approximately 19% of the total estimated financing gap. The local share to produce affordable rental housing in other communities varies from 11 percent in Boston to 39 percent in Cambridge. On average, local funds have represented 11 percent of the total project costs for the 14 rental projects MHP financed between 2016 and 2020, as shown by **Table 3-13**. Most sources of subsidy for affordable funds are available only to projects targeting low-income and moderate-income households. The largest source of funds is the Low-Income Housing Tax Credit, accounting for about half of funds in MHP projects, on average. The local share on ownership projects is higher because there are few programs for ownership housing development. As a result, there are few comparable projects, one in Cambridge and one in Boston. The local share of these projects was 57 percent and 32 percent, respectively.

Table 3-13. Sources of Funds from Recent MHP Affordable Housing Projects

	Percent to Total
Permanent Debt	11%
Federal LIHTC Equity	47%
Public funding (federal, state)	17%
Public funding (local)	11%
State Tax Credits (incl. historic)	8%
Other	6%
Total	**100%**

Note: Information calculated from data on 14 new construction or adaptive reuse affordable housing developments funded with permanent loans from MHP from FY2016-FY2020 located in metro Boston, including City of Boston; excludes 40B developments.

Source: Massachusetts Housing Partnership and ConsultEcon, Inc.

For analytic and illustrative purposes, scenarios based on estimates of Somerville's local share of the financing gap to produce affordable rental housing projects were used to create linkage fee scenarios, as shown in **Table 3-14**. Because of the limited project funding available for affordable ownership housing from the federal and state governments, Somerville must assume it will provide the full subsidy required for ownership units. It is not guaranteed that Somerville will be able to attract any outside sources of funds for ownership units given the small number of programs and their funding levels. Because of the small number of ownership projects, there are too few examples available to assign a local share estimate below 100%. The likelihood that any given ownership project would be able to get outside funding would ultimately vary from project to project and depend on factors that are difficult to assess in advance. However, given the increased competition for federal and state subsidy and the uncertainty that Somerville will receive these grants, Somerville likely will need to increase its share of the financing gap. In addition, increasing land and construction costs will require more subsidy as the costs of projects exceeds funding program limits.

Table 3-14. Linkage Fee Scenarios for the City of Somerville

	Linkage Fee Scenarios, Percent to Total / Full Financing Gap	Linkage Fee Amounts, per Square Foot
Total Financing Gap		$58.28
Illustrative Percentages of Financing Gap that would be Supported by Linkage Fees		
Current Linkage Fee	19.3%	$11.23
11% local share of Rental TDC per MHP Projects and 100% local share for Ownership	28.6%	$16.65
$5 fee increase	27.8%	$16.23
$10 fee increase	36.4%	$21.23
$20 fee increase	53.6%	$31.23
Full Financing Gap	100.0%	$58.28

Source: City of Somerville; Karl F. Seidman Consulting Services; and ConsultEcon, Inc.

Summary of Development Costs, Needed Subsidy and Local Share of Project Funding

The analysis of the development costs and needed subsidy for rental and homeownership units was conducted based on 85 ownership units and 282 rental units. Development costs were estimated based on costs for comparable affordable housing projects under construction or requesting project funding in Boston. For rental projects, the needed subsidy was calculated as the difference between total development costs and the amount of debt and equity that could be supported by the housing cash flow using affordable rents at 30 percent of household income and comparable operating costs. For ownership projects, the needed subsidy was calculated as the difference between total development costs and the affordable purchase price based on monthly payments for mortgage, condo fees, and taxes. Based on these assumptions and detailed analysis, the total development cost required to build 367 units of affordable housing is $211.7 million. The total needed subsidy is estimated to be $127.8 million. The maximum linkage fee needed to provide the full subsidy is $58.28 per square foot, based on an estimated 2.6 million square feet of nonresidential space projected over 10 years.

IV. Employment Impact and Subsidy Required to Address Resident Employment, Education and Training

Somerville's new non-residential development will create thousands of new jobs that can provide employment opportunities for Somerville residents and increase the earnings for the City's low-income and moderate-income workers. Somerville's job linkage policy provides funding for employment and training programs to help these workers gain access to entry-level and middle-skills jobs in new development in Somerville. Programs and services funded through jobs linkage can capitalize on the jobs in new development projects to help overcome historic and structural barriers to better paying occupations among immigrants and workers of color in Somerville and help reduce these racial disparities.

This section estimates the jobs linkage fee level to fill the funding gap for employment and training services needed to connect low-income and moderate-income workers with jobs in Somerville's projected new development over the next decade. The methodology for this analysis has four components:

1. Forecasting the demand by occupation for 6,174 new jobs projected to be created by new development over the next ten years. This forecast uses the May 2021 occupational distribution by industry for Massachusetts prepared by the US Bureau of Labor statistics[12] and focuses on jobs that do not require a four-year college degree. Two demand scenarios were used: 1) Somerville residents fill 30% of these jobs, which reflects resident employment goals for past projects, such as Assembly Square; and 2) Somerville residents fill 40% of jobs, which reflects an increase in resident employment goals that may be feasible and desirable for the City and employers, given the challenges in hiring workers during a tight labor market and the potential environmental benefits from having a higher share of workers living and commuting within Somerville.
2. Estimating the supply of Somerville workers from occupational training programs in the existing education and training ecosystem, based on several parameters that include the number of participants and the share who graduate, are placed in jobs and are Somerville residents. Data for these estimates came from a variety of sources, including interviews with training providers, directories of training providers from the Boston Private Industry Council and MassHire, the national Integrated Postsecondary Education Data System *(*IPEDS*)* database for community college associate degrees and certificates, Somerville Public School data on vocational program graduates and data on the use of Individual Training Account (ITA) vouchers under the federal Workforce Innovation and Opportunities Act (WIOA). For programs in which data was not available, assumptions for parameters were made based on data for similar programs. Since these training programs will place workers with employers in existing buildings and new development, 42.5% of the projected supply was assumed to fill jobs at new development projects[13]. Low-supply and high-supply estimates were prepared taking into account planned expansions in some training programs and post-pandemic increase in program participation and use of ITAs.

[12] https://www.bls.gov/oes/2021/may/oes_research_estimates.htm

[13] This percentage reflects the projected ten-year job growth in tenant industries as a percentage of Boston's job growth in these industries over the past ten years.

3. Estimating the gap between employer demand and system supply for specific occupations and groups of occupations and the cost to provide additional training to fill this gap. Cost estimates were based on data from the Job Creation and Retention Trust, Boston's Neighborhood Jobs Trust and individual training providers on the cost to training a worker for different occupations. In some cases, these costs include services beyond skills training that improve participant training completion, job placement and post-employment support.
4. Estimating the costs for related education and supports that are critical for workers to access and succeed in occupational training, including English for Speakers of Other Languages (ESOL), Adult Basic Education and high school equivalency programs (ABE), skill upgrading after employment to help workers advance into higher paying positions and stipends to offset lost income while attending training programs.

Overall Occupational Demand

Table 4-1 and Table 4-2 present the ten-year projected employment from new development by industry and occupation, respectively. Three industries account for 82% of this expected job growth. Over half (55%) are in the life sciences sector, reflecting its strong growth market and developer focus on building lab space for these firms, with two other industries, information technology and hospitality (restaurants and hotels) accounting for 18% and 9%, respectively. Since the training ecosystem varies by industry and their related occupations, a separate analysis of occupational demand, the training supply and the supply gap for these key industries is discussed below, followed by an analysis for health care, which has a specialized training ecosystem, and finally for the remaining occupations.

Table 4-1. Projected Employment by Industry for New Somerville Development, 2022 to 2031

Industry	Number of Employees	Percent of Total
Life Science	3,422	55.4%
Computer Systems Design	367	5.9%
Software	367	5.9%
Other Information Services	367	5.9%
Management & Technical Consulting	550	8.9%
Management of Companies	550	8.9%
Restaurants	442	7.2%
Clothing Stores	12	0.2%
Food & Beverage Stores	20	0.3%
Daycare	12	0.2%
Bank Branches	10	0.2%
Medical Offices	20	0.3%
Hotels	35	0.6%
Total	6,174	100.0%

Source: Karl F. Seidman Consulting Services

Table 4-2. Projected Employment by Occupational Group for New Somerville Development, 2022 to 2031

Occupational Group	Number of Jobs	Percent of Total
Management	**1,517**	**24.6%**
Business & Financial Operations	**811**	**13.1%**
Computer & Mathematical	**942**	**15.3%**
Architectural & Engineering	**292**	**4.7%**
Life, Physical & Social Science	**921**	**14.9%**
Community Service	14	0.2%
Legal	**57**	**0.9%**
Educational, Training & Library	**26**	**0.4%**
Art, Design & Media	107	1.7%
Health Care Practitioners & Technicians	70	1.1%
Health care support	26	0.4%
Protectective Services	5	0.1%
Food Preparation & Serving	416	6.7%
Buildings & Grounds	12	0.2%
Personal Care	8	0.1%
Sales & Related	266	4.3%
Office & Administrative	494	8.0%
Farming & Fishing	0	0.0%
Construction & Extraction	3	0.0%
Installation, Maintenance & Repair	32	0.5%
Production	101	1.6%
Transportation & Material Moving	54	0.9%
Total	6,174	100.0%

Source: Karl F. Seidman Consulting Services

The occupational distribution in Table 4-2 shows that almost three-quarters (74%) of the projected employment will occur in higher skill occupational groups that largely require at least a college degree (indicated in bold type): Management, Business & Financial Operations, Computer & Mathematical, Architectural & Engineering, Life, Physical & Social Science, Legal, and Educational, Training & Library. Among the one-quarter of projected new jobs in occupational groups that primarily do not require a college degree, 73% are in three categories: 1) Food Preparation & Serving, 2) Sales and Related Occupations; and 3) Office & Administrative. These occupations are important sources of entry-level jobs for workers with limited work experience and/or education, but they also are low-paying occupations. While the median annual earnings, as of May 2021, for all occupations in the Metro North Workforce Development Area was $61,821, the median annual earnings for Food Preparation & Serving, Sales and Office & Administrative occupations were $31,106, $39,498 and $48,305, respectively. This highlights the importance of funding skill upgrading and career advancement training to help these entry-level workers increase their earnings over time.

