CITY OF CAMBRIDGE
Community Development Department

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Assistant City Manager for Community Development

MEMORANDUM

To: Richard Rossi, City Manager
From: Iram Farooq, Assistant City Manager for Community Development
Date: April 6, 2016
Re: Inclusionary Housing Study

We are pleased to transmit the Cambridge Inclusionary Housing Study recently completed by David Paul Rosen & Associates. The attached study provides in depth analyses and recommendations for changes to the City's Inclusionary Housing Ordinance by:

- reviewing the current inclusionary housing provisions of the Zoning Ordinance and comparing these standards to inclusionary housing programs in other localities;
- analyzing changes in the socioeconomic profile of the city and housing affordability in the years since the adoption of the inclusionary housing provisions in 1998;
- modeling the economic impact of the current program on typical developments seen in the City and estimating the potential impact of increased set-asides of affordable housing; and,
- outlining policy options and recommendations for consideration as changes to the inclusionary housing provisions are discussed.

Key findings of the study include:

- increases in market rents and sales prices have outstripped increases in income in recent years;
- affordable housing created under the inclusionary housing provisions has become an increasingly critical source of new affordable housing as other mechanisms to expand the affordable stock have become more challenging;
- strengthening the inclusionary housing provisions is necessary to maintain an adequate stock of affordable housing and preserve the socioeconomic diversity of the city;
- inclusionary housing provisions may be increased to a certain extent without severely compromising the production of new market-rate housing.

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Background

The current inclusionary housing provisions were adopted in 1998 after two City-commissioned studies were completed. In one study completed in 1997, Peter Werwath and Associates recommended a framework for inclusionary housing provisions which became the basis for the current inclusionary housing provisions in the Zoning Ordinance. Then, a rationale study completed by Stockard, Engler & Brigham in 1998 recommended that for every 10 new market-rate housing units, 1.5 additional affordable units should be created to preserve the economic diversity of the community.

The inclusionary housing provisions apply to housing developments of 10 or more units, which include units that are affordable to households earning less than 80% of Area Median Income (AMI). The current provisions set a 15% affordable housing ratio. Most developments are eligible for an allowed 30% density bonus, which typically results in an effective affordable housing ratio of approximately 11.5% of units in many new market buildings. Developments that are not eligible for the density bonus provide a full 15% of total units as affordable. The density bonus is an important and intentional provision for which there is legal support. The application of the density bonus, however, has on occasion caused confusion about the expected number of affordable units in new buildings. There are currently 891 affordable units completed or now being developed through the inclusionary housing and similar zoning provisions. Inclusionary units have grown to become a significant component of the City's affordable housing stock and have been a critical means to create new units in recent years.

The Cambridge inclusionary housing provisions were cutting edge when adopted, and continue to be cited as a successful model for other communities. While the Cambridge program has been successful at creating new permanently affordable units, we wanted to examine the program in the context of current housing needs.

In 2014, CDD commissioned David Paul Rosen & Associates (DRA) to conduct a comprehensive new inclusionary housing study with the following objectives: to analyze the impact of new market rate residential development on housing affordability, housing supply, housing needs, demographic trends and socio-economic diversity in Cambridge; to recommend changes to the inclusionary housing provisions contained in Article 11.200 of the Cambridge Zoning

Ordinance; and to provide advice on current needs and best practices from inclusionary housing programs in other communities.

Founded in 1980, DRA provides affordable housing advisory services to public agencies, private lenders and investors, and residential developers. DRA has completed dozens of similar studies analyzing the economic impact of inclusionary housing provisions, nexus fees, housing mitigation measures, and regulatory reform on development in communities across the country, and has helped more than forty communities research and develop inclusionary housing programs and other affordable housing mitigation measures.

Comparison to Other Communities

DRA reviewed the Cambridge inclusionary housing provisions and compared these to similar provisions in other communities. DRA's comparison included communities selected by CDD staff along with communities identified by DRA as having model programs or policies and/or similar needs which would provide a worthy comparison. Communities included in this comparison included: Boston; Boulder, Colorado; Burlington, Vermont; San Francisco; Santa Monica, California; Somerville; and Washington, DC.

Overall, Cambridge's provisions compared favorably with those in other communities. Cambridge is unusual in that affordable units are built on-site in all cases, and are comparable to market units in terms of location, quality and size. While the typical effective set-aside ratio of 11.5% in Cambridge is "middle of the pack" compared to surveyed communities, DRA found that communities with higher set-aside ratios typically targeted higher income households for affordable units, and those with lower set-aside ratios targeted lower-income households. Unlike Cambridge, all but one other surveyed program had higher income limits for ownership than for rental housing. Density bonuses were offered in half of the surveyed programs. DRA also found that Cambridge's provisions are notable for their consistency and predictability, and for their success in creating mixed-income communities where high-quality affordable units are indistinguishable from market units.

Socioeconomic Diversity Analysis

DRA conducted a socioeconomic diversity analysis which analyzed how housing affordability and socioeconomic diversity in the city has changed in recent years by examining trends in market housing costs, affordable housing, household income distribution, and the affordable housing stock. DRA found that increases in market-rate rents and sales prices have outpaced increases in income, resulting in a reduction of overall housing affordability. Household income needed to afford market-rate rental and ownership housing has increased, making it more and more unlikely that a low or moderate-income households can find an affordable home on the market. Cost burdening (i.e., paying more than 30% of a household's gross income on housing) remains a significant issue for households earning under 80% AMI, and has become an increasing issue even for households earning up to 100% AMI.

DRA found that the household income characteristics of the city have changed significantly since 2000. The biggest changes were reductions in the proportion of moderate-income households (i.e. incomes between 50% and 80% AMI) which declined from 13% of the community in 2000 to 8% in 2011, and lower-middle-income households (i.e. incomes between 80% and 100% AMI) which declined from 14% in 2000 to 8% in 2011. These changes occurred for both renters and owners but were more dramatic for renters. These changes were offset by an increase in the ratio of households earning over 120% AMI (increasing from 35% of the community in 2000 to 47% in 2011). The proportion of households with incomes under 50% AMI showed little change in this comparison.

DRA found that despite market pressures, the City has been successful in maintaining the overall ratio of affordable housing in the city at roughly 15% of the total housing stock. This has been accomplished through various housing strategies, including the current inclusionary provisions and other City-funded affordable housing. DRA noted, however, that an increasing proportion of the City's stock of affordable units are targeted to households earning less than 60% of AMI, making the inclusionary housing program one of the few mechanisms that caters to households earning up to 80% of AMI.

Economic Feasibility Analysis

DRA modeled alternative inclusionary housing set-aside standards for seven development prototypes based on typical development models. Development prototypes included large-scale rental buildings (high-rise and low-rise), moderate-scale rental and homeownership buildings, and smaller-scale rental and homeownership buildings. The economic modeling was intended to estimate the financial impact of differing set-aside standards on different types of developments to help inform discussions about increases in inclusionary set-aside ratios. No specific development project was modeled. The results are intended to be a guide for discussing the potential impact of regulatory changes on the feasibility of market residential development.

DRA consulted with local developers and other experts to get information on land, construction and other development costs typical for each development type. Financial modeling was done using both a return on equity (ROE) and residual land value (RLV) approach for each scenario with changes in affordability set-asides. Affordability set-asides varied from the current provisions (typically 11.5%, after application of the density bonus) up to 25% affordable with varying affordability targets. For purposes of this modeling, DRA assumed that the current 30% inclusionary density bonus was available in each scenario and that no additional zoning offsets would be available (e.g. additional density or height or relaxed dimensional requirements).

Cambridge's current housing market is exceptionally strong, as demonstrated by high demand and historically low "cap rates". Cap rates are a measure of observed property sales which can be used to estimate the value of a property based on income it produces. Low cap rates in Cambridge indicate that residential property in Cambridge is a very attractive investment and that there is very strong demand for buildable land. Given the strength of the current market, DRA considered two market scenarios for each prototype, using both a cap rate that is typical of the current market and a slightly higher cap rate, in acknowledgement that cap rates seen in the current market are lower than long-term averages and that developments which are feasible today might not be as feasible in a different market climate.

DRA's analysis found that in the current market, increasing the affordability set-aside up to 20% of the total units in the prototypical developments modeled would have a financial impact, but would not necessarily render developments economically problematic. Reflecting standard industry practices, feasibility was set at a threshold of 8% ROE or a RLV at or above market land costs.

Policy Options and Recommendations

Based on changes described in its socioeconomic diversity analysis, the economic feasibility analysis of prototypical developments with varying affordability requirements, and its review of inclusionary programs in other communities and national best practices in inclusionary housing, DRA's recommendations for Cambridge include:

- Increasing the set-aside ratio for affordable units up to a net of 20% of total units built in a residential project;
- For affordable inclusionary rental housing, either maintaining the current income eligibility limit of 80% of AMI for the recommended inclusionary set-aside (i.e. up to 20% under 80% AMI), or making up to 15% of units affordable to households earning less than 80% AMI and up to 5% of units affordable to households earning less than 100% AMI;
- For affordable inclusionary ownership housing, increasing the eligibility limit to 100% of AMI and increasing affordability targets above 65% of AMI;
- Maintaining the 30% allowed increase in density for an inclusionary housing project;
- Considering a higher set-aside ratio in unique cases through zoning ordinance changes where warranted;
- Considering specifying that a portion of affordable units created must be 3-bedroom units, and/or that inclusionary housing set-aside ratios can be applied on a per-bedroom or per-square-foot basis.
- Disallowing the provision of affordable studio units, or creating a pricing structure in which studio units can be offered at a lower cost than one-bedroom units;
- Considering lowering the unit and/or square footage threshold for triggering the inclusionary housing provisions;
- For projects which result in at least one inclusionary unit and a fractional unit, permitting an in-lieu-of contribution for the fractional affordable unit rather than rounding the number of affordable units up or down;
- Allowing the option to select inclusionary units that are less premium in a development in exchange for increasing the total number of affordable units;
- Considering the impacts of the changes to the inclusionary housing provisions on the competitiveness of residential versus commercial development and land uses;
- Applying changes to the inclusionary housing provisions only to new developments.