Table 4-3. Projected Occupational Demand from New Development for Jobs Not Requiring a Bachelor's Degree

Occupation	Number of New Jobs	Educational Requirement	May 2021 Median Annual Earnings
Management			
Transportation, Storage, & Distribution Managers	9	High School Diploma	$108,310
Food Service Managers	8	High School Diploma	$74,150
Comp & Math			
Computer Network Support Specialists	13	Associate's Degree	$79,914
Computer User Support Specialists	62	Some College	$77,112
Web Developers	7	Associate's Degree	$98,045
Web & Digital Interface Designers	5	Associate's Degree	$77,748
Architecture & Engineering			
Electrical & Electronic Engineering Technicians	6	Associate's Degree	$61,395
Engineering Technicians, Except Drafters, All Other	18	Associate's Degree	$60,513
Life, Physical & Social Science			
Biological Technicians	121	Associate's Degree	$61,517
Chemical Technicians	5	Associate's Degree	$50,146
Clinical Laboratory Technologists & Technicians	31	No formal credential	$59,638
Occupation	**Number of New Jobs**	**Educational Requirement**	**May 2021 Median Annual Earnings**
Sales			
First-Line Supervisors of Retail Sales Workers	18	High School Diploma	$48,157
Sales Representatives, Services, Except Advertising, Insurance, Finance & Travel	88	High School Diploma	$63,579
Office/Administrative			
First-Line Supervisors of Office & Administrative Support Workers	28	High School Diploma	$63,579
Bookkeeping, Accounting, & Auditing Clerks	53	Some college	$52,740
Customer Service Representatives	101	High School Diploma	$46,550
Executive Secretaries & Executive Administrative Assistants	79	High School Diploma	$77,172
Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	35	High School Diploma	$59,112
Office Clerks, General	75	High School Diploma	$46,747
Production			
First-Line Supervisors of Production & Operating Workers	20	High School Diploma	$77,016
Electrical, Electronic, & Electromechanical Assemblers, Except Coil Winders, Tapers, & Finishers	14	No formal credential	$47,410

Source: Karl F. Seidman Consulting Services

Table 4-3 highlights the projected demand for occupations that do not require a bachelor's degree, according to the Bureau of Labor Statistics occupational classification system. It lists all occupations with at least 5 new jobs, based on the expected industry mix, along with their educational requirements and 2021 median earnings in the MetroNorth WDA region. Software Developers and Computer Programmers are not included in the table since they typically require a bachelor's degree. However, multiple training programs exist that provide an alternative pathway to these jobs without a four-year college degree. The projected number of jobs from new

development for these two occupations are 446 and 22, respectively. The median annual earnings, as of May 2021, for these occupations were quite high, exceeding $120,000. This information indicates key occupations that Somerville may want to target in its job training initiatives and funding due to the number of projected new jobs and median annual earnings near or above the region's 2021 overall median annual earnings of $61,821:

- Computer use support specialists (62 jobs; $77,122 in median annual earnings);
- Software developers (446 jobs; $129,990 in median annual earnings);
- Biological technicians (121 jobs; $61,517 in median annual earnings);
- Sales Representatives, Services, Except Advertising, Insurance, Finance & Travel (88 jobs; $63,579 in median annual earnings); and
- Executive Secretaries & Executive Administrative Assistants (79 jobs; $77,172 in median annual earnings).

Life Science

Occupational Demand

A total of 3,442 new jobs at life science firms are expected from new development projects in Somerville. The vast majority of these jobs are in occupations that require a bachelor's degree or higher. A recent report by TEConomy Partners, LLC for the Massachusetts Biotechnology Educational Foundation found that 11% of life science industry jobs in Massachusetts don't require a bachelor's degree[14]. Based on this figure, 379 jobs would be accessible to Somerville residents without a four-year college degree. Interviews with training providers indicated that the 11% figure covers statewide employment that includes manufacturing jobs and thus may be too high for firms in Somerville lab buildings that will focus on research and development. Based on the state occupational distribution for the life science research and development industry, there will be 181 engineering/lab/research technician jobs among the 3,442 industry jobs. These technician jobs had average 2021 median annual earnings of $66,025 in the Metro North WDA. While the skills for these technician jobs can be developed through specialized training programs and do not require a bachelor's degree, some employers do require a four-year college degree for technician jobs. Based on these data, the estimated life science industry demand for entry-level and middle-skill jobs that do not require a bachelor's degree is 289. This translates into 87 and 116 jobs for Somerville residents based on 30% and 40% resident employment, respectively.

Training Supply

Current training capacity for life science industry jobs is modest with limited participation by Somerville residents and employers. The existing training programs targeted to the life science occupations and firms are:

- Three non-profit programs at Just-A-Start, Lab Central, Jewish Vocational Service (JVS). The JVS program prepares people for additional education at Quincy College rather than for employment;
- Two apprenticeship programs at Massachusetts Biotechnology Education Foundation- one for Biomanufacturing Technician and a second for Clinical Research Associate; and

[14]TEConomy Partners, LLC, *2022 Massachusetts Life Sciences Employment Outlook,* June 2022

- Certificate and associate degrees at four community colleges-Ben Franklin Institute of Technology (BFIT), Bunker Hill Community College (BHCC), Quincy College (QC) and Roxbury Community College (RCC).

Collectively, these programs graduate 182 trainees with 131 estimated to be placed into employment with firms throughout the region. However, data from training providers indicate that Somerville residents represent a very small share of participants and graduates—1% of program graduates for the Mass Biotechnology Education Foundation and Quincy College and 13% for Bunker Hill Community College. Consequently, the current life science training system is estimated to generate one graduate per year that is a Somerville residents placed in a job, or 10 over the ten-year period[15]. Training capacity is likely to grow over the next decade with multiple providers planning program expansions to add to the range of occupations covered and open new training facilities. These expansions are estimated to increase the annual number of Somerville residents trained and placed in jobs to 5, yielding a ten-year high-supply estimate of 50 positions.

Combining occupational demand and the low training supply projection, there is a ten-year gap of 77 and 106 training seats for the 30% and 40% resident employment scenarios, respectively. Under the high training supply estimate, the gap is 37 seats under the 30% resident employment scenario and 66 seats for 40% resident employment.

Information Technology

Occupational Demand

Demand for workers in IT occupations is projected at 642--this includes jobs within IT-related industries and positions across other industries, many of which have some demand for IT workers. Of these jobs, 222 are estimated to be accessible for workers without a bachelor's degree and include Network Support Specialists, User Support Specialists and Web Design, and a portion of the Computer Programs and Software Developer positions. These IT occupations are especially good-paying positions with average median annual earnings of $97,227 in 2021 ($83,205 without programmers & software developers). Programmers and Software Developers, which constitute half of the projected IT jobs, typically require a bachelor's degree. However, there are a growing number of training programs providing an alternative pathway for these jobs and increased employer interest in skill-based rather than degree-based job requirements. Based on interviews with training providers and researchers, 10% of the Computer Programmer and Software Developer jobs are estimated to be accessible to workers with industry-based skills training without a college degree. These 222 jobs translate into 67 and 89 jobs for Somerville residents based on 30% and 40% resident employment, respectively.

[15] These estimates exclude graduates in programs funded with linkage fees through the Job Creation and Retention Trust (JCRT)

Training Supply

A large and diverse training system for IT occupations exists in the Boston and nearby communities that includes:

- Twenty-four different certificate and associate degree programs at BHCC, Bay State College, BFIT, Quincy College and RCC[16]; and
- Over a dozen non-profit and for-profit providers, some training for multiple occupations and jobs, that use different program formats and lengths that include coding bootcamps, on-line courses, extended courses and long-term programs with apprenticeships.

Several IT training providers have plans to expand their programs, including both the number of participants and range of jobs for which they provide skills training jobs, so the supply of IT training and graduates is likely to increase over the next ten years.

These programs currently graduate an estimated 16 Somerville residents per year entering employment with added capacity generating a high-supply estimate of 26 per year. Based on 42.5% of these Somerville graduates entering jobs at new development projects, the ten-year supply of graduates for jobs in new development projects is estimated at 70 and 110[17].

Combining occupational demand and the low training supply projection, there is ten-year gap of 0 and 19 training seats for the 30% and 40% resident employment scenarios, respectively. Under the high training supply estimate, there is enough capacity to address employer demand and no training supply gap would exist.

Health Care

Massachusetts has experienced a shortage of workers for many health care occupations for over a decade with some studies projecting that workforce shortages in the state could more than triple between 2017 and 2024.[18] The pandemic worsened this shortage as nurses and other workers left the industry and the pipeline of new workers was interrupted due to delays in education, clinical placements and licensing exams[19]. Health care training providers indicated that employer demand for their graduates significantly exceeds the current number of graduates. Given this situation, the current training supply may only function to address the existing shortage of health care workers, with linkage funding needed to expand capacity to fill 100% of the occupational demand for entry-level and middle-skill health care jobs generated from new development. This assumption is used to estimate the training gap and costs under the low-supply scenario discussed below.

[16] Incomplete data was available on the number of community college IT program graduates going into jobs versus pursuing further education and the following assumptions were made: 80% to employment for certificate programs and 35% to 50% for associate degrees, depending on the type of degree.
[17] These estimates do not include training funded by the JCRT and linkage fee revenue.
[18] The Project on Workforce, Covid-19 and the Changing Massachusetts Health Care Workforce, p.7.
[19] The Project on Workforce, Covid-19 and the Changing Massachusetts Health Care Workforce, p.8, 13 and 15.

Occupational Demand
Employment in health care occupations from new development is expected to be small, primarily occurring in medical offices and pharmacies and corporate headquarters[20]. An estimated 30 of these jobs are in health care practitioner and support occupations that do not require a bachelor's degree. This results in the demand for 9 and 12 entry-level and middle-skills jobs for Somerville residents with 30% resident employment and 40% resident employment, respectively.

Earnings for these health care occupations are fairly low, with median annual earnings averaging $46,550 for the Metro North in 2021.

Training Supply
Somerville and the Boston area has a large array of health care training programs, with considerable capacity in the local community colleges and non-profit agencies. Several large health care systems also have internal programs to support additional education and training among their workers to move up career ladders. Skills training programs within the current system include:

- Extensive certificate and associate degree programs at 7 area community colleges, including Bay State College, BFIT, BHCC, Laboure College, QC, RCC, and the Urban College of Boston. The occupations addressed in these programs include EMT Technician, LPN, Nursing Aid, RN, Physical Therapy Assistant, Phlebotomist, Substance Abuse Counseling, Medical Assistant, Cardiovascular Technician, Electro-neurodiagnostic Technician, Radiology Technician, Sonograph/ultrasound Technician, and Surgical Technician.
- Multiple non-profit organizations provide training primarily geared toward health care support occupations, although some provide training for technician positions, e.g., JVS has a Pharmacy Technician program.

The programs generated an estimated 13 annual graduates entering employment who are Somerville residents. As noted above, the low-supply estimate assumes that all of this supply goes to address the current shortage of health care workers with none filling jobs at new development projects. The high-supply estimate assumes 42.5% of this capacity goes to new developments, supplying 6 workers per year, or 60 over the ten-year period.

Combining occupation demand and the low training supply projection, there is ten-year gap of 363 and 457 training seats for the 30% and 40% resident employment scenarios, respectively. Under the high training supply estimate, there is enough capacity to address employer demand and no training supply gap would exist.

Hospitality

Occupational Demand
Growth in restaurant and hotel employment from new development is projected to create 423 new largely entry-level jobs in Food Preparation and Serving and Building and Grounds Cleaning and

[20] Health occupations in life science firms are included in the earlier analysis for that industry.

Maintenance occupations, with 127 and 169 jobs for Somerville residents at 30% and 40% resident hiring, respectively.

Hospitality jobs are among the lowest paying occupations in Metro North WDA with 2021 median annual earnings of $31,106 for Food Preparation and Serving occupations and $38,220 the median for Building and Grounds Cleaning and Maintenance occupations.

Training Supply
Training for hospitality jobs is provided through several BHCC certificate programs, a Somerville career and technical education program, JVS and other providers approved for ITA vouchers. Best Hospitality is a non-profit organization that trains workers for union hotel jobs in the Boston region[21]. The estimated existing annual supply of graduates from these programs that are Somerville residents and go into employment is 12, or 120 over ten years, with 51 of these graduates (42.5%) projected to fill jobs in new development projects. Since the pandemic reduced recent employment and hiring in the hospitality industry and the level of training, a high-supply estimate was made that assumed a doubling of the annual number of ITA vouchers used for hospitality industry training and a 50% increase at the JVS program. Under this high-supply scenario, the ten-year supply of employed graduates who are Somerville residents increases to 135 with 57 working at new developments.

Combining occupation demand and the low training supply projection, there is a ten-year gap of 45 and 77 training seats for the 30% and 40% resident employment scenarios, respectively. Under the high training supply estimate, the training supply gap is 39 and 71 seats for the 30% and 40% resident employment level, respectively.

Administrative and Other Occupations

Occupational Demand
An additional 871 jobs in occupations not requiring a bachelor's degree are expected to be generated by new development projects over the next ten years. Office and administrative occupations account for 494 or 57% of these jobs. The remaining 377 jobs are in other occupations including sales, repair and maintenance, production and transportation/material moving. Estimated employment for Somervillians in these occupations is 261 and 348 for 30% and 40% resident employment, respectively.

Training Supply
Multiple programs provide training for these additional occupations, primarily for office and administrative positions, including at BHCC certificate programs, several non-profit agencies (JVS, Operation Able, the YMCA) and other providers approved for ITA vouchers. These programs currently supply an estimated 6 annual graduates who enter employment and are Somerville residents, or 60 over ten years, with 26 (42.5%) assumed to be in jobs at new development projects. Under the high-supply estimate, with increases in annual ITAs and expansion at non-profit training providers, the ten year supply of Somerville residents entering employment is 70 over ten years, of which 30 are expected to fill jobs at new development projects.

[21] Since Boston residents trained by Best Hospitality are funded through the Neighborhood Jobs Trust and linkage funding, its graduates are not included in the figures for existing system supply.

Median earnings within these occupational groups are well below the overall median for the Metro North WDA. Production and Transportation/Materials Moving jobs have the lowest earnings, with the 2021 median annual pay at $40,327 and $38,005, respectively. Median annual earnings for Sales and Office/Administrative occupations are higher at over $48,305. However, there are positions within these two occupational groups with considerably higher median annual pay. Examples include:

- Executive Secretaries/Administrative Assistants: $77,172;
- Legal Secretaries and Administrative Assistants: $67,631;
- Brokerage Clerks $60,661;
- Advertising Sales Agents: $63,080;
- Insurance Sales Agents: $77,883; and
- Sales Representatives, Wholesale and Manufacturing Products: $77,260.

Combining occupation demand and the low training supply projection, there is a ten-year gap of 235 and 322 training seats for the 30% and 40% resident employment scenarios, respectively. Under the high training supply estimate, the training supply gap is 231 and 318 seats for the 30% and 40% resident employment level, respectively.

Skills Training Funding Gap

Table 4-5 summarizes the skills training supply gap by industry/occupational area and the required funding amount to address these gaps under 30% resident employment. The total funding gap is $2.4 million under the high-supply scenario and $3.3 million under the low-supply estimate. The funding gap for 40% resident employment is $3.7 million under the high-supply estimate and $5 million with the low-supply estimate (see **Table 4-6)** The per participant training costs used to calculate the required funding levels, based on averages for existing programs, are shown in **Table 4-4.**

Table 4-4. Occupational Skills Training Costs

Training Industry/Occupation	Cost Per Participant
Life Science	$19,000
Information Technology	$7,500
Health Care	$8,914
Hospitality	$5,800
Office/Administration & Other Occupations	$5,700

Source: Karl F. Seidman Consulting Services

Table 4-5. Occupational Training Supply Gap and Costs by Industry Sector, 30% Resident Employment

Sector	Ten-Year Training Positions Needed	Existing Training Supply - Low	Existing Training Supply - High	Gap- Low Supply	Gap: High Supply*	Funding Gap at Low Supply	Funding Gap at High Supply
Life Science	87	10	50	77	37	$1,463,000	$703,000
Information Technology	67	70	110	0	0	$0	$0
Health Care	9	0	60	9	0	$80,229	$0
Hotel/Restaurants	127	51	57	76	70	$440,800	$406,000
Office/Admin/Other	261	26	30	235	231	$1,339,500	$1,316,700
Total	551	157	307	397	338	$3,323,529	$2,425,700
*Gap is zero for IT & health care since training supply exceeds needed training							

Source: Karl F. Seidman Consulting Services

Table 4-6. Occupational Training Supply Gap and Costs by Industry Sector, 40% Resident Employment

Sector	Ten-Year Training Positions Needed	Existing Training Supply - Low	Existing Training Supply - High*	Gap- Low Supply	Gap: High Supply	Funding Gap at Low Supply	Funding Gap at High Supply
Life Science	116	10	50	106	66	$2,014,000	$1,254,000
Information Technology	89	70	110	19	0	$361,000	$0
Health Care	12	0	60	12	0	$106,971	$0
Hotel/Restaurants	169	51	57	118	112	$684,400	$649,600
Office/Admin/Other	348	26	30	322	318	$1,835,400	$1,812,600
Total	734	157	307	577	496	$5,001,771	$3,716,200
*Gap is zero for IT & health care since training supply exceeds needed training							

Source: Karl F. Seidman Consulting Services

Additional Employment and Training Services

ESOL and ABE Education

Part of the Somerville labor force faces language and educational barriers to skills training and to accessing the job opportunities generated by new development. Funding and delivering these services is closely aligned with the goals for the jobs linkage policy and the Job Creation and Retention Trust. The need for ESOL education services was based on the percentage of unemployed who do not speak English well based on data from the 2016 to 2020 5-year American Community Survey, which is 6.9%. This percentage was applied to the 551 and 734 needed training positions to yield an estimate of 38 and 51 ESOL seats for 30% and 40% resident employment, respectively. The cost to provide this level of ESOL education is $152,000 and $204,000, based on a cost of $4,000 per participant[22].

Two estimates were prepared for the cost of needed Adult Basic Education services. The low estimate assumes 9.4% of the need training position (551 and 734 as noted above) will lack a high school diploma, based on the share of Somerville's unemployed workers without a high school education from the 2016-2020 American Community Survey. A high estimate is based on 15.9%

[22] This costs for ESOL and ABE services are based on the average cost per participant in FY2023 as funded by the Massachusetts Department of Elementary and Secondary Education (DESE), rounded to the nearest hundred dollars.

of trainees needing ABE services, assuming that one-quarter of trainees with a high school diploma or its equivalent will lack high school level competency and thus will need educational services to reach this skill level. Based on a $4,000 average cost per participant, the required funding for ABE services for 30% resident employment is $208,000 for the low ABE estimate and $352,000 for the high ABE estimate[23]. Under 40% resident employment, ABE funding estimates are $276,000 and $468,000[24].

Skills Upgrading and Training Stipends

As noted above, many of the projected jobs, particularly in entry-level positions, at new development projects pay wages well below the MetroNorth WDA median annual earnings of $61,821 and below the estimated Middlesex County living wage of $67,517 for a four-person household with two working adults[25]. To address this situation, the Job Creation and Retention Trust can fund skills upgrading and career advancement training for workers after they are employed at new development projects. Based on Massachusetts' industry occupational distributions, there are 335 entry-level jobs not requiring a college degree with career advancement potential for the 30% Somerville resident employment scenario and 423 under the 40% resident scenario. The estimated cost to provide skills upgrading training for these employed workers is $590,000 and $756,000, respectively, based on a cost per worker of $1,788[26].

Participation in education and skills training programs entails a loss of income for trainees for the time required to attend training. Some programs, particularly in the health care field, have a required number of workplace externships to obtain certification that are typically uncompensated. This loss of income is a major barrier to obtaining skills training, particularly for the low-income and moderate-income workers targeted by the jobs linkage policy, who critically need this income to cover the living expense during training. The estimated cost to provide a single training stipend is $4,640 based on an average training program period of 290 hours for non-apprenticeship training programs[27] and an hourly rate of $15.96—Somerville's current living wage standard for vendors. Since most life science training programs and some IT training programs already pay a stipend, the cost estimate for stipends excludes all life science training seats and 20% of IT training seats to avoid double counting stipend costs for these programs. **Table 4-7** summarizes stipend cost estimates under the different scenarios, which range from $1.4 million to $2.2 million.

[23] For 30% resident employment the low ABE estimate is based 52 persons (9.4% of 551 trainees) receiving ABE services at $4,000 per person; the high estimate assumes 88 persons (15.9% of 551 training) at $4,000 per person.
[24] For 40% resident employment the low ABE estimate is based 69 persons (9.4% of 734 trainees) receiving ABE services at $4,000 per person; the high estimate assumes 117 persons (15.9% of 734 training) at $4,000 per person.
[25] From the MIT Living Wage Calculator (https://livingwage.mit.edu/counties/25025).
[26] This cost estimate is the average cost for incumbent worker skills training funded by the Massachusetts Commonwealth Corporation's Workforce Training Fund in FY2021.
[27] Apprenticeship programs were excluded as participants are typically paid during the non-classroom work portion of the program and the breakdown of hours for classroom vs. work portions of these programs was not available.