<u>Other Considerations</u>

While the report contains a number of DRA recommendations which provide options for City discussions, we would also note a few other considerations to be mindful of when considering changes to the inclusionary housing provisions.

The DRA report focused on housing affordability and changes in the housing market and community since the current inclusionary provisions were adopted. There are other policy, legal and practical considerations to be aware of as we discuss recommendations and consider changes to the inclusionary provisions. It is important to consider not just the impact changes might have on overall housing production, but also other City goals such as balancing residential and commercial development, achieving excellence in urban design, reducing adverse transportation impacts, setting high standards for environmental sustainability, and engaging community members in a meaningful review of development proposals.

Finally, given the depth of this study, the myriad factors to consider as changes are discussed, the impact of inclusionary housing provisions on our ability to meet affordable and other housing goals and on the feasibility of new housing development, and other public policy goals in the city, we recommend that the City reassess the inclusionary housing provisions periodically. We recommend that the City undertake an update in five years to assess the impact of any changes made now, and to determine whether and how the inclusionary housing provisions are addressing the housing needs and priorities of the city at that time.

Next Steps

Increasing the effective ratio of inclusionary housing would be a significant step forward in addressing the continuing need for affordable housing in the community. A thoughtful increase which does not significantly alter the development landscape and continues to support the development of housing, would greatly assist in offsetting changes in socioeconomic diversity of the community from higher income households moving into new market-rate housing in the city.

We look forward to discussing this study and its recommendations with the City Council and community. In coordination with the City Council, we will reach out to and be available to meet with residents, developers, and others interested in the study. We can gather and prepare feedback on the report if that is helpful to the City Council. We will also review and discuss this study with the Affordable Housing Trust and ask that they be available to assist the City Council with this review.

As the City Council's discussion moves forward and consensus is reached on a desired set of policy changes, we will work to draft a zoning amendment that would implement the desired changes to the City's inclusionary housing provisions.

Final Report

Cambridge Inclusionary Housing Study

March 27, 2016

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Executive Summary and Introduction

The City of Cambridge Community Development Department ("City") retained DRA to prepare a study to evaluate the impact of new market-rate residential development on housing affordability and socio-economic diversity in Cambridge and to recommend changes, if any, to the inclusionary housing provisions of Article 11.200 of the Cambridge Zoning Ordinance ("the Zoning Ordinance" and the City's Inclusionary Housing Program to better meet the City's policy goals for the program.

DRA evaluated the City's current Inclusionary Housing Program (IHP) in three major respects:

1. In terms of housing and demographic changes since the initial inclusionary housing studies were completed for the City in 1997 and 1998;

2. Through an economic analysis that examines the effect of alternative inclusionary housing standards on residential financial feasibility and land values in Cambridge using a series of prototypical housing developments; and

3. In light of best practices in inclusionary housing programs as informed by DRA's extensive nationwide experience as well as a survey of selected inclusionary housing programs across the country.

The study includes an overview of demographic and residential market conditions in Cambridge, with a focus on trends in market housing prices and rents, housing affordability, household income distribution, housing cost burden, and the affordable housing stock. Using this data, DRA evaluates changes in socioeconomic diversity in the City since 1997.

DRA's economic analysis evaluates the effect of the City's current inclusionary housing program, and potential changes to the program, on the financial feasibility of new residential development in Cambridge. DRA worked closely with City staff to develop a series of residential prototypes that represent the types of projects currently being built in Cambridge and reflect current underlying zoning designations in the City. The prototypes include large high- and mid-rise rental housing prototypes as well as smaller low- and mid-rise homeownership and rental developments. These prototypes form the basis of DRA's economic analysis of the current program and alternative set-aside and income targeting policies. The findings of the analysis will assist the City in evaluating policy options for the inclusionary housing program that will generate affordable housing units to meet needs in the community while being sensitive to current and future real estate market conditions.

Summary of Key Findings

The City of Cambridge has a population of approximately 109,700 (July 1, 2014) with about 46,000 households, of which 65% are renters and 35% are owners.

Increases in residential market rents and sales prices have outstripped increases in area median income (AMI) in the City of Cambridge since 1997, resulting in a marked reduction in housing affordability, an increase in cost-burdened households, and a decline in the proportion of households in the City with incomes under 100% of AMI.

The City's Inclusionary Housing Program, along with the Cambridge Affordable Housing Trust and other City programs to develop and preserve affordable housing, have succeeded in maintaining the proportion of the restricted affordable housing stock at approximately 15% of total housing units.

As the development of new affordable housing becomes more challenging due to market competition for sites and declining state and federal funding for affordable housing, the Inclusionary Housing Program is contributing an increasing proportion of new affordable units in the City. Thus, the continuation and strengthening of the City's Inclusionary Housing Program is vital to maintaining the affordable housing stock and preserving socioeconomic diversity within the community. As currently configured the

Inclusionary Housing Program cannot on its own maintain the existing proportion of affordable housing.

Overall, the analyses demonstrate that there is room for Cambridge to increase its inclusionary standard without rendering housing development economically problematic. The higher the inclusionary housing standard and the deeper the affordability, the greater the impact on the feasibility of residential development. As the City assesses options, these analyses are useful to consider so as not to either discourage development or tilt development in favor of commercial projects.

Contents of Report

This report is presented in the following major sections:

- **Existing Inclusionary Housing Program (IHP)**

The first section reviews the background and history of the Cambridge inclusionary housing program, along with a summary of key provisions of the ordinance. It also compares several of these key provisions with other selected inclusionary zoning programs nationwide, and presents available data on affordable unit production in Cambridge and the other selected communities.

- **Socioeconomic Diversity Analysis**

The second section of the report provides an analysis of trends in socioeconomic diversity in the City of Cambridge, based on a review of demographic and market data. The analysis includes a review of market-rate rents and sales prices, household size, housing unit bedroom count distribution, housing affordability, household income distribution and the affordable housing stock in the City.

- **Economic Analysis of IHP Standards and Options**

The third section of the report presents an economic feasibility analysis of the impact of the existing Inclusionary Housing Program and alternative program set-aside standards on the economic feasibility of new rental and owner housing development in Cambridge. The analysis uses a series of housing prototypes representing different renter and owner housing products currently being built in Cambridge.

- **Policy Options and Recommendations**

The final section of the report reviews policy issues of concern to the City of Cambridge regarding the inclusionary housing provisions of the Zoning Ordinance, as well as several additional issues identified by DRA in its review of the City's program. DRA describes policy options for these issues and makes policy recommendations for the City's consideration. These options and recommendations are based on the socioeconomic diversity analysis, the economic feasibility assessment, the review of selected inclusionary housing programs in other communities, and DRA's experience with inclusionary housing best practices nationwide.

Detailed Summary of Findings

Findings of Socioeconomic Diversity Analysis

DRA analyzed trends in market-rate housing rents and sales prices, the affordability of housing, household income distribution, household size and unit bedroom count and the affordable housing stock, to determine how recent market trends and conditions have affected the socioeconomic diversity of Cambridge.

Key Findings:

Increases in residential market rents and sales prices have outstripped increases in area median income (AMI) in the City of Cambridge since 1997, resulting in a marked reduction in housing affordability, an increase in cost-burdened households, and a decline in the proportion of households in the City with incomes under 100% of AMI.

The City's Inclusionary Housing Program, along with the Cambridge Affordable Housing Trust and other City programs to develop and preserve affordable housing, have succeeded in maintaining the proportion of the restricted affordable housing stock at approximately 15% of total housing units.

As the development of new affordable housing becomes more challenging due to market competition for sites and declining state and federal funding for affordable housing, the Inclusionary Housing Program is contributing an increasing proportion of new affordable units in the City. Thus, the continuation and strengthening of the City's Inclusionary Housing Program is vital to maintaining the affordable housing stock and preserving socioeconomic diversity within the community. As currently configured the Inclusionary Housing Program cannot on its own maintain the existing proportion of affordable housing.

These findings are based on the following key observations:

1. Between 2007 and 2014, area median income increased a total of 14%, while the median two-bedroom asking rent increased 31%, the average condo sales price increased 33%, and the average single-family sales price increased 45%.

2. Housing affordability has declined markedly in Cambridge since the inception of the inclusionary zoning program. In 1997, the affordable rent at 80% of AMI was almost equal to the median asking market rent, with a ratio of affordable to market rent of 99.3%. By 2000, the percentage declined to 72.1%, and by 2014 the percentage was 63.8%. For owner housing, prices fell modestly during the recession but have increased in recent years and are generally out of reach for households earning less than 100% AMI. The percentage of AMI required to afford the average-priced condo in the City increased from 145% in 2007 to 151% in 2014. The percentage of AMI required to afford the average-priced single-family home increased from 226% in 2007 to 257% in 2014.