Table 4-7. Estimated Cost for Training Stipends under Different Scenarios

Training Supply Scenario	30% Resident Employment	40% Resident Employment
	Number of Stipends	
High supply training scenario	301	430
Low supply training scenario	320	467
	Stipend Cost	
High supply training scenario	$1,396,640	$1,781,490
Low supply training scenario	$1,484,800	$2,166,880

Source: Karl F. Seidman Consulting Services

Total Job Training Funding Gap and Warranted Jobs Linkage Fee

The total funding gap and associated linkage fee to address the combined employment and training needs for entry-level and middle-skill jobs at the projected new development under the 30% resident employment scenario are summarized in **Table 4-8.** Excluding the cost for stipends, the gap is $3.4 million under the high training supply estimate and $4.4 million for the low training supply estimate. These translate into PSF linkage fees of $1.41 and $1.84 using a basis of 2,402,800 square feet (total projected development of 2,612,800 SF less 210,000 in exempt space[28]). When stipends are included the jobs linkage fee increases to $1.99 and $2.46 for the high training supply and low training supply scenarios, respectively

Table 4-8. Total Funding Gap and Jobs Linkage Fee, 30% Resident Employment

Type of Service	High Training Supply Estimate	Low Training Supply Estimate
Skills Training	$2,425,700	$3,323,529
ABE/ESOL	$360,000	$504,000
Career Advancement	$598,980	$598,980
Total	$3,384,680	$4,426,509
PSF Linkage Fee	$1.41	$1.84
Training Stipend	$1,396,640	$1,484,800
Total with Stipend	$4,781,320	$5,911,309
PSF Linkage Fee with Stipend	$1.99	$2.46
Current Fee	$2.75	$2.75

Source: Karl F. Seidman Consulting Services

Table 4-9 details the funding gap and linkage fee levels for the 40% resident employment scenario. Without stipends, the gap is $5 million under the high training supply estimate and $6.4 million for the low training supply estimate. These translate into PSF linkage fees of $2.06 and $2.68 using the basis of 2,402,800 square feet of projected new development subject to linkage fees. When stipends are included the jobs linkage fee increases to $2.80 and $3.52 for the high training supply and low training supply scenarios, respectively.

[28] The exemption amount assumes 14 development projects with an exemption of 15,000 SF per project.

Table 4-9. Total Funding Gap and Jobs Linkage Fee, 40% Resident Employment

Type of Service	High Training Supply Estimate	Low Training Supply Estimate
Skills Training	$3,716,200	$5,001,771
ABE/ESOL	$480,000	$672,000
Career Advancement	$756,324	$756,324
Total	$4,952,524	$6,430,095
PSF Linkage Fee	$2.06	$2.68
Training Stipend	$1,781,490	$2,166,880
Total with Stipend	$6,734,014	$8,596,975
PSF Linkage Fee with Stipend	$2.80	$3.58
Current Fee	$2.75	$2.75

Source: Karl F. Seidman Consulting Services

V. Review of Linkage Fee Policy Options

Cities across the country have implemented policies to generate funding to address the impact of commercial development on affordable housing demand for over several decades. Many California communities have enacted such programs, and they are also found in Washington, Colorado, Florida, and New Jersey. Locally, Boston has implemented housing and jobs linkage fees, and Cambridge has a housing linkage fee. Watertown and Chelsea also recently submitted home rule petitions to establish linkage fees, with Watertown's proposed fee dedicated to affordable housing and Chelsea's fee applicable to multiple purposes. This section reviews the legal basis for linkage fees, discusses linkage fees in other communities, considers key options for changes in Somerville's linkage policies and assesses the impact of the fee increase under the maximum warrant fee level and other options on Somerville's competitiveness for attracting businesses and the economics of commercial development investments.

Legal Justification for Linkage Fees

The legal underpinnings of Somerville's linkage fee policies rest on solid footing. Both the housing linkage fee and jobs linkage fee were authorized by the Home Rule petitions enacted by the Legislature and signed by the Governor. To date, no Court in Massachusetts has adjudicated a legal challenge to these linkage fees. Any such challenge would likely pass legal muster so long as there exists a sufficient rational connection between the linkage fee imposed on non-residential development and the City's public policy goal of developing affordable housing and facilitating job training. The purpose of this nexus study is to demonstrate the City's rational basis for imposing linkage fees on non-residential development for affordable housing and job training.

Linkage fees, which are codified under the zoning ordinance in Somerville, are not considered a tax because the fees are particularized for a specific designated purpose, not to raise general revenues. There is no authority for implementing a general tax under zoning, but Somerville's zoning ordinance does authorize rational regulations for the development of private property in the City, including the imposition of linkage fees for non-residential development. The implementation of such linkage fees is lawful so long as it does not amount to a regulatory taking of property without just compensation, which is protected under the Fifth Amendment to the United States Constitution.

In the seminal case, Penn Central Transp. Co. v. New York City, 438 U.S. 104 (1979), the Supreme Court outlined three factors to make a determination whether government restriction on private property, or exaction as a condition of developing it, amounts to a taking of property that requires payment of compensation:

1. Economic impact on the claimant's "investment-backed expectations";
2. Character of the governmental action, i.e., physical invasion or land use regulation to promote the common good; and
3. Effect on the "parcel as a whole".

Based on those factors, linkage fees would be constitutional because there is a rational basis for imposing them City-wide: developers have no investment-backed expectations where the linkage

fees have already been codified, the fees have been implemented to promote affordable housing and job growth, and are calculated based on gross floor area as applied to each parcel as a whole.

In practice linkage fees are imposed in the context of permit proceedings where an additional layer of constitutional protection applies. Based on additional court cases, in order to be constitutional, there must be an "essential nexus" and "rough proportionality" between the governmental demand or permit condition and the social costs of the applicant's proposal for development. Absent the essential nexus and rough proportionality, linkage fees could be considered a taking that would be unconstitutional without just compensation, which would undermine their utility to foster affordable housing and facilitate job training in Somerville. The U.S. Supreme Court decision in the Nollan case [Nollan v. California Coastal Commission, 483 US 825 (1987)] declared that there must be an "essential nexus" between the exaction or mitigation imposed on the party and a legitimate state interest. The U.S. Supreme Court decision in the Dolan case enshrined into law the proportionality test that mitigations required by municipalities must be roughly proportional to the impact that the proposed developments will create [Dolan v. City of Tigard, 512 US 687 (1994)]. The Supreme Court revisited the Nollan/Dolan rubric in the Koontz case [Koontz v. St. Johns River Water Mgmt. Dist., 570 U.S. 595 (2013)]. In Koontz, the Court extended the Nollan/Dolan principle to apply not only where land use permits have been granted with conditions, but also when such a permit has been denied and the local government has demanded a monetary exaction.

The straightforward application of these Supreme Court precedents (Penn Central, Nollan, Dolan and Koontz) to Somerville's linkage fees demonstrate they are legally justified and pass constitutional muster under the 5th Amendment. As shown in the Nexus Study, the essential nexus and rough proportionality exists between the type and amount of linkage fees imposed on non-residential development and the City's legitimate interest in developing affordable housing and facilitating job training and growth in the community. The City imposes linkage fees at a pro-rata rate based on gross floor area to offset the impact such non-residential development has on affordable housing in the City. As more of the City becomes developed, the need for scarce affordable housing increases. Likewise, the linkage for job training facilitates growth and investment in the City's workforce as it allows for additional non-residential development. More such development in Somerville results in the need for more trained workers, and affordable housing in which they can live. Linkage fees for affordable housing and job training are therefore legally justified when imposed on non-residential development in the City of Somerville.

Linkage Fee Policies in Nearby Communities

Cities across the country have implemented linkage policies to generate funding to address the impact of commercial development on affordable housing demand for over three decades—from several California cities to Denver and Seattle, and communities in Florida and New Jersey. Locally, Boston and Somerville have implemented housing and jobs linkage fees, and Cambridge has a housing linkage fee. Watertown and Chelsea also recently submitted home rule petitions to establish linkage fees, with Watertown's proposed fee dedicated to affordable housing and Chelsea's fee applicable to multiple purposes. This section reviews the linkage fees in nearby communities and several cities nationwide, considers several changes to Boston's current linkage

policies, and assesses the impact of changes to the City's linkage fee rate on the financial returns and feasibility of future commercial development.

Linkage Fee Policies in Other Communities

Current linkage fee rates and policies for Boston, Cambridge, Somerville and several comparable national cities are summarized in **Table 5-1**. Housing linkage fees range from under $1.00 per SF for some uses in Denver, San Diego and San Jose to a high of $69.80 for some office projects in San Francisco. Locally, Somerville's combined Housing and Jobs fee rate of $13.98 is below that of Cambridge ($33.34) and Boston ($15.39). However, Boston recently completed a Nexus Study that may result in rate changes over the next several months. Nationally, Somerville's rate is above that for Denver and San Diego but below the highest rates in San Jose ($15.79) and Seattle ($25.30). All four of these cities vary linkage fees by use, and all except San Diego also vary rates by location, so some projects in San Jose and Seattle face lower rates than in Somerville. San Francisco has the highest rates by far, with lab projects between $31 and $39 and office projects over 50,000 SF paying almost $47 to just under $70 per SF.

Somerville's 30,000 SF project size threshold to trigger housing linkage payments is the same as Cambridge, higher than San Francisco and Seattle and lower than Boston (100,000 SF) and San Jose (50,000 to 100,000 SF). Denver and San Diego have no size threshold. Providing an exemption for some amount of space is not common among the comparison cities—present only in Boston, Somerville and Seattle. A single full payment of linkage obligations is the most common payment schedule, typically prior to issuance of the building permit or certificate of occupancy. Boston and Somerville are the only cities that allow payment over multiple years, with Boston requiring two payments, beginning at the Building permit date, for jobs linkage and five to seven payments for housing linkage[29]. However, San Diego allows application for a two-year deferral and San Jose provides a 20% discount for early payment prior to the final building inspection date. All comparison cities, except San Jose, provide for annual inflation adjustment tied to the CPI or other index.

[29] The shorter payment period applies to projects in a defined "Downtown" district.

Table 5-1 . Linkage Fee Policies in Boston and Other Cities

City	Year Established	Exaction/Linkage Fee Rate (per SF)	Project Size Threshold (SF)	Exemption (SF)	Payment Schedule	Rate Adjustments	Other Policies
Boston	1983	Housing: $13.00	100,000	100,000	Housing: Downtown district: 5 payments at building permit date & 4 anniversary dates; elsewhere: 7 payments at COO date & 6 anniversary dates	Automatic annual adjustment based on a "combined index" of the CPI for Urban Consumers and CPI Housing Component. At other times as recommended by the BRA based on a consideration of economic trends, housing trends and other factors.	Housing creation option allows a developer to make all or a portion of their linkage obligation via a financial contribution to a specific income restricted housing project.
	1986	Jobs: $2.39			Jobs: two payments at building permit date & one-year anniversary		Job linkage obligation can be met through either cash payments or creation of a job training program with a cost at least equal to the required linkage fee contribution.
Cambridge	1988	Housing: $33.34	30,000	30,000 for projects with 60,000 SF or less & the rebuilding of existing space without a change of use	One payment at COO	Annual Adjustment (in October or November) based on Boston CPI Housing Index Recalculation after three years or longer.	
Somerville	1990	Housing: $11.23	30,000 for housing and jobs fees	30,000 for housing	Housing fee made in three payments at COO & next two anniversary dates. Jobs fee made in two payments at building permit & COO	Reevaluation every five years. Annual adjustment March 1 based on Boston CPI.	
	2017	Jobs: $2.75	15,000 for jobs	15,000 for jobs			
Denver, CO	2017	.96 to 3.65 depending on use (7/1/2022) and market area for some uses; annual scheduled increases to $2.50 to $9.00 in 2025.	None	None	One payment before building permit issuance	Annual adjustment based on change in CPI for Urban Consumers.	Applies to housing project with 9 or fewer units; lowest fees for industrial uses; highest for commercial, civic, public and institutional uses in high market area.
San Diego	1990	.80 to 2.12 PSF depending on use	None	None	One payment prior to building permit; can apply for 2 year deferral	No automatic inflation adjustments.	Exemptions for projects in Enterprise Zone, with certain 1st source hiring agreements & with primary uses that include manufacturing wholesale, and urgent care, hospitals, intermediate care & nursing homes.
San Francisco	1996	Fees vary by use, size and date of permit application. Highest fees are for office projects > 50,000 SF and range from $46.98 to $69.60. Lab fees range from $31.43 to 38.37.	Increase by 25,000 SF or more by any combination of entertainment, hotel, office, laboratory, retail, and/or Small Enterprise Workspace		Prior to certificate of occupancy	Annual adjustment per changes in the Annual Infrastructure Construction Cost Inflation Estimate prepared by City's Capital Planning Group.	Free-standing pharmacies <50.000 SF and grocery stores <75,000 SF are exempt.
San Jose	2020	Fees vary from 0 to $15.79 by use, location in one of four districts and timing of payment. Highest fee for downtown office use.	Office & Industrial R&D above 50,000 or 100,000 for some districts	None	By final building inspection date; 20% discount if paid before building permit	Annual adjustment per changes in the Engineering News Record (ENR) Construction Cost Index.	
Seattle	2015	Fees vary by detailed development zone within the downtown/SM-SLU/SM-U 85 area vs. outside, by commercial vs. residential use, & date vested in Land-use code. Commercial rates range from $9.76 to $25.30.	4,000 SF for commercial uses	4,000 SF; may vary by zone	Prior to master use permit or building permit	Annual CPI adjustment.	Applies to any project with rezoning that increases the maximum height or floor area ratio (FAR), or establishes a different zoning designation.

Source: Karl F. Seidman Consulting Services

Administrative and Policy Issues

Beyond setting the linkage fee rate, Somerville is considering several changes to its linkage policies and their administration. The following five policy changes are reviewed in this section:

- Changing the project threshold for housing linkage fees to 10,000 SF, 15,000 Sf or 20,000 SF;

- Establishing a graduated housing linkage fee rate;
- Altering the 30,000 SF housing exemption;
- Synchronizing payment schedules for the jobs and housing linkage fees; and
- Creating incentives to encourage faster fee payment.

Changing the Housing Project Size Threshold

Although lowering the project threshold to 10,000 SF, 15,000 SF or 20,000 SF would add to the number of projects subject to linkage payments, it would generate a modest addition to linkage revenue. **Table 5-2** and **Table 5-3** present the total SF subject to linkage for completed projects over the past ten years and the City's current development pipeline, respectively.

Over the past 10 years, there were 36 completed projects between 10,000 SF and 30,000 SF with 59,419 non-residential SF subject to housing linkage, which would have generated $667,275 in additional housing linkage fees at the current $11.23 rate. A large part of this space was ground floor retail use in mixed-use housing developments. Fifteen of these projects were between 15,000 SF and 30,000 SF with 35,768 SF subject to housing linkage fees that would have yielded another $401,675 in housing linkage fees under the current rate. Over this period, eight projects between 20,000 SF and 30,000 SF were built with 28,462 SF subject to linkage fees, which equal $319,628 in additional housing linkage fees.

Table 5-2. Additional Square Feet Subject to Housing Linkage by Use, Completed Projects 2012 to May 2022

Completed Projects	Retail SF	Commercial SF	Hotel SF	Total SF Subject to Linkage	Number of Projects
Buildings 10,000 to 30,000 SF	54,669	4,750	0	59,419	36
Buildings 15,000 to 30,000 SF	31,018	4,750	0	35,768	15
Buildings 20,000 to 30,000 SF	28,462	0	0	28,462	8

Source: City of Somerville and Karl F. Seidman Consulting Services

Somerville's development pipeline[30] includes 22 projects between 10,000 SF and 30,000 SF with 63,857 SF subject to housing linkage. If all of these projects are built over the next ten years, they would provide an additional $717,114 in revenue from housing linkage fees. The current pipeline is more balanced between stand-alone commercial projects, hotel projects and mixed-use retail space than the 36 completed projects in Table 5-2. Since 87% of the square feet in the pipeline are in projects between 10,000 and 20,000 SF, a reduction in the threshold to 10,000 SF or 15,000 SF would have more impact than setting the threshold at 20,000 SF.

A reduction in the threshold would be accompanied by a comparable reduction in the exemption amount since having an exemption larger than the project threshold would eliminate any impact from the threshold change. A lower exemption would increase housing linkage fees on projects above the current 30,000 SF threshold, and this added revenue is much larger than the fees that would be collected on smaller projects below 30,000 SF. Based on projected development of 2.6 million SF over the next ten years, reducing the threshold and exemption to 10,000 SF would

[30] The pipeline includes projects with a building permit but not under construction, approved and under review as of May 2022.

generate another $3.14 million in housing linkage revenue while reducing the threshold and exemption to 5,000 SF would add $2.36 million. If the threshold and exemption were changed to 20,000 SF, the current pipeline if fully built would yield $1.57 million in additional housing linkage fees. However, this increased revenue could be achieved by reducing the current exemption without changing the project size threshold.

Somerville developers had mixed views on lowering the project threshold and its impact. Most felt it would have little impact on their planned projects, which are much larger, but some developers viewed it as hurting smaller projects and local businesses.

Table 5-3. Additional Square Feet Subject to Housing Linkage by Use, Somerville Development Pipeline as of May 2022

Pipeline Projects	Retail SF	Commercial SF	Hotel SF	Total SF Subject to Linkage	Number of Projects
Buildings 10,000 to 20,000 SF	13,382	24,552	17,558	55,492	16
Buildings 15.000 to 30,000 SF	12,925	20,622	17,558	51,105	10
Buildings 20,000 to 30,000 SF	8,365	0	0	8,365	6

Source: City of Somerville and Karl F. Seidman Consulting Services

Graduated Fee Schedule

Two alternative graduated fee schedules were analyzed: (1) a three-tier schedule in which projects between 10,000 SF and 20,000 SF pay one-third of the full fee; projects between 20,000 SF and 30,000 SF pay two-thirds of the full fee; and projects of 30,000 SF or more pay the full fee; and (2) a two-tier schedule in which projects between 15,000 and 30,000 SF pay one-half of the full fee and projects of 30,000 SF or more pay the full fee.

Table 5-4 presents the impact of the three-tier graduated fee schedule option on linkage fee revenue, based on the development pipeline. This graduated fee schedule has a relatively small impact on housing linkage revenue. Under the current $11.23 rate, it would lower fee payments by $447,000. Under a $20 fee increase, the "lost" revenue compared to applying the full rate to all projects over 10,000 SF would be $1.2 million. Therefore, a graduated fee rate would lessen the financial burden on smaller projects of lowering the project threshold to 10,000 SF without a significant reduction in linkage revenue. It should be noted that graduated fees duplicate the impact of lowering the exemption with a lower project threshold since the lower exemption reduces the fees paid and effective rate for small projects. For example, a 10,000 SF exemption would reduce housing linkage fees by half on a 20,000 SF project since it would only pay fees on the square feet amount above 10,000 SF.

Table 5-4. Impact of a Three-Tier Graduated Housing Linkage Fee Schedule on Linkage Fee Revenue

		Project Size in Square Feet (SF)			
Projects Subject to Linkage Fee		**10-20,000**	**20-30,000**	**30,000+**	**Total**
Number of Projects		16	6	14	36
Total SF		55,492	8,365	2,192,800	2,256,657
Percent to Total		2.5%	0.4%	97.2%	100.0%
		Linkage Fee Revenue by Project Size			
Linkage Fee Scenarios		**10-20,000**	**20-30,000**	**30,000+**	**Total**
Current Linkage Fee	$11.23	$623,175	$93,939	$24,625,144	$25,342,258
$5 fee increase	$16.23	$900,635	$135,764	$35,589,144	$36,625,543
$10 fee increase	$21.23	$1,178,095	$177,589	$46,553,144	$47,908,828
$20 fee increase	$31.23	$1,733,015	$261,239	$68,481,144	$70,475,398
Percent to Total		*2.5%*	*0.4%*	*97.2%*	*100.0%*
Fee Discount for Small Projects		**66.7%**	**33.3%**		
		Discounted Fee Revenue by Project Size			
Linkage Fee Scenarios		**10-20,000**	**20-30,000**	**30,000+**	**Total**
Current Linkage Fee		$207,517	$62,657	$24,625,144	$24,895,319
$5 fee increase		$299,912	$90,555	$35,589,144	$35,979,610
$10 fee increase		$392,306	$118,452	$46,553,144	$47,063,902
$20 fee increase		$577,094	$174,246	$68,481,144	$69,232,484
Percent to Total		*0.8%*	*0.3%*	*98.9%*	*100.0%*

Note: The number of projects and total SF subject to the linkage fee for projects with less than 30,000 SF are based on development projects permitted & under review by the City of Somerville, as of May 2022. The number and total SF subject to the linkage fee for the projects with more than 30,000 SF are based on the development projections prepared for this nexus study.

Source: City of Somerville, Karl F. Seidman Consulting Services, and ConsultEcon, Inc.

Table 5-5 presents the impact of the two-tier graduated fee schedule option on linkage fee revenue from the development pipeline. The analysis in Table 5-5 shows that this second scenario results in a slightly lower reduction in housing linkage fee revenue than the three-tier option. Under the current $11.23 fee, housing linkage revenue declines by $287,000 under the two-tier fee schedule. With a $20 fee increase, the two-tier schedules reduces revenue by $798,000.