3. Households are considered cost-burdened if they pay more than 30% of their gross income on housing, and severely cost-burdened if they pay more than 50% of their income on housing. Housing cost burden has increased in Cambridge over the 2000 to 2011 period. In 2000, approximately 40% of all renter households paid more than 30% of their gross income on housing, and 19% paid more than 50% of their income on housing. The most recently available CHAS data for 2011 show that the percentage of cost-burdened renter households increased to 45%, and 24% were severely cost-burdened. The percentages of cost-burdened households are much higher for households with incomes below 80% AMI. For example, more than 56% of households with incomes between 50% and 80% of AMI paid more than 30% of their income on housing in 2000, rising to 74% in 2011.

4. Based on the most recent demographic data available, between 2000 and 2011 the percentage of total households with incomes below 50% remained relatively stable but the percent of households with incomes between 50% and 100% of AMI declined from 27% to 18%. A decline is seen in both renter and owner households in these income groups, and has likely only accelerated since 2012, given the continued rapid increase in housing costs. Over the same 2000 to 2011 period, the percentage of households with incomes above 120% of AMI increased from 35% to 47%.

5. The affordable housing stock in Cambridge has remained fairly constant at 15% of total housing units since the inception of the City's Inclusionary

Housing Program in 1997. However, the percentage of the City's affordable housing stock comprised of inclusionary units has increased from 6% in 2008 to almost 11% in 2014, demonstrating the increased importance of the City's inclusionary zoning program in creating new affordable housing in Cambridge.

The findings of the socioeconomic diversity analysis indicate that households with incomes between 50% and 80% of AMI have been particularly hard hit by changing market conditions. This is demonstrated by the lack of market-rate units affordable to this group, the large increase in cost-burdened households, and the decline in the proportion of households in this income category. These findings support the continued targeting of the inclusionary housing program at the 65% AMI level, particularly for renters. The findings indicate that the 80% to 100% of AMI group is another segment of the population that is being squeezed out by rising housing costs in Cambridge.

DRA also reviewed trends in household size and housing unit bedroom count distribution, to determine whether a change to the inclusionary zoning program to incentivize, or require, the creation of larger family-sized units is warranted. In regard to household size, there appears to be a shift toward two-person renter households relative to both smaller and larger households. Based on available data on bedroom count for the entire housing stock, it is difficult to see any trend towards smaller units emerging. But in the larger new developments there is a trend toward smaller units, resulting in smaller inclusionary units. Additionally, as in many communities, low-income large family housing needs continue to be unmet as market prices for family sized units continue to outstrip income. This may contribute to the perception of increased scarcity of family-sized units.

Findings of Economic Feasibility Analysis

DRA prepared an economic analysis to assist the City in evaluating potential revisions to its Inclusionary Housing Program for residential development. DRA conducted the economic analysis using seven housing prototypes, developed in conjunction with City staff. These prototypes represent the type of housing developments that have been recently developed and are in the development pipeline in the City.

Key Findings: Cambridge, within limits, can increase the percentage of units set aside and alter the income targeting of its IHP without rendering market-rate housing economically problematic. The higher the inclusionary housing standard and the deeper the affordability, the greater the impact on the feasibility of residential development. As the City assesses options, these analyses are useful to consider so as not to either discourage development or tilt development in favor of commercial projects.

The prototypes analyzed include low-, mid- and high-rise residential developments appropriate to a range of current zoning designations in the City. The tenure, number of units and building heights of the prototypes are summarized in **Table 1**.

Table 1
Summary of Development Prototypes
Cambridge Inclusionary Housing Study

Prototype	Tenure	Total Units	Appx. Bldg. Stories	Density (DUs/Acre)
Prototype 1	Rental	300	17	245
Prototype 2	Rental	300	6	115
Prototype 3	Rental	100	5	82
Prototype 4	Rental	25	4	109
Prototype 5	Owner	40	5	73
Prototype 6	Rental	6	2	38
Prototype 7	Owner	6	2	38

Source: City of Cambridge; DRA.

DRA interviewed a number of residential and mixed-use developers active in Cambridge to review the prototypes, revenue, operating cost and development cost assumptions used in the analysis. DRA incorporated comments received from these developers into the analysis.

DRA also consulted with the City's Assessing Department regarding current cap rates, rates of return on equity, and the ratio of debt to equity on recent residential development projects in the City of Cambridge.

DRA evaluated the economic feasibility of the prototype developments using both Return on Equity (ROE) and Residual Land Value (RLV) analyses. The return on equity approach calculates the value of a development based on its stabilized income potential and subtracts the costs of development (including land) to determine the net value of the investment, or developer/investor profit. Under the ROE approach, the financial feasibility of the prototypes is measured by the rate of the return on equity that the resulting net investment value (or profit) represents. Land costs are held fixed at an estimated market land price and the economic impact of the program is shown as a change in the dollar amount of the net value of investment in the prototype and as a change in the ROE.

Land residual analysis methodology calculates the value of a development based on its income potential and subtracts the costs of development (excluding land but including an assumed return on equity), to yield the underlying value of the land. An alternative that generates a value to the land that is negative, or well below market land sales prices, is financially problematic.

Both the ROE and RLV analyses calculate the value of rental prototypes at a point in time based on the estimated stabilized net operating income of the prototype.

The economic performance of the prototypes was calculated for the following four set-aside scenarios, which are the same for both the renter and owner prototypes. The prototypes assume the density bonus of market rate units is already incorporated.

Scenario 1: 11.5% of total units at 65% of AMI (typical project under current IHP standards)

Scenario 2: 15% of total units at 65% of AMI plus 5% of units at 100% of AMI.

Scenario 3: 20% of total units at 65% of AMI.

Scenario 4: 20% of total units at 65% of AMI plus 5% of units at 100% of AMI.

DRA also examined 20% set-asides for owners at average AMIs of 75% and 90%.

The analysis was conducted under two alternative capitalization ("cap") rate assumptions. Based on consultation with the City Assessing Department, current cap rates in Cambridge are approximately 4.00% for projects with 50 units or more and 4.25% for projects with 50 units or less. These current cap rates are at historically low levels. We compare the results of the economic analysis using current historically low cap rates (estimated at 4.0%) to higher rates (assumed at 4.75%). The higher cap rates reflect a prospective economic view. An acceptable ROE is estimated at 8.0% or more.

The results of the analysis are designed to inform the city as it evaluates potential changes to the program and are one among other factors to consider in the public policy decision.

The results of the ROE and RLV analyses are summarized in **Table 2** under the low cap rate scenario and **Table 3** under the higher cap rate scenario. The findings are summarized as follows.

Overall, the analyses demonstrate that there is room for Cambridge to expand its inclusionary housing standards without rendering housing development economically problematic. The higher the standards, the greater the impact on the feasibility of residential development. As the City reviews options, these analyses are useful to consider so as not to either discourage development or tilt development in favor of commercial projects.

1. For the rental prototypes under the low cap rate assumption, the ROE for all of the prototypes substantially exceeds the acceptable rate of return threshold of 8% for Scenarios 1, 2 and 3. The ROE also equals or exceeds the threshold under Scenario 4.

2. For the rental prototypes under the higher cap rate assumption, the ROE exceeds the acceptable rate of return for all rental prototypes for 100% market-rate development. Under Scenario 1 (the existing program), the ROE exceeds the acceptable rate of return for Prototypes 2, 3 and 6, and falls slightly below the acceptable rate of return for Prototypes 1 and 4. It also exceeds the acceptable rate of return under Scenarios 2 and 3 for Prototypes 3 and 6. The ROE falls below the acceptable rate of return for all prototypes except Prototype 6 under Scenario 4.

3. For owner Prototype 5, the ROE exceeds the acceptable rate of return for the market-rate development and Scenario 1 (the existing program). It drops slightly below the acceptable rate of return to 7% for Scenarios 2 and 3, and further below the acceptable rate of return under Scenario 4. DRA also examined an owner housing set-aside of 20% at average income levels of 75% and 90% AMI. The ROE meets or exceeds the acceptable rate of return under both of these alternatives.

4. For the small six-unit owner Prototype 7, the ROE exceeds the acceptable rate of return for the 100% market-rate development and all Scenarios examined (assuming one affordable unit, or 17% of total units, in each case).

5. The RLV analysis shows similar results. Those scenarios with ROEs in excess of the acceptable rate of return generate land values in excess of the assumed land sales prices. Those that fall below the acceptable rate of return also generate land values less than the assumed land sales prices, in some cases substantially less.

Regulation and development impact fees on residential development that increase the costs of development, including inclusionary housing standards, will ultimately be passed through to the land owner in the form of reduced land prices. In order for developers to profitably develop new housing, they will bid down land prices to the level that makes development feasible, given market economics and zoning regulations affecting the amount of development that can be built on a particular site. This also depends if the site can be developed with commercial as well as residential uses. Increasing the cost of residential development relative to the cost of commercial development may change the highest and best use in favor of commercial development and prevent the land value from being bid down. In addition, land prices react more quickly to factors that increase land prices, such as increases in rents. Land prices tend to be slower to respond to factors that decrease land prices, including changing market conditions and increased regulation or fees, as owners who purchased recently may be reluctant to take a loss and others may be hesitant to adjust their expectations downward.

Land prices are also volatile in response to economic cycles and factors beyond the control of local government. Land will lose value in higher cap rate environments.

If the residual land value is negative, that indicates that capitalized values are not sufficient to cover the other development costs besides land, and new development will be slowed or halted until market conditions change. Therefore, very low or negative RLVs such as shown under Scenario 4 for rental Prototypes 1 and 4 with the higher cap rate assumption suggest that development of these project types would not occur until market conditions change.