Table 5-5. Impact of a Two-Tier Graduated Housing Linkage Fee Schedule on Linkage Fee Revenue

		Project Size in Square Feet (SF)		
Projects Subject to Linkage Fee		**15-30,000**	**30,000+**	**Total**
Number of Projects		10	14	24
Total SF		51,105	2,192,800	2,243,905
Percent to Total		2.3%	97.7%	100.0%
		Linkage Fee Revenue by Project Size		
Linkage Fee Scenarios		**15-30,000**	**30,000+**	**Total**
Current Linkage Fee	$11.23	$573,909	$24,625,144	$25,199,053
$5 fee increase	$16.23	$829,434	$35,589,144	$36,418,578
$10 fee increase	$21.23	$1,084,959	$46,553,144	$47,638,103
$20 fee increase	$31.23	$1,596,009	$68,481,144	$70,077,153
Percent to Total		*2.3%*	*97.7%*	*100.0%*
Fee Discount for Small Projects		**50.0%**		
		Discounted Fee Revenue by Project Size		
Linkage Fee Scenarios		**15-30,000**	**30,000+**	**Total**
Current Linkage Fee		$286,955	$24,625,144	$24,912,099
$5 fee increase		$414,717	$35,589,144	$36,003,861
$10 fee increase		$542,480	$46,553,144	$47,095,624
$20 fee increase		$798,005	$68,481,144	$69,279,149
Percent to Total		*1.2%*	*98.8%*	*100.0%*

Note: The number of projects and total SF subject to the linkage fee for projects with less than 30,000 SF are based on development projects permitted & under review by the City of Somerville, as of May 2022. The number and total SF subject to the linkage fee for the projects with more than 30,000 SF are based on the development projections prepared for this nexus study.

Source: City of Somerville, Karl F. Seidman Consulting Services, and ConsultEcon, Inc.

Altering the Housing Exemption

As noted in the above discussion, an exemption on the amount of a building's gross floor area subject to linkage fees is an important policy that impacts overall linkage revenue and the financial impact of the fee rate on development projects. Somerville currently applies a 30,000 SF exemption for housing linkage fees—higher than the 15,000 SF exemption for the jobs linkage.

Somerville might consider three changes to its housing linkage exemption policy, based on the current project threshold:

1. Retain its current 30,000 SF exemption;
2. Reduce the exemption to 15,000 SF to match the jobs linkage exemption; and
3. Eliminate the exemption entirely.

The policy case and advantage of the exemption is that it lowers the effective linkage fee and financial burden on smaller projects, which can be more challenging to undertake as they have less space and rental income to cover land costs and other fixed development expenses. It also serves to increase the share of linkage revenue paid by larger projects that are likely to have higher financial returns and a greater financial capacity to absorb the fee. This is especially true now with lab projects, which command high rents, constituting most of Somerville's large non-residential development projects.

The case against an exemption is twofold. First, the exempt space still generates employment and the associated impacts that linkage fees are designed to mitigate. Thus, collecting a fee on all of a project's non-residential space aligns with having all space that generates an affordable housing impact contribute to addressing this need. Second, an exemption increases the required fee rate needed to raise a given amount of revenue; with a portion of the space not paying the fee, a larger fee needs to be levied on the remaining space. To the extent developers and investors pay more attention to the fee rate, rather than the details of linkage policies, a higher linkage fee rate may have more impact on perceptions of the cost of doing business in Somerville than a lower fee without an exemption.

Keeping the current exemption level would maintain the current policy of having larger projects contribute more and pay a larger share of overall linkage revenues, and minimizing the impact of linkage fees on small- and medium-size projects. Reducing the exemption to 15,000 SF would simplify administration and create a more uniform policy between housing and jobs linkage and shift some of the responsibility for housing linkage to smaller projects. Eliminating the exemption would allow for a lower overall linkage fee rate and more comparable linkage payments that are directly proportional to a project's amount of non-residential space for all projects above the linkage threshold.

Synchronizing the Payment Schedule

Somerville has different time periods and initial payment dates for housing and jobs linkage fees, as shown in **Table 5-6.** These different fee schedules create administrative complexity for the City, may create some confusion among developers and slow the collection of housing linkage fees, which begin later and extend over a longer period than payments for jobs linkage. Thus,

synchronizing these payments allows Somerville to simplify its administration of the linkage program while collecting fee revenue more quickly.

Table 5-6. Comparison of Housing and Jobs Fee Payment Schedule

Fee Type	Initial Payment	Number of Payments
Jobs Fee	Building Permit	2
Affordable Housing Fee	Certificate of Occupancy	3

Source: City of Somerville and Karl F. Seidman Consulting Services

Our analysis considered the impact of fee synchronization from two perspectives: (1) the financial benefit to the City of receiving revenue more quickly; and (2) the financial cost to developers and the resulting impact on projected financial returns. Three options for synchronizing the payment schedule were analyzed:

1. two payments with one due at building permit date and the second at the certificate of occupancy date;
2. a single payment at building permit date; and
3. a single payment at certificate of occupancy date.

Present value calculations were made to compare the different streams of linkage fee revenue from the 2.6 million SF of projected new development under current linkage fee rates. These calculations used a 3.5% discount rate, an estimate of Somerville's interest rate on City debt over a three-year to five-year period, to convert the linkage payments under each schedule to comparable values at the building permit date—the earliest time of fee payment (see **Table 5-7**). Under the current fees and payment schedule, the present value of linkage payments for the projected development would be $28.6 million dollars. Synchronizing payments based on the jobs linkage two payment schedule would increase the present value by $1.59 million to $30.2 million. The highest present value of $31.3 million dollars would occur with synchronizing both fees via a single payment at the building permit date.

Table 5-7. Present Value of Linkage Fee Payments to Somerville Under Synchronization Options

Payment Schedule	Present Value of Payments at Building Permit Date (3.5% Discount Rate)	Change in Present Value from Current Schedule
Current Schedule	$28,607,261	NA
2 Payments at BP and COO Dates	$30,194,519	$1,587,258
1 Payment at COO Date	$29,156,194	$548,933
1 Payment at BP Date	$31,232,844	$2,625,583

Source: Karl F. Seidman Consulting Services

To assess the impact of synchronization on developer payments and return, a similar present value analysis was done for the three payment options using a 200,000 SF project. However, higher discount rates (6.5% and 10%) were used to approximate the cost of capital for developers under different mixes of debt and equity. **Table 5-8** shows the present value calculations under each option and the change from the current schedule. Under all three options, the present value of developer fee payments increases, from a low of $70,536 under one payment at the COO date and a 6.5% discount to rate to a high of almost $781,000 under one payment at the building permit date and a 10% discount rate. However, the higher present value of fee payments, when added to total development costs, had minimal impact on the return on cost for developers (see **Table 5-9**). For a lab development at high estimated development costs of $1,300 per square foot (PSF), the largest impact on developer returns was a decline of 1.9 basis points[31] from 6.365% to 6.346%, with single payment at the building permit date. With a lower development cost of $1,100 PSF, the impact on developer returns was slightly higher but still minimal; the greatest impact was a 2.7 basis point drop from 7.522% to 7.496%.

Table 5-8. Present Value of Developer Linkage Payments Under Synchronization Options

Payment Schedule	Present Value of Payments at Building Permit Date (6.5% Discount Rate)	Change in Present Value from Current Schedule	Present Value of Payments at Building Permit Date (10% Discount Rate)	Change in Present Value from Current Schedule
Current Schedule	$2,061,184	NA	$1,637,074	NA
2 Payments at BP & COO Dates	$2,274,785	$213,601	$2,208,037	$570,962
1 Payment at COO Date	$2,131,720	$70,536	$1,998,223	$361,149
1 Payment at BP Date	$2,417,850	$356,666	$2,417,850	$780,776

Source: Karl F. Seidman Consulting Services

[31] A basis point is 1/100th of a percentage point.

Table 5-9. Impact of Payments Synchronization Options on Developer Financial Returns

Development at $1300 PSF	Current Payment Schedule	2 Payments at BP and COO Dates	One Payment at COO	One Payment at BP
Total Development Costs without Fee	$260,000,000	$260,570,962	$260,361,149	$260,780,776
Estimated Gross Rental income	$17,420,000	$17,420,000	$17,420,000	$17,420,000
Vacancy	$871,000	$871,000	$871,000	$871,000
Net Rental Income	$16,549,000	$16,549,000	$16,549,000	$16,549,000
Return on Cost	6.365%	6.351%	6.356%	6.346%
Differential		**-0.014%**	**-0.009%**	**-0.019%**
Development at $1100 PSF				
Total Development Costs without Fee	$220,000,000	$220,570,962	$220,361,149	$220,780,776
Estimated Gross Rental income	$17,420,000	$17,420,000	$17,420,000	$17,420,000
Vacancy	$871,000	$871,000	$871,000	$871,000
Net Rental Income	$16,549,000	$16,549,000	$16,549,000	$16,549,000
Return on Cost	7.522%	7.503%	7.510%	7.496%
Differential		**-0.019%**	**-0.012%**	**-0.027%**

Source: Karl F. Seidman Consulting Services

Incentives for Faster Fee Payment

An alternative to changing the linkage fee payment schedule is providing incentives to encourage developers to accelerate their payments, ideally by providing a single up-front payment prior to the building permit date, or perhaps the COO date for housing fees. Somerville has two main options to incentivize faster payment. First, it could provide a flat discount for making full payment of the linkage obligation prior to a set date. San Jose uses this approach, providing a 20% discount for payment of affordable housing linkage before the building permit date. A second option is to a apply a discount rate to scheduled 2-year job payments and/or 3-year housing payments to allow payment of a present value equivalent. To provide a strong incentive, the discount rate would need to be close to a developer's cost of capital. This would entail a discount rate in the 7% to 12% range, based on projects with debt/equity ratio of 70%/30%, although this range, and an effective discount rate, would change as interest rates and financial market conditions change.

A flat discount has the advantage of predictability and simplicity compared to setting and applying a discount rate to determine a present value, as the discount rate would need to be updated regularly or pegged to a market benchmark or index.