Table 2
Summary of Return on Equity and Land Residual Analysis Results
Residential Development Prototypes
Low Cap Rate Assumption
Cambridge Inclusionary Housing Analysis

	Resid. Cap Rate
Under 50 Units	4.25%
50 Units or More	4.00%

	Prototype 1	Prototype 2	Prototype 3	Prototype 4	Prototype 5	Prototype 6	Prototype 7
Tenure	*Rental*	*Rental*	*Rental*	*Rental*	*Homeownership*	*Rental*	*Homeownership*
Residential Units	*300*	*300*	*100*	*25*	*40*	*6*	*6*
Site Area (SF)	*53,269*	*113,974*	*53,033*	*10,026*	*23,791*	*6,800*	*6,800*
Residential Net SF	*207,750*	*222,250*	*79,550*	*19,550*	*43,300*	*6,800*	*6,800*
Total Net SF	*207,750*	*222,250*	*79,550*	*19,550*	*43,300*	*6,800*	*6,800*
Residential Units	*300*	*300*	*100*	*25*	*40*	*6*	*6*
Parking Spaces	*150*	*225*	*88*	*22*	*40*	*6*	*6*
Approximate Building Stories	*17*	*6*	*5*	*4*	*5*	*2*	*2*
Assumed Land Price							
Per Unit	$50,000	$85,000	$85,000	$85,000	$85,000	$170,000	$170,000
Per SF	$282	$224	$160	$212	$143	$150	$150
Number of Inclusionary Units							
100% Market Rate	0	0	0	0	0	0	0
Scenario 1: Existing IHO (1)	35	35	12	3	5	1	1
Scenario 2 (2)	60	60	20	5	8	1	1
Scenario 3 (3)	60	60	20	5	8	1	1
Scenario 4 (4)	75	75	25	6	10	1	1
Return on Equity (ROE) (5)							
100% Market Rate	36%	30%	47%	38%	29%	54%	50%
Scenario 1: Existing IHO (1)	25%	21%	36%	25%	16%	40%	34%
Scenario 2 (2)	18%	17%	29%	20%	10%	40%	34%
Scenario 3 (3)	17%	14%	27%	16%	9%	39%	34%
Scenario 4 (4)	11%	11%	23%	13%	5%	40%	34%
Residual Land Value (RLV) (6)							
100% Market Rate							
Per Unit	$206,180	$193,471	$315,214	$220,743	$202,273	$395,526	$386,064
Per SF	$1,161	$509	$594	$550	$340	$349	$341
Scenario 1: Existing IHO (1)							
Per Unit	$145,372	$155,115	$254,952	$162,916	$134,913	$329,344	$306,122
Per SF	$819	$408	$481	$406	$227	$291	$270
Scenario 2 (2)							
Per Unit	$110,966	$136,606	$216,326	$142,719	$101,860	$329,344	$306,122
Per SF	$625	$360	$408	$356	$171	$291	$270
Scenario 3 (3)							
Per Unit	$101,797	$122,694	$202,553	$126,314	$96,661	$326,125	$306,122
Per SF	$573	$323	$382	$315	$163	$288	$270
Scenario 4 (4)							
Per Unit	$69,631	$107,770	$178,004	$110,836	$77,310	$328,057	$306,122
Per SF	$392	$284	$336	$276	$130	$289	$270
Assumed Return on Equity (7)	8%	8%	8%	8%	8%	8%	8%
Assumed Investment Period (Years)	4	4	4	3	3	3	3

(1) 11.5% of total units at 65% of AMI for renters and owners.
(2) 15.0% of total units at 65% of AMI plus 5% of units at 100% AMI for renters and owners.
(3) 20.0% of total units at 65% of AMI for renters and owners.
(4) 20% of units at 65% of AMI plus 5% of units at 100% of AMI for renters and owners.
(5) Return on equity measured as net project value divided by the number of years equity investment divided by total equity investment.
(6) Land residual value per housing unit and per square foot site area.
(7) Used in land residual analysis.

Source: DRA.

Table 3
Summary of Return on Equity and Land Residual Analysis Results
Residential Development Prototypes
High Cap Rate Assumption
Cambridge Inclusionary Housing Analysis

	Resid. Cap Rate
Under 50 Units	5.00%
50 Units or More	4.75%

	Prototype 1	Prototype 2	Prototype 3	Prototype 4	Prototype 5	Prototype 6	Prototype 7
Tenure	*Rental*	*Rental*	*Rental*	*Rental*	*Homeownership*	*Rental*	*Homeownership*
Residential Units	*300*	*300*	*100*	*25*	*40*	*6*	*6*
Site Area (SF)	*53,269*	*113,974*	*53,033*	*10,026*	*23,791*	*6,800*	*6,800*
Residential Net SF	*207,750*	*222,250*	*79,550*	*19,550*	*43,300*	*6,800*	*6,800*
Total Net SF	*207,750*	*222,250*	*79,550*	*19,550*	*43,300*	*6,800*	*6,800*
Residential Units	*300*	*300*	*100*	*25*	*40*	*6*	*6*
Parking Spaces	*150*	*225*	*88*	*22*	*40*	*6*	*6*
Approximate Building Stories	*17*	*6*	*5*	*4*	*5*	*2*	*2*
Assumed Land Price							
Per Unit	$50,000	$85,000	$85,000	$85,000	$85,000	$170,000	$170,000
Per SF	$282	$224	$160	$212	$143	$150	$150
Number of Inclusionary Units							
100% Market Rate	0	0	0	0	0	0	0
Scenario 1: Existing IHO (1)	35	35	12	3	5	1	1
Scenario 2 (2)	60	60	20	5	8	1	1
Scenario 3 (3)	60	60	20	5	8	1	1
Scenario 4 (4)	75	75	25	6	10	1	1
Return on Equity (ROE) (5)							
100% Market Rate	17%	12%	26%	16%	29%	29%	50%
Scenario 1: Existing IHO (1)	8%	5%	17%	4%	16%	17%	34%
Scenario 2 (2)	2%	1%	12%	0%	10%	17%	34%
Scenario 3 (3)	1%	-1%	10%	-3%	9%	17%	34%
Scenario 4 (4)	-4%	-4%	6%	-6%	5%	17%	34%
Owner: 20% @ 75% AMI					10%		35%
Owner: 20% @ 90% AMI					12%		37%
Residual Land Value (RLV) (6)							
100% Market Rate							
Per Unit	$103,567	$111,095	$197,284	$125,338	$202,273	$281,244	$386,064
Per SF	$1,161	$509	$594	$550	$340	$349	$341
Scenario 1: Existing IHO (1)							
Per Unit	$52,360	$78,796	$146,536	$76,185	$134,913	$224,989	$306,122
Per SF	$295	$207	$276	$190	$227	$199	$270
Scenario 2 (2)							
Per Unit	$23,387	$63,210	$114,009	$59,017	$101,860	$224,989	$306,122
Per SF	$132	$166	$215	$147	$171	$199	$270
Scenario 3 (3)							
Per Unit	$15,666	$51,494	$102,410	$45,073	$96,661	$222,253	$306,122
Per SF	$88	$136	$193	$112	$163	$196	$270
Scenario 4 (4)							
Per Unit	($11,422)	$38,926	$81,738	$31,917	$77,310	$223,895	$306,122
Per SF	($64)	$102	$154	$80	$130	$198	$270
Owner: 20% @ 75% AMI							
Per Unit					$102,789		$311,378
Per SF					$173		$275
Owner: 20% @ 90% AMI					$111,954		$319,247
Per Unit					$188		$282
Per SF							
Assumed Yield on Equity (7)	*8%*	*8%*	*8%*	*8%*	*8%*	*8%*	*8%*
Assumed Investment Period (Years)	*4*	*4*	*4*	*3*	*3*	*3*	*3*

(1) 11.5% of total units at 65% of AMI for renters and owners.
(2) 15.0% of total units at 65% of AMI plus 5% of units at 100% AMI for renters and owners.
(3) 20.0% of total units at 65% of AMI for renters and owners.
(4) 20% of units at 65% of AMI plus 5% of units at 100% of AMI for renters and owners.
(5) Return on equity measured as net project value divided by the number of years equity investment divided by total equity investment.
(6) Land residual value per housing unit and per square foot site area.
(7) Used in land residual analysis.

Source: DRA.

Existing Inclusionary Housing Program

Background and History

The City of Cambridge adopted the Inclusionary Zoning Ordinance in 1998, in large part as a response to the impact the end of rent control in 1995 was having on the City's housing market.[1]

In 1997 and 1998, the City of Cambridge contracted with consultant teams to conduct studies on rationales and approaches for adoption of inclusionary housing provisions in the Zoning Ordinance. The 1997 study by Peter Werwath and Associates (*Recommendations Concerning a New Inclusionary Zoning Ordinance, A Report to the City of Cambridge*) recommended a framework and provisions for inclusionary housing standards to be included in the Zoning Ordinance. The 1998 study by Stockard & Engler & Brigham (*Cambridge Inclusionary Housing Study*) explored affordability standards for the inclusionary provisions in the Zoning Ordinance. The 1998 study concluded that for every 10 new market rate housing units, 1.5 affordable units were needed to maintain the proportion of affordable housing units in the City and assist in meeting the City's socio-economic diversity goals.

Based on these studies, the City adopted the inclusionary housing provisions in the Zoning Ordinance in 1998. The Zoning Ordinance asks developers of residential projects of 10 or more units or 10,000 or more square feet to mitigate the impact of their development on the socio-economic diversity of Cambridge by providing 15% of the units as affordable, and provides such developers with a development bonus increasing the FAR normally permitted in the applicable zoning district by 30%, half of which must be allocated to the affordable units. When aggregating all projects, the result is an overall ratio of approximately 12.5% affordable units to total units built.