Impact on Somerville's Competitiveness for Attracting Development and Companies

An important consideration in establishing the housing contribution rate is its potential impact on attracting new development and tenants. A housing linkage fee will increase development costs. Developers can offset this addition by either paying less for their development site, reducing other development costs or collecting higher rents from tenants. When developers are unable to offset the added costs, e.g., if they acquired their site before the linkage fee was established or market conditions prevent them from increasing rents, the higher costs will reduce the return on investment for the developer and its investment partners. Since the impact of a new linkage fee on the economics of development is not certain and can vary under different circumstances, this section analyzes three ways in which a linkage fee may affect Somerville's competitive position for economic development:

1. The cost of the linkage fee is passed on to tenants as higher rents. If the rent increase is large, then it may affect Somerville's competitiveness in attracting businesses to new development projects.
2. The linkage fee cost is fully paid by developers without any rent increase or offsetting reduction in acquisition or other development costs. With higher development costs and the same rental income, developers will experience a reduction in their financial return for the project. Many developers have a return threshold that a project must meet to be deemed financially feasible and to be undertaken. If the added cost of the linkage fee significantly reduces the financial return, developers may forego undertaking a project in Somerville and pursue opportunities in other communities. A developer's return on cost[32], a common financial return measure that developers use to assess project feasibility, is used for this analysis to assess the potential impact of linkage fee options.
3. The linkage fee cost is fully paid by the project's equity investors without the cost passed on as a rent increase, offset by lower acquisition and/or other development costs, or increase in project debt financing. Developers need to raise equity financing to cover the portion of project costs that cannot be financed with debt. If the full cost of the linkage fee must be financed by equity, it will reduce the equity investors' return on investment since they will be providing more capital but the project's income will not increase. If the cost of the linkage significantly reduces their investment return, then equity investors may choose not to invest in Somerville projects. The inability to raise sufficient equity investment might prevent some developers from being able to undertake projects and reduce future investment in Somerville.

Potential Impact on Rents

Table 5-10 shows the dollar and percentage impact on Somerville laboratory rents for the $47.88 maximum linkage fee increase and additional options ranging from a $5 to $20 fee increase. The maximum fee, if fully passed on to tenants, would increase annual rent by $4.79 per SF—a 5% increase. Lower fee increases have a smaller impact on rents, ranging from .5% for a $5 increase to 2.1% for a $20 increase, and are modest in light of the large growth in lab rents during recent years and current rates of inflation.

[32] Return on cost is the ratio of a project's net income to its total development costs.

Table 5-10. Impact of Linkage Fee Options on Somerville Lab Rents

Linkage Fee Increase Level	Potential Impact on Annual Per Square Foot Rent*	Percent of Somerville Class A Lab Rent
$5 per square foot	$0.50	0.5%
$10 per square foot	$1.00	1.1%
$20 per square foot	$2.00	2.1%
$47.88 per square foot	$4.79	5.0%
*Fee cost amortized over a 10 year lease		

Source: Karl F. Seidman Consulting Services

To assess the impact of these potential rent increases on competition for tenants, **Table 5-11** compares lab rents for Somerville, Watertown, East and West Cambridge, Boston's Seaport District and the 128-MassPike suburban market area. Somerville lab rents are below most of its competing locations-ranging from $5 below Watertown to $30 below East Cambridge. Somerville rents are comparable to those in West Cambridge and $10 above those in the 128-MassPike market area. As an emerging market without a cluster of life science lab space and firms, it is important for Somerville to maintain a rent advantage over more established lab locations. The maximum increase of $47.88 PSF would eliminate Somerville's advantage over Watertown and make it more costly than West Cambridge—two important competing locations. Smaller increases in the $5 to $20 ranges will allow Somerville to maintain its lower rent vis-à-vis Watertown and remain close to West Cambridge.

Table 5-11. Lab Rents in Somerville and Competing Market locations

Location	Class A Lab Asking Rent	Differential from Somerville
Somerville	$95	
Boston Seaport	$105	$10
Boston-Longwood/Fenway	$108	$13
East Cambridge	$125	$30
West Cambridge	$95	$0
128-MassPike	$85	-$10
Watertown	$100	$5

Source: CRESA Greater Boston Life Science 2022 Market Insight Report & CBRE Boston Metro Lab Report 4Q21

Impact of Developer Returns

Table 5-12 shows the impact of the additional linkage fee costs on developers' financial return, under the maximum fee increase and several alternatives, for a 200,000 SF lab project with ground floor retail space under high-cost ($1300/SF) and low-cost ($1100/SF) development scenarios[33]. The maximum fee increase of $47.88 is based on the maximum warranted housing linkage fee of $58.28 and a maximum jobs fee of $3.85 based in the 40% resident employment and low-supply education and training scenario. Under the maximum fee, development costs increase by $8.152

[33] A lab project was chosen since lab development accounts for almost all of the current pipeline of non-residential development in Somerville.

million, which reduces the project's return on cost under high development costs from 6.37% to 6.18%--a decline of 19 basis points, and from 7.53% to 7.26% (a 27 basis point drop) with the low-cost development scenario.

This level of increase is unlikely to prevent lab projects at the lower development costs from going forward but could make some projects with high development costs of $1300 PSF infeasible, since they are currently at the low end of return thresholds without a fee increase.

Fee increases in the $5 to $20 range have modest impacts on developer returns, reducing them between 2 and 11 basis points. This level of change in developer returns is unlikely to make a project infeasible and prevent its development—a developer willing to undertake a project with a 6.4% or 7.5% return is likely to still view the project as viable at a 6.3% or 7.4% return.

Table 5-12. Estimated Impact of Linkage Fee Options on Development Costs and Developer Returns

Lab Development at $1300 PSF	No Fee Increase	$47.88 Maximum Fee Increase	$20 Housing Fee Increase	$10 Housing Fee Increase	$5 Housing Fee Increase
Total Development Costs without	$260,000,000	$268,152,050	$263,400,000	$261,700,000	$260,850,000
Estimated Gross Rental income	$18,410,000	$18,410,000	$18,410,000	$18,410,000	$18,410,000
Vacancy	$1,841,000	$1,841,000	$1,841,000	$1,841,000	$1,841,000
Net Rental Income	$16,569,000	$16,569,000	$16,569,000	$16,569,000	$16,569,000
Return on Cost	6.37%	6.18%	6.29%	6.33%	6.35%
Differential		**-0.19%**	**-0.08%**	**-0.04%**	**-0.02%**
Lab Development at $1100 PSF	**No Fee Increase**	**$47.88 Maximum Fee Increase**	**$20 Housing Fee Increase**	**$10 Housing Fee Increase**	**$5 Housing Fee Increase**
Total Development Costs without	$220,000,000	$228,152,050	$223,400,000	$221,700,000	$220,850,000
Estimated Gross Rental income	$18,410,000	$18,410,000	$18,410,000	$18,410,000	$18,410,000
Vacancy	$1,841,000	$1,841,000	$1,841,000	$1,841,000	$1,841,000
Net Rental Income	$16,569,000	$16,569,000	$16,569,000	$16,569,000	$16,569,000
Return on Cost	7.53%	7.26%	7.42%	7.47%	7.50%
Differential		**-0.27%**	**-0.11%**	**-0.06%**	**-0.03%**

Source: Karl F. Seidman Consulting Services

Impact on Investor Returns

Table 5-13 summarizes the potential impact of linkage fee options on the financial returns for equity investors under the low-cost ($1100/SF) and high-cost ($1300/SF) development cost scenarios for a 200,000 SF lab project with ground floor retail space. This scenario assumes that equity investors finance 40% of total development costs without the linkage fee and then finance 100% of the additional development costs due to the linkage fees.

Table 5-13. Estimated Impact of Linkage Fee Options on Equity Investor Returns

$1300 PSF Cost	No Fee Increase	$47.88 Maximum Fee Increase	$20 Housing Fee Increase	$10 Housing Fee Increase	$5 Housing Fee Increase
Equity Investment	$104,000,000	$112,152,050	$107,400,000	$105,700,000	$104,850,000
Equity Return @12%	$12,480,000	$12,480,000	$12,480,000	$12,480,000	$12,480,000
Adjusted Return with Fee		11.13%	11.62%	11.81%	11.90%
Differential		**-0.87%**	**-0.38%**	**-0.19%**	**-0.10%**
Equity Return @ 20%	$20,800,000	$20,800,000	$20,800,000	$20,800,000	$20,800,000
Adjusted Return with Fee		18.55%	19.37%	19.68%	19.84%
Differential		**-1.45%**	**-0.63%**	**-0.32%**	**-0.16%**
$1100 PSF Cost	**No Fee Increase**	**$47.88 Maximum Fee Increase**	**$20 Housing Fee Increase**	**$10 Housing Fee Increase**	**$5 Housing Fee Increase**
Equity Investment	$88,000,000	$96,152,050	$91,400,000	$89,700,000	$88,850,000
Equity Return @12%	$10,560,000	$10,560,000	$10,560,000	$10,560,000	$10,560,000
Adjusted Return with Fee		10.98%	11.55%	11.77%	11.89%
Differential		**-1.02%**	**-0.45%**	**-0.23%**	**-0.11%**
Equity Return @ 20%	$17,600,000	$17,600,000	$17,600,000	$17,600,000	$17,600,000
Adjusted Return with Fee		18.30%	19.26%	19.62%	19.81%
Differential		**-1.70%**	**-0.74%**	**-0.38%**	**-0.19%**

Source: Karl F. Seidman Consulting Services

This analysis assumes that equity investors finance 40% of total development costs without the linkage fee increase and then finance 100% of the additional development costs due to the linkage fee increases, and that their required return is 20%. Since developers reported a range of required returns for equity investors from 12% at the low end to 20% at the high end, the analysis was conducted for these two return thresholds.

The annual percentage return on equity is reduced due to the added investment capital needed to fund linkage fee costs. At the maximum fee increase of $47.88 PSF, equity investment returns decrease from 12% to 11.13% and from 20% to 18.55% at the higher development cost level ($1300 per SF). With the lower $1100 per SF development costs, equity returns drop from 12% to 10.98% and from 20% to $18.30%. These impacts are large enough to deter investment from some equity investors and make it more difficult for developers to raise needed capital to undertake projects. The impact is considerably less with lower fee increases between $5 and $20 options, with the reductions in investor returns ranging from a low of 10 basis points to a high of 74 basis points. Whether these impacts are large enough to deter equity investment in Somerville projects will depend on how strictly investors stick to their return threshold and the availability of alternative investments that will meet the 12% or 20% return requirement. With linkage fee increases up to $20, investors with a 12% target return would still be within 45 basis points of their threshold and earning over 11.5%, and investors seeking a 20% return will be within 75 basis points and able to earn an estimated 19.25%

When weighed across all three potential impacts, increasing Somerville's linkage fees by an amount that is between $10 and $20 dollars is unlikely to make Somerville an uncompetitive location either for new laboratory development or for attracting future tenants to new development projects. When setting new linkage fees, Somerville should also consider how its fees will compare with Boston and Cambridge. As an emerging location for life science development,

Somerville should seek to keeps its overall fees and development costs below these two cities, which are highly desirable and established life science and office locations.