Since its inception through the end of 2015, the Inclusionary Housing Program in Cambridge has been responsible for the creation of nearly 850 affordable housing units, built or underway, including more than 650 rental units and over 190

[1] Rent control was ended in the City due to a statewide referendum in 1995 that eliminated rent control across Massachusetts.)

homeownership units located in privately owned buildings throughout the City[1]. Approximately 50% of inclusionary rental units are filled with tenants with mobile housing vouchers.

The City has been able to maintain the ratio of 1.5 affordable units for every 10 market rate units, as set forth in the original inclusionary zoning studies, through employment of a number of strategies, including inclusionary zoning. In addition to inclusionary zoning, affordable housing is created in Cambridge through assisted housing development, homeownership programs run by the City, the preservation of expiring use projects, and public housing and mobile vouchers from the Cambridge Housing Authority. The Affordable Housing Trust funds non-profit and other affordable housing developers to produce 100% affordable projects, which are largely targeted to lower income households. Trust funded projects leverage additional state and federal resources, including the federal 9% Low Income Housing Tax Credit program (9% tax credits); the most valuable source of leveraged financing available today.

Inclusionary Housing Provisions of the Cambridge Zoning Ordinance

The following sections describe the key provisions of the existing inclusionary housing provisions in the Zoning Ordinance and the Inclusionary Housing Program.

1. Income Targeting, and Housing Payment Standards

Eligible households must earn between 50% and 80% of the area median income (AMI), with a target income of 65% of the AMI. Households who have access to a mobile housing voucher may have a lower income.

Rent for inclusionary units are set for each tenant at 30% of the actual gross income of the tenant household. A utility allowance, based on the Cambridge Housing Authority schedule, is subtracted for any utilities that the tenant will pay directly. For homeownership units, sales prices are set so the affordable housing expense (including mortgage principal and interest, property insurance, real estate taxes,

[1] These figures include several developments that are subject to other similar inclusionary zoning like requirements, such as the recent Alexandria development in Kendall Square.

condo/HOA fees and parking fees, where applicable) does not exceed 30% of 65% of the AMI.

2. Unit Location

Cambridge requires all inclusionary units to be provided on site, unless the project can demonstrate to the Planning Board that providing the units on site would create a significant hardship because the property cannot physically accommodate the required affordable units. All units have been provided on site. No developers have sought an exemption.

3. Set Aside Percentages and Density Bonus Provisions

Inclusionary zoning applies to new or converted residential projects with 10 or more units or with over 10,000 square feet of residential space. Fifteen percent of the dwelling units, before the bonus is applied, are to be affordable. The FAR normally permitted in the applicable zoning district for residential uses is increased by 30% for inclusionary projects, of which at least 50% of the additional FAR must be allocated to the affordable units. When the bonus is applied, the 15% requirement results in approximately 11.5% of the total units as affordable.

4. Unit Comparability

Affordable units in an inclusionary project must be generally comparable in size and materials to the other units in the overall project. The City also requires the affordable units to be distributed proportionately throughout the building in terms of floors, the direction they face, number of bedrooms, and other factors. Specific units are designated as affordable and remain so for the life of the project.

5. Parking

One parking space must be provided for each affordable unit unless there is an average of less than one space per unit for the entire development, in which case the parking spaces provided for the affordable units shall be in the same proportion as for the market-rate units. If there is a parking fee for the market rate units, there is a reduced parking fee for the inclusionary units.

6. Administration

Prior to the issuance of a Building Permit for a property, a permanent deed restriction (the Inclusionary Housing Covenant) is required to be recorded. The

Covenant identifies the inclusionary units and the other elements of the program, and is the senior interest on the property.

When construction is complete, the City manages tenant and homeowner selection. The City Community Development Department (CDD) maintains a single point of entry for applicants to apply for affordable inclusionary rental and homeownership units. CDD conducts the marketing and maintains applicant lists. Applicants are screened by the City for eligibility and forwarded for final approvals to property managers for rental units and for mortgage approvals for homeownership units.

Inclusionary Housing Programs in Selected Communities

DRA reviewed the provisions of inclusionary housing programs in selected communities nationwide, with a focus on policy issues of interest to Cambridge, as well as available data on the number of affordable units produced under these programs. DRA consulted with City staff to select the communities below for analysis which represent municipalities similar to Cambridge, and/or which have inclusionary programs that include features of relevance to Cambridge housing policy goals. Appendix B includes inclusionary housing program profiles for the following communities:

- Boston, MA
- Boulder, CO
- Burlington, VT
- Montgomery County, MD
- San Francisco, CA
- Santa Monica, CA
- Somerville, MA
- Washington, DC

Table 4 compares the percentage of affordable units, density bonus provisions, threshold project sizes and affordable housing unit production in Cambridge with the inclusionary housing programs surveyed. Somerville's existing program is included, but the city has proposed changes to its program that are currently being considered. The current population and recent population growth rate for each community is shown for context.

Table 4
Inclusionary Housing Set-Aside, Density Bonus, and Threshold Size Provisions and Affordable Units Created
Selected Nationwide Inclusionary Housing Programs
2015

City	Year Adopted	Rental		Owner		Density Bonus	Project Size Threshold	Afford. Units Created[1]	2013 Population (2000-2013 % Pop. Change)
		% of Units or FAR	% of AMI	% of Units or FAR	% of AMI				
Cambridge, MA[2]	1998	15%	50%-80% AMI	15%	Up to 80%	30%	10 units or 10,000 SF	849	106,355 (4.9%)
Boston, MA On-Site	2000	13%[3]	70% AMI	6.5% plus 6.5%[4]	80% AMI 100% AMI	Negotiated	10 units[5]	1,586[6]	645,966 (9.4%)
Off-Site		15-18%[3]	70% AMI	15-18%[4]	80%-100% AMI[4]	None			
Boulder, CO[7]	1981	20%	60% AMI	20%	76% AMI[8]	None	All projects	750[9]	103,166 (9.1%)
Burlington, VT[10]	1990	15% to 25%	65%	15% to 25%	75%	15% to 25%	5 units	212[11]	42,284 (6.1%)
Montgomery Co., MD	1974	12.5% to 15%	65% AMI (70% AMI hi-rise)	12.5% to 15%	70%	Up to 20 to 22%	20 units	370 Ave. Annual	1,016,677 (15.9%)

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1 The time period over which the number of affordable units created varies from community to community based on available data; therefore these figures are not directly comparable between programs but are intended to give a sense of whether the program has been effective in creating affordable units.

2 Program requires 15% of pre-bonus units to be affordable at actual household income for renters (with a target average of 65% AMI) and at 65% of AMI for owners. With the 30% FAR bonus, the set-aside is equivalent to 11.5% of total post-bonus units. The number of units created is since inception in 1998 and includes units created through inclusionary zoning and additional zoning provisions similar to inclusionary zoning.

3 For renters, 13% on-site and 15%-18% offsite requirement at 70% AMI (under certain circumstances a portion of units may be designated up to 100% AMI).

4 For owners, 13% on-site and 15%-18% offsite requirement including at least 50% of units at 80% AMI and the balance of units at 100% AMI.

5 Applies to residential developments of 10 or more that seek zoning relief, or receive city financing, or land owned by the city or BRA."

6 Approximate units completed or in construction 2000-2014.

7 Most affordable rental units have been developed off-site. For-sale developments should provide at least one-half of required units on-site; others may be provided on-site or through cash-in-lieu contribution

8 HUD low-income limit plus 10%, currently about 76% AMI.

9 1981-2014.

10 The affordable housing set-aside percentage depends on the affordability of average price/rent of the market-rate units. The set-aside is 15% if it is less than 13% of median income; 20% if it is 1450% to 179% of AMI, and 25% is if it is 180% of AMI or above. Developers may provide affordable units off-site at 125% of the on-site obligation.

11 1990-March 2014.

Table 4 (Continued)
Inclusionary Housing Set-Aside, Density Bonus, and Threshold Size Provisions and Affordable Units Created
Selected Nationwide Inclusionary Housing Programs
2015

City	Year Adopted	Rental: % of Units or FAR	Rental: % of AMI	Owner: % of Units or FAR	Owner: % of AMI	Density Bonus	Project Size Threshold	Afford. Units Created[12]	2013 Population (2000-2013 % Pop. Change)
San Francisco, CA Citywide Onsite	2013	12%	55% AMI	12%	90% AMI	None	10 units	1,560[13]	837,442 (7.7%)
Citywide Offsite		20% 17% hi-rise	55% AMI	20%	70% AMI	None			
Plan Areas Onsite		14.4% to 17.6%	55% AMI	14.4% to 17.6%	90% AMI				
Plan Areas Offsite		23% to 27%	55% AMI	23% to 27%	70% AMI	None			
Santa Monica, CA[14]	1998	5% or 10% or 20%	30% AMI 50% AMI 80% AMI	20% (4-15 units) 25% (16+ units)	100% AMI	5% to 35%	2 units	1,000[15]	92,472 (3.2%)
Somerville, MA	1990	12.5 %	At least ½ at 50% AMI; balance at 80%	12.5%	At least ½ at 80% AMI; balance at 110%	Two additional market-rate units for each additional affordable unit[16]	8 units	168[17]	78,804 (1.7%)
Washington, DC.[18]	2007	5% of FAR plus 5% of FAR	50% AMI 80% AMI	5% of FAR plus 5% of FAR	50% AMI 80% AMI	Up to 20%	10 units	53[19]	646,449 (13%)

Source: DRA survey of selected inclusionary housing programs. Note: % of AMI is for eligibility.