VIII. Recommended Linkage Fee Policies

The analysis detailed in this report supports an increase in Somerville's housing linkage fee rates and continuation of the jobs linkage fee at its current rate. Projected new construction of 2.613 million square feet in new non-residential development over the next ten years is expected to generate 6,174 jobs. This employment growth will create demand for 367 new units of affordable housing and a need for education and training services to secure access to these jobs for the city's low-income and moderate-income workers. An estimated financing gap of $127.8 million will exist to reach the $211.7 million in total development costs necessary to build an additional 367 housing units. For workforce development services, a funding gap of $6.7 million to $8.6 million is needed to ensure resident access to 40% of the entry-level and middle-skill jobs generated by this development. The maximum warranted housing and jobs exactions to fill these financing gaps are $58.28 per square foot and $3.58 per square foot, respectively, under Somerville's current linkage policies with a 30,000 SF exemption for the housing linkage fee and 15,000 SF exemption for the jobs linkage fee. Several existing linkage policies would benefit from updating to simplify their administration and align policies for the two fees.

The following recommendations advance two goals: (1) simplifying linkage fee policies and administration to provide consistency across both fees and generate housing linkage revenue more quickly; and (2) addressing the need for increased linkage revenue to mitigate the impacts of future development while ensuring that Somerville remains a competitive location for investment and economic development.

Administrative and Policy Changes

The following changes are recommended to simplify and update Somerville's linkage policies:

- **Lower the project size threshold and exemption for the housing linkage fee to 15,000 SF to match the current levels for the job linkage fee.** This change will create consistency in how housing and jobs linkage fees are applied and calculated, simplifying their administration and reducing the potential for confusion or miscalculation within the development community.
- **Establish a graduated housing linkage fee rate for projects**. Lowering the project size threshold to 15,000 SF for the housing linkage fee will generate funds to mitigate housing impacts generated by these projects but also add a new development cost to smaller projects, which face more challenges to financial viability than larger projects. To reduce this financial impact, Somerville should establish a graduated housing linkage fee schedule in which projects with at least 15,000 SF pay 50% of the full housing linkage fee for square footage between 15,000 and 30,000 and pay the full housing linkage fee for the square footage above 30,000.
- **Change the housing linkage fee payment schedule to mirror the jobs linkage payment schedule.** This change will shorten the current housing fee payment schedule from three payments beginning at the certificate of occupancy date to two payments occurring at the building permit date and certificate of occupancy date. Synchronizing payments for both fees will simplify fee administration and collection for the City while allowing faster

collection and deployment of funds to build affordable housing. As shown earlier in the report, this change in the payment schedule has minimal impact on financial returns to developers.

Housing and Job Fee Recommendations

The impact of new development on the demand for affordable housing justifies an increase in Somerville's housing linkage fees. With the large need for affordable housing throughout the Boston region and increasing construction and financing costs to build affordable housing, the share of required subsidies that Somerville can secure from federal and state funds may decline over the next decade. Moreover, Somerville will need to use some these state and federal sources to address affordable housing needs beyond those generated by new development. For these reasons, Somerville should increase its housing linkage fee to supply a higher share of the required funding gap than the 11% share in MHP financed projects completed from FY2016 to FY2020.

It is recommended that Somerville set a new housing linkage fee of $22.46, or twice its current fee. This level is well below the maximum warranted fee of $58.28 and over $10 below Cambridge's $33.34 rate. Moreover, the financial analysis conducted in the report indicates that a fee increase of $11.23 is unlikely to impact Somerville's competitiveness in either attracting development investment or tenants. The estimated impact on developer returns is less than 10 basis points and the impact on equity investor returns is the 20 to 40 basis point range. These modest impacts, by themselves, are unlikely to deter investment. If fully passed on to tenants, it will allow Somerville lab rents to remain below those in Boston, Cambridge and Watertown.

No increase or change in Somerville's current job linkage fee is recommended. Somerville's current fee of $2.75 is sufficient to address the estimated funding gap for provide job training and education services needed to prepare Somerville low- and moderate-income workers for over 30% of the new jobs at new development projects.

The above recommendations and analyses were formulated for linkage fees alone. In setting the final fee rates, the City should consider additional fees or exactions that may be implemented and their combined impact on the economics of development and Somerville's competitive position.

Appendix A: Tables Detailing Housing Subsidy Analysis

Table A-1. Illustrative Distribution of Affordable Rental Housing Units by Number of Bedrooms and Building Area

	Number of Units	Average Unit Size	Total Living Area
One-Bedroom	74	700	51,800
Two-Bedroom	65	950	61,750
Three-Bedroom	143	1,150	164,450
Total Units	**282**	**986**	**278,000**
Net Square Feet as a Percent of Gross Square Feet			80.0%
Total Gross Square Feet (GSF) (Rounded)			**348,000**
Average Unit Size per GSF			***1,234***

Source: Karl F. Seidman Consulting Services; and ConsultEcon, Inc.

Table A-2. Affordable Ownership Housing Units by Number of Bedrooms and Building Area

	Number of Units	Average Unit Size	Total Living Area
One-Bedroom	8	700	5,600
Two-Bedroom	6	950	5,700
Three-Bedroom	71	1,150	81,650
Total Units	**85**	**1,094**	**92,950**
Net Square Feet as a Percent of Gross Square Feet			80.0%
Total Gross Square Feet (GSF) (Rounded)			**116,000**
Average Unit Size per GSF			***1,365***

Source: Karl F. Seidman Consulting Services; and ConsultEcon, Inc.

Table A-3. Conversion of Ownership Unit Household Income by Persons to Household Income by Bedrooms

Household Size	Annual Income [1/]	Number of Households [2/]	Aggregate Income
Calculation of Aggregate Income			
Low-Income Households			
1-Person	$37,873	3	$113,619
2-Persons	$38,412	3	115,235
3-Persons	$43,113	1	43,113
4-Persons	$43,970	1	43,970
Total	**$39,492**	**8**	**$315,936**
Moderate-Income Households			
1-Person	$53,255	2	$106,510
2-Persons	$60,291	0	0
3-Persons	$92,364	1	92,364
4-Persons	$102,226	3	306,677
Total	**$84,258**	**6**	**$505,551**
Middle-Income Households			
1-Person	$93,760	17	$1,593,928
2-Persons	$107,406	32	3,436,989
3-Persons	$110,757	11	1,218,332
4-Persons	$116,933	11	1,286,259
Total	**$106,134**	**71**	**$7,535,509**

	One-Bedroom	Two bedroom	Three-Bedroom	All Units
Distribution of Units by Number of Bedrooms				
1-Person	100%	0%	0%	100%
2-Persons	20%	80%	0%	100%
3-Persons	0%	80%	20%	100%
4-Persons	0%	0%	100%	100%
Low-Income Households				
Distribution of Low-Income Aggregate Income by Unit Size				
1-Person	$113,619	$0	$0	$113,619
2-Persons	$23,047	$92,188	$0	115,235
3-Persons	$0	$34,490	$8,623	43,113
4-Persons	$0	$0	$43,970	43,970
Total	**$136,666**	**$126,678**	**$52,593**	**$315,936**
Total Units by Size [2/]	**4**	**3**	**1**	**8**
Avg. Income per Unit by Size	***$34,166***	***$42,226***	***$52,593***	***$39,492***
Moderate-Income Households				
Distribution of Low-Income Aggregate Income by Unit Size				
1-Person	$106,510	$0	$0	$106,510
2-Persons	0	0	0	0
3-Persons	0	73,891	18,473	92,364
4-Persons	0	0	306,677	306,677
Total	**$106,510**	**$73,891**	**$325,150**	**$505,551**
Total Units by Size [2/]	**2**	**1**	**3**	**6**
Avg. Income per Unit by Size	***$53,255***	***$73,891***	***$108,383***	***$84,258***
Middle-Income Households				
Distribution of Moderate-Income Aggregate Income by Number of Bedrooms				
1-Person	$1,593,928	$0	$0	$1,593,928
2-Persons	687,398	2,749,591	0	3,436,989
3-Persons	0	974,666	243,666	1,218,332
4-Persons	0	0	1,286,259	1,286,259
Total	**$2,281,326**	**$3,724,257**	**$1,529,925**	**$7,535,509**
Total Units by Size [2/]	**23**	**35**	**13**	**71**
Avg. Income per Unit by Size	***$99,188***	***$106,407***	***$117,687***	***$106,134***

1/ See Table 3-8. Weighted average annual household income based on anticipated mix of occupations and average occupational wages for based on projected commercial development in Somerville.

2/ See Table 3-6.

Source: City of Somerville; Karl F. Seidman Consulting Services; and ConsultEcon, Inc.

Table A-4. Sales Price Analysis by Unit Size / Number of Bedrooms based on Estimated Monthly Housing Costs Set at 30% of Household Income

Assumptions	Low-Income	Moderate-Income	Middle-Income	
Mortgage	4%	4%	7%	Assumed Down payment
	96%	96%	93%	Percent of Price covered by Mortgage
	5.67%	5.67%	5.67%	Mortgage interest rate [1/]
	NA	NA	NA	Private Mortgage Insurance [2/]
Real Estate Taxes	$10.19 per 1,000 of assessed values [3/]			
Residential Exemption	35% of sales price			
Annual Condo Fees	2% as a percent of Sales Price			

	One-Bedroom	Two-Bedroom	Three-Bedroom
Low-Income Households			
Sales Price	$109,830	$135,867	$169,246
Down payment	$4,393	$5,435	$6,770
Monthly Payment Calculation			
Mortgage Payment	$610	$755	$940
Real Estate Taxes	$61	$75	$93
Condo Fees	$183	$226	$282
Total Monthly Payment [4/]	**$854**	**$1,056**	**$1,315**
Moderate-Income Household			
Sales Price	$171,209	$237,664	$348,740
Down payment	$6,848	$9,507	$13,950
Monthly Payment Calculation			
Mortgage Payment	$951	$1,320	$1,937
Real Estate Taxes	$94	$131	$192
Condo Fees	$285	$396	$581
Total Monthly Payment [4/]	**$1,330**	**$1,847**	**$2,710**
Middle-Income Household			
Sales Price	$326,393	$350,092	$387,130
Down payment	$22,847	$24,506	$27,099
Monthly Payment Calculation			
Mortgage Payment	$1,756	$1,884	$2,083
Real Estate Taxes	$180	$193	$214
Condo Fees	$544	$583	$645
Total Monthly Payment [4/]	**$2,480**	**$2,660**	**$2,942**

1/ Average 30-year fixed mortgage rate for Massachusetts per Bankrate.com on August 24, 2022.

2/ All households qualify for the One Mortgage Program (http://www.mhp.net/homeownership/homebuyer/one_mortgage.php) that waives Private Mortgage Insurance (PMI) for first time homeowners through participating lenders.

3/ Source: City of Somerville.

4/ Assumes 30% of income.

Source: City of Somerville; Karl F. Seidman Consulting Services; and ConsultEcon, Inc.