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[12] The time period over which the number of affordable units created varies from community to community based on available data; therefore these figures are not directly comparable between programs but are intended to give a sense of whether the program has been effective in creating affordable units.

[13] 2002-March 2014.

[14] Rental project set-asides are lower if the developer chooses lower income levels, as shown, and are the same for on- and off-site units. For owner hosing, set-aside requirements vary by project size and are 25% higher for off-site compliance. The amount of the density bonus depends on the percentage of units that are affordable and the income level, with higher density bonuses given for lower AMIs and higher set-aside percentages.

[15] Approximate production 1998-March 2014.

[16] If more than 12.5% affordable units are provided, may apply for a bonus of 2 market rate units for each affordable unit, subject to conditions and restrictions.

[17] 1990-present.

[18] Set-aside varies by construction type and zone district. Generally in low density zones the set-aside is the greater of 10% of residential FAR or 75% of bonus density. In higher density zones it is the greater of 8% of FAR or 50% of the bonus density split evenly between 50% AMI and 80% AMI.

[19] 2007-March 2014.

1. Comparison of Inclusionary Housing Program Provisions

In the communities surveyed, income targeting for rental and ownership housing typically differ, with higher income targeting for owner than for renter housing. This policy is often dictated by market prices. In most cities, Cambridge included, rental housing is more affordable than ownership housing. For rental housing, the programs in the other communities surveyed target households earning below 80% of AMI, with income targets from 30% of AMI (as an option in Santa Monica, at a lower percentage of units), to 80% of AMI. Except for Washington D.C., which has identical income targets for owners and renters like Cambridge, all of the surveyed programs target higher income levels for owners than renters. The income targets for owners range from 70% to 100% of AMI.

Among the communities surveyed, lower income targeting is associated with a lower set-aside percentage, while higher income targeting is associated with a higher percentage of affordable units. In terms of affordable housing set-aside percentages, Cambridge's current effective requirement of 11.5% of total units at an average of 65% of AMI is in the "middle of the pack" compared with the communities surveyed. Its percentage of units for owners is also towards the middle of the range of communities surveyed (though at lower income targeting).

Of the seven communities surveyed, four offer fixed density bonuses, two offer none, and the seventh (Boston) offers them on a negotiated basis. The density bonus of 30% offered by Cambridge is higher than all but Santa Monica's. Santa Monica requires 11% of units at 50% of AMI or 20% of units at 80% of AMI to qualify for the maximum density bonus of 35%.

Unit size thresholds for the inclusionary programs range from 2 units in Santa Monica to 20 units in Montgomery County, Maryland. Boulder has no size threshold. Boston, San Francisco and Washington DC have a 10-unit threshold and Burlington, Vermont has a 5-unit threshold.

A comparison of Cambridge's ordinance to the other programs evaluated reveals a number of key differences: Cambridge's ordinance is unique in terms of providing virtually no option for alternative compliance methods such as in lieu fees or off-site compliance. In addition, Cambridge does not allow the affordable units to be smaller units or to have lower quality finishes, and Cambridge specifies that units must be distributed proportionately throughout the building.

Cambridge's standard for identical affordable units have advantages and disadvantages. The obvious benefit is that high quality affordable housing is created in mixed-income locations. By not accepting off site units or fees in lieu of units, over 850 affordable units have been created without any public funds and units are completed and occupied at the same time as the market rate units. An additional advantage is that the program is very predictable, and developers are able to determine in advance precisely what will be expected. However, allowing alternative compliance options could result in a lower cost of compliance to developers, which in turn could allow for increased percentages of affordable units that would result in the production of additional units and/or family sized units.

Cambridge's program is also unique with respect to its treatment of homeowner association (HOA) dues. Even with a subsidized purchase price, homeownership can be a stretch financially for lower income households with incomes at or below 65% of AMI, especially with respect to maintenance costs and homeowner association (HOA) dues. HOA dues often present a particularly difficult issue for inclusionary housing provisions for owners. Cambridge is unique in that in setting HOA fees, a percentage of interest is determined for each unit and it is applied to HOA fees. The percentage of interest for units is based on value, so the inclusionary units have a lower percentage of interest than market-rate units. As a result, the HOA fees, increases in HOA fees, and assessments are kept lower for affordable units in Cambridge.

The challenge presented by HOA dues is one reason many cities allow ownership units to serve a higher income group compared to rental units.

2. Best Practices in Inclusionary Housing

Best practices in inclusionary housing relating to policies such as income targeting, density bonus, bedroom size and alternative compliance are contextual to the demographic, market, and land use characteristics of the community as well as to local politics and policy priorities. There is no single best practice in how communities handle these issues. Cambridge's policies, i.e. its practices, will be shaped by policy makers in response to Cambridge's market and demographic characteristics, and by political choices.

Key best practices in inclusionary housing include program consistency, clearly documented rules and predictability. Cambridge's program scores very well in this regard. The straightforward and predictable nature of Cambridge's program was repeatedly cited as a positive factor in DRA's interviews with developers involved with the program.

Socioeconomic Diversity Analysis

The City of Cambridge's Inclusionary Housing Program represents an important element in the City's "tool kit" of resources to assist in the creation and preservation of affordable housing. This section analyzes trends in market-rate housing rents and sales prices, the affordability of housing, household income distribution, and the affordable housing stock. The analysis of recent market trends and conditions demonstrate the ongoing and pressing need for the City's Inclusionary Housing Program. Market conditions in recent years have significantly affected the affordability of housing and the socioeconomic diversity of the community.

Key Findings:

Increases in residential market rents and sales prices have outstripped increases in area median income (AMI) in the City of Cambridge since 1997, resulting in a marked reduction in housing affordability, an increase in cost-burdened households, and a decline in the proportion of households in the City with incomes under 100% of AMI.

The City's Inclusionary Housing Program, along with the Cambridge Affordable Housing Trust and other City programs to develop and preserve affordable housing, have succeeded in maintaining the proportion of the restricted affordable housing stock at approximately 15% of total housing units.

As the development of new affordable housing becomes more challenging due to market competition for sites and declining state and federal funding for affordable housing, the inclusionary program is contributing an increasing proportion of new affordable units in the City. Thus, the continuation and strengthening of the City's Inclusionary Housing Program is vital to maintaining the affordable housing stock and preserving socioeconomic diversity within the community. As currently configured the Inclusionary Housing Program cannot on its own maintain the existing proportion of affordable housing.

Affordable Housing Income Limits

The U.S. Department of Housing and Urban Development (HUD) and most affordable housing programs target specific income categories, defined as a percentage of area median income (AMI) for a given geography. The City of Cambridge is within the Boston-Cambridge-Quincy HUD Metro FMR Area (HMFA)[1], as defined by HUD.

HUD publishes the income limits annually adjusted for household size. However, the HUD published 80% AMI for the Cambridge area is artificially capped by a national standard, and is not actually 80% of the 100% of median income. For the City of Cambridge's Inclusionary Housing Program, the City uses the actual calculated 80% of 100% of AMI.[2]

The City of Cambridge uses the following terminology in describing these income categories:

- Low income: households with incomes up to 50% of AMI;
- Moderate income: households with incomes between 50% and 80% of AMI;
- Middle income: households with incomes between 80% and 120% of AMI.

All of these income limits are based on the 2015 area median income (AMI) of $98,500 for a household of four. Income limits are adjusted by household size using HUD household size adjustment factors.

Table 5 shows 2015 income limits for the City of Cambridge Inclusionary Housing Program for household sizes of one to six persons.

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[1] FMR stands for Fair Market Rent. The Boston-Cambridge-Quincy HMFA is a HUD-defined metropolitan area.

[2] HUD's 80% AMI is $69,700 for a four-person household, which is actually 71% of 100% AMI. The calculated 80% AMI used by the Inclusionary Housing Program is $78,800 for a four person household.

Table 5 Affordable Housing Income Limits by Household Size City of Cambridge Inclusionary Housing Program 2015				
Household Size	**50% AMI**	**80% AMI** Actual Calculated	**100% AMI**	**120% AMI**
One Person	$34,500	$55,200	$69,000	$82,800
Two Persons	$39,400	$63,040	$78,800	$94,560
Three Persons	$44,350	$70,960	$88,700	$106,440
Four Persons	$49,250	$78,800	$98,500	$118,200
Five Persons	$53,200	$85,120	$106,400	$127,680
Six Persons	$57,150	$91,440	$114,300	$137,160

Source: 2015 median household income for the Boston-Cambridge-Quincy HMFA of $98,500, adjusted by household size and income level using HUD household size adjustment factors (actual calculated limits for all categories); DRA.

Market-Rate Housing Rents and Sales Prices

Cambridge is a high-cost city and the Great Recession had only moderate and temporary effect on rents and sales prices in the City. Twice each year, the City's Community Development Department (CDD) conducts a survey of asking rents to help understand the current rental market from the perspective of a household looking for a rental unit in Cambridge. In recent years, the survey has been conducted using listings from boston.com and craigslist.org. Data sources for prior years depend upon available marketing sources at the time of the survey.

Asking market rents best represent the prices facing new households moving to Cambridge or existing residents seeking alternative housing in Cambridge. They are typically higher than average rents paid by existing renter households in the City, as the units on the market may include a disproportionate percentage of newly built units, which typically command higher rents. In addition, in a rising market, rents for existing units are often raised upon turnover.

Table 6 summarizes trends in median market-rate asking rents for one-, two- and three-bedroom units in Cambridge since 1997, based on data from the City's annual rent surveys. **Table 7** shows the annual compound growth rates in rents for each year, measuring from the prior time period. After increases earlier in the decade, rents declined slightly in 2009-2010 and then increased markedly after 2010. Overall, from 2010 to 2014 rents increased at annual compound growth rates of 9.5%, 6.4% and 6.4%, for one-, two-, and three-bedroom units, respectively.

Table 6
Median Market-Rate Asking Rents
City of Cambridge Rent Survey
1997 to 2014

	1997	2000	2007	2009	2010	2011	2012	2013	2014
1 BR	$1,000	$1,383	$1,800	$1,850	$1,795	$2,300	$2,300	$2,385	$2,583
2 BR	$1,200	$1,817	$2,250	$2,470	$2,300	$2,627	$2,800	$3,000	$2,950
3 BR	$1,500	$2,000	$2,300	$2,725	$2,650	$2,950	$3,175	$3,200	$3,400

Source: City of Cambridge Community Development Department rent survey. Data is based on the second survey of the year, generally during the months of August or September. The figures for 2008 are from the November, 2007 survey.

Table 7
Annual Growth Rate in Median Market-Rate Asking Rents[1]
City of Cambridge Rent Survey
2000 to 2014

	2000	2007	2009	2010	2011	2012	2013	2014
1 BR	11.4%	3.8%	1.4%	-3.0%	28.1%	0.0%	3.7%	8.3%
2 BR	14.8%	3.1%	4.8%	-6.9%	14.2%	6.6%	7.1%	-1.7%
3 BR	10.1%	2.0%	8.8%	-2.8%	11.3%	7.6%	0.8%	6.3%

[1]Annual growth rate from prior period (compound rate for multi-year periods). Increases for 2000 are from 1997.
Source: City of Cambridge Community Development Department rent survey; DRA.

Market sales prices for owner-occupied homes and condos have also increased substantially over the past several years. **Table 8** shows trends in average sales prices for condominiums and single-family homes from 2007 to 2014, based on data provided by the CDD. **Table 9** shows the annual compound growth rates in average prices, measuring from the previous date shown. Overall, between 2007 and 2014, the average condo sales price increased 33% and the average single-family sales price increased 45%.

Table 8
Average Sales Prices for Single-Family Homes and Condos
City of Cambridge
2007 to 2014

	2007	2008	2009	2010	2011	2012	2013	2014
Condos	$416,000	$419,000	$415,000	$424,000	$422,250	$445,500	$510,000	$575,000
Single-Family	$648,450	$790,000	$682,500	$760,000	$740,000	$810,750	$858,300	$1,200,000

Source: City of Cambridge Community Development Department; DRA

Table 9
Annual Growth Rate in Average Sales Prices for Single-Family Homes and Condos[1]
City of Cambridge
2007 to 2014

	2008	2009	2010	2011	2012	2013	2014
Condos	0.7%	-1.0%	2.2%	-0.4%	5.5%	14.5%	8.3%
Single-Family	21.8%	-13.6%	11.4%	-2.6%	9.6%	5.9%	9.8%

[1]Growth rate from prior year.
Source: City of Cambridge Community Development Department; DRA.

Housing Affordability

Ongoing increases in rents and sales prices have outpaced increases in household income, resulting in a reduction in housing affordability in the City. **Table 10** summarizes the area median income for the Boston-Cambridge-Quincy HMFA from 1997 to 2014, along with the growth rate in the AMI from the prior period. Since the affordable rent is based on 30% of AMI, adjusted by household size, affordable rents increase at the same rate as AMI. The table also calculates the affordable rent for a four-person family, and the affordable rent as a percentage of the median market-rate asking rent for a two-bedroom unit in Cambridge.

Household income declined slightly between 2011 and 2014, while the median asking rent for a two-bedroom unit increased at a compound annual rate of 3.9% over the same period.

With increases in rents and sales prices outstripping increases in income, the affordable rent for a four-person family at 80% of AMI has decreased as a percentage of the median asking rent for a two-bedroom unit. In 1997, the affordable rent at 80% AMI was almost equal to the asking market rent, with a ratio of 99.3%. By 2000, the percentage declined to 72.1%. As a result of the effects of the 2007 to 2009 Great Recession on the housing market, the ratio increased again to 79.8% in 2010, before declining to a low of 62.9% in 2013. The ratio increased slightly to 63.8% in 2014.

Table 10
Trends in Area Median Income and Affordable Rents
City of Cambridge
1997 to 2014

	1997	2000	2007	2010	2011	2012	2013	2014
AMI	$59,600	$65,500	$82,400	$91,800	$96,500	$97,800	$94,400	$94,100
% Increase in AMI[1]	--	3.2%	3.3%	3.4%	5.1%	1.3%	-3.5%	-0.3%
80% AMI Affordable Rent[2]	$1,192	$1,310	$1,648	$1,836	$1,930	$1,956	$1,888	$1,882
Affordable Rent as a % of Market Rent[3]	99.3%	72.1%	73.2%	79.8%	73.5%	69.9%	62.9%	63.8%

[1]Annual growth rate from the prior period (compound annual growth rates for multi-year periods).
[2]Affordable rent for a 4-person family earning actual calculated 80% of AMI assuming 30% of annual household income for gross rent (including utilities).
[3]Affordable rent for a four-person household earning 80% of AMI as a percentage of the median asking rent for two-bedroom apartments in the City from the City's rent survey.

The City's 2014 rent data also included an analysis of the affordability of asking rents to households at various income levels by unit bedroom count. **Table 11** shows the percentage of units affordable to a four-person household based on the asking rent survey. The analysis indicates that there are almost no market listings affordable to households at or below 80% of AMI. There continue to be some rental options for households with incomes at 100% of AMI, although the percentage of affordable three-bedroom units is very small.

Table 11 Affordability of Median Asking Rents for a Four-Person Household City of Cambridge Rent Survey 2014				
	50% of AMI	**80% of AMI**	**100% of AMI**	**120% of AMI**
Annual Income	$47,050	$67,750	$94,100	$112,920
Affordable Rent[1]	$1,176	$1,694	$2,353	$2,823
% Affordable 2-BR Listings	0.0%	0.8%	16.7%	49.6%
% Affordable 3-BR Listings	0.0%	0.0%	1.7%	10.2%

[1]Based on 30% of gross household income.
Source: City of Cambridge Community Development Department; DRA.

DRA calculated the income level required to afford new market-rate housing, rental and ownership, in Cambridge. **Table 12** shows the annual gross income required to afford the median asking rent for one-, two- and three-bedroom units based on the City's rental survey, assuming 30% of income is spent on rent. It shows that the income required to afford a two-bedroom unit has increased from 81% of AMI in 1997 to 125% of AMI in 2014. The required income is even higher when utility allowances are included, as required by the Cambridge IHP and virtually all affordable housing programs. One bedroom units require a lower percent of AMI, while three-bedroom units require a higher percent of AMI (before adjustments for household size).

Table 12 **Annual Gross Income Required to Afford Median Asking Rents for One-, Two- and Three-Bedroom Units** **City of Cambridge** **1997 to 2014**							
	1997	**2000**	**2010**	**2011**	**2012**	**2013**	**2014**
Median Rent, 1 BR Unit[1]	$1,000	$1,383	$1,795	$2,300	$2,300	$2,385	$2,583
Gross HH Income Required[2]	$40,000	$55,320	$71,800	$92,000	$92,000	$95,400	$103,320
Required Income as a % of AMI[3]	67%	84%	78%	95%	94%	101%	110%
Median Rent, 2 BR Unit[1]	$1,200	$1,817	$2,300	$2,627	$2,800	$3,000	$2,950
Gross HH Income Required[2]	$48,000	$72,680	$92,000	$105,080	$112,000	$120,000	$118,000
Required Income as a % of AMI[3]	81%	111%	100%	109%	115%	127%	125%
Median Rent, 3 BR Unit[1]	$1,500	$2,000	$2,650	$2,950	$3,175	$3,200	$3,400
Gross HH Income Required[2]	$60,000	$80,000	$106,000	$118,000	$127,000	$128,000	$136,000
Required Income as a % of AMI[3]	101%	122%	115%	122%	130%	136%	145%

[1]Median asking rent by bedroom count from City rental survey.
[2]At 30% of gross income for rent.
[3]Income required to afford market rent as a percentage of HUD AMI for that year. Not adjusted for household size.
Source: HUD; City of Cambridge; DRA

DRA also calculated the income necessary to afford market-rate homes and condos. **Table 13** displays the annual gross income required to purchase median-priced single-family homes and condos in Cambridge based on data provided by the CDD. It shows that the percentage of AMI required to afford the median-priced condo in the City declined from 145% in 2007 to a low of 104% in 2012, before increasing again to 151% in 2014. The percentage of AMI required to afford the median-priced single-family home was highest in 2008 at 258%, before declining to a low of 188% in 2011, then rising again to 257% in 2014. The declines in the AMI required to purchase median priced homes and condos during the late 2000s and early 2010s, indicating an increase in affordability during this period, reflect the impact of the Great Recession on the housing market. However, the recovery of the housing market has resulted in a continuation of the decline in affordability in the City. In 2014, a household needs one- and one-half times the median income for the area to afford the median priced condo in Cambridge and prices have only increased since 2014.

Table 13
Annual Gross Income Required to Afford Average-Priced Homes and Condos[1]
City of Cambridge
2007 to 2014

	2007	2008	2009	2010	2011	2012	2013	2014
Average Condo Price	$416,000	$419,000	$415,000	$424,000	$422,250	$445,500	$510,000	$575,000
Gross HH Income Required	$119,000	$117,000	$107,000	$106,000	$103,000	$102,000	$120,000	$147,000
Required Income as % of AMI	145%	137%	118%	115%	107%	104%	127%	157%
Ave. Single-Family Price	$648,450	$790,000	$682,500	$760,000	$740,000	$810,750	$858,300	$1,200,000
Gross HH Income Required	$186,000	$221,000	$176,000	$190,000	$181,000	$185,000	$202,000	$308,000
As % of AMI	226%	258%	195%	207%	188%	189%	213%	327%
Assumed Interest Rate[2]	6.34%	6.03%	5.04%	4.69%	4.45%	3.66%	3.98%	5.00%

[1]Assumes 30% of annual household income for mortgage principal and interest, property taxes and insurance. Assumes 30-year fixed-rate mortgage at interest rate shown, taxes and insurance at 1.4% and 0.5% of sales price, respectively, and 10% downpayment.
[2]Average annual 30-year fixed-rate mortgage rates from Freddie Mac.
Source: City of Cambridge; DRA.

Housing Cost-Burden

Households are considered cost-burdened if they pay more than 30% of gross income on housing, and severely cost-burdened if they pay more than 50% of their income on housing. Households that pay a large share of their income on housing have less income available for food, health care and the other necessities of life. Housing cost burden is particularly a problem for renters, who don't have other housing options. Cost-burdened owners may have other options, such as selling their home and renting, so owner cost-burden is often considered a choice households make to achieve the American dream of homeownership.

Table 14 presents HUD Comprehensive Housing Affordability Strategy (CHAS) data on housing cost burden in Cambridge over the 2000 to 2011 time period. As the table shows, the percentage of cost-burdened households in the City has increased since 2000, at which time about 40% of all renter households paid more than 30% of their gross income on housing, and 19% paid more than 50% of their income on housing. The most recently available CHAS data show that the percentage of cost-burdened renter households increased to 45% in 2011, and 24% were severely cost-burdened. The percentages of cost-burdened households are much higher for lower income households. In 2011, 80% of renter households with incomes between 30% and 50% of AMI were cost-burdened. The percentage of severely cost-burdened renter households in this income group increased from 38% in 2000 to 52% in 2011. For renter households with incomes between 50% and 80% of AMI, more than 56% were cost-burdened in 2000, rising to 74% in 2011. For renter households with incomes between 80% and 100% of AMI, the percentage of cost-burdened households increased from 14% in 2000 to nearly 61% in 2011.

Table 14
Percentage of Cost-Burdened Households by Income Level
City of Cambridge
2000 to 2011

Tenure/% AMI	2000[1]		2007-2011	
	>30%[2]	>50%[3]	>30%[2]	>50%[3]
Renters				
<=30%	62.6%	48.3%	64.8%	53.7%
30% to 50%	70.2%	37.8%	80.0%	52.4%
50% to 80%	56.7%	10.4%	73.5%	24.9%
80% to 100%	14.1%	1.3%	60.6%	7.3%
>100%	N/A	N/A	12.9%	1.0%
Total	39.6%	18.6%	44.7%	24.1%
Owners				
<=30%	77.1%	61.3%	84.5%	70.1%
30% to 50%	56.3%	40.1%	72.0%	48.0%
50% to 80%	46.9%	23.7%	50.5%	27.8%
80% to 100%	13.6%	2.7%	43.1%	23.6%
>100%	N/A	N/A	15.5%	3.3%
Total	23.9%	11.2%	26.8%	12.6%
All Households				
<=30%	N/A	N/A	66.9%	55.5%
30% to 50%	N/A	N/A	78.5%	51.6%
50% to 80%	N/A	N/A	67.5%	25.7%
80% to 100%	N/A	N/A	54.8%	12.8%
>100%	N/A	N/A	14.2%	2.1%
Total	N/A	N/A	38.4%	20.0%

[1]Data not broken out for >100% AMI and not reported for all households. Included in 80% to 100% category.
[2]Households paying more than 30% of gross income on housing.
[3]Households paying more than 50% of gross income on housing.
Source: Department of Housing and Urban Development (HUD) Comprehensive Housing Affordability Strategy (CHAS) data; DRA.

Household Income Distribution

The household income distribution in the City of Cambridge has changed significantly since the year 2000, with a notable decline in the proportion of households with incomes under 100% of AMI. **Chart 1** and **Table 15** present the distribution of households by income level in the City of Cambridge for 2000, and 2007 to 2011 based on CHAS data. It shows that the percentage of moderate income households in the City earning from 50% to 80% of AMI has declined from 15% in 2000 to 8% in 2011. The percentage of households with incomes between 80% and 120% of AMI has also declined, from 22% in 2000 to 16% in 2011. The proportion of lower income households, earning under 50% of median income, was little changed but did shift more toward the lower end of the income spectrum. The largest percentage declines in households by income level occurred in the 50% to 100% of AMI range, dropping from 27% to 16%. This decline is seen in both renter and owner households.

Overall, the percentage of households in the City with incomes under 100% of AMI has declined from 57% to 45%. The City lost about 3,500 households from this income range over this period, while the total number of households gained was almost 2,800. The decline in households with incomes under 100% of AMI level has likely only accelerated since 2012, given the continued rapid increase in housing costs.

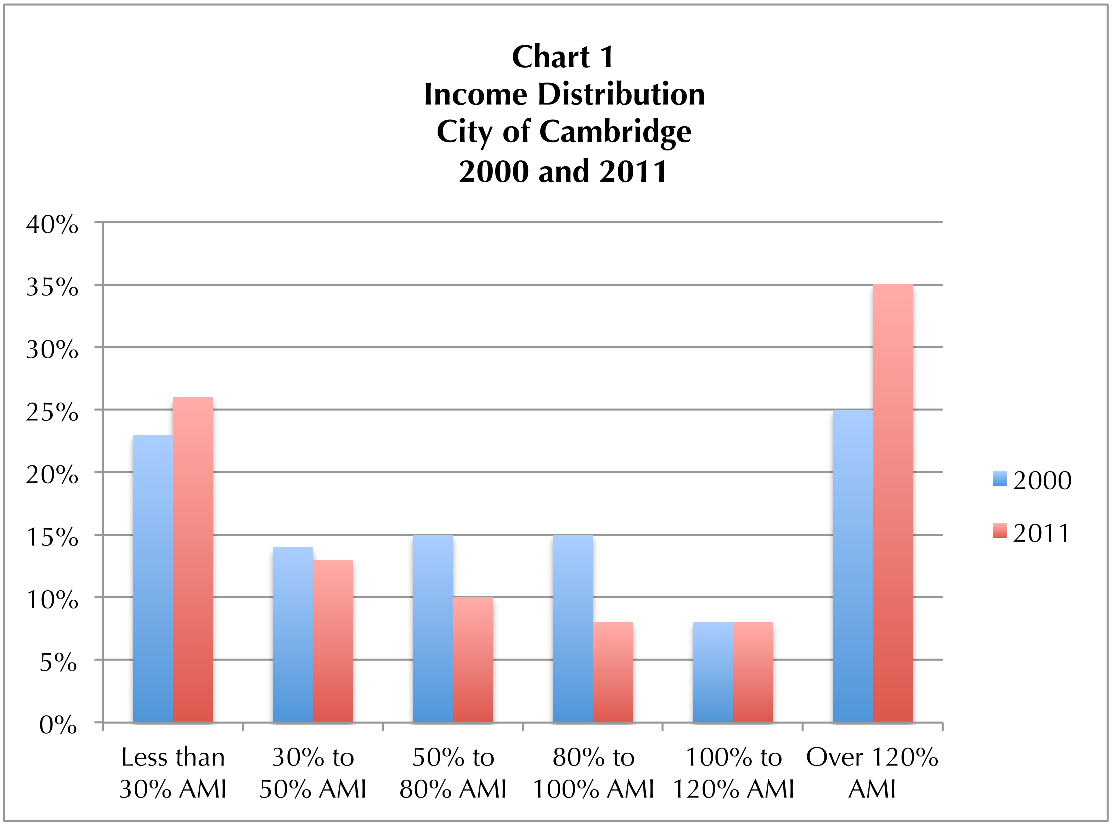
Chart 1
Income Distribution
City of Cambridge
2000 and 2011
40%
35%
30%
25%
20%
15%
10%
5%
0%
Less than 30% AMI
30% to 50% AMI
50% to 80% AMI
80% to 100% AMI
100% to 120% AMI
Over 120% AMI
2000
2011

Table 15 Distribution of Households by Income Level City of Cambridge 2000 to 2011				
Tenure/% AMI	**2000**		**2007 to 2011**	
	No. of HH	**% of HH**	**No. of HH**	**% of HH**
Renters				
<=30%	6,595	23%	7,625	26%
30% to 50%	4,120	14%	3,720	13%
50% to 80%	4,330	15%	2,790	10%
80% to 100%	4,415	15%	2,450	8%
100% to 120%	2,165	8%	2,355	8%
>120%	7,260	25%	10,280	35%
Total	28,885	100%	29,220	100%
Owners				
<=30%	940	7%	935	6%
30% to 50%	1,030	7%	875	5%
50% to 80%	1,110	8%	990	6%
80% to 100%	1,580	12%	1,230	8%
100% to 120%	1,110	8%	1,095	7%
>120%	7,965	58%	11,050	68%
Total	13,735	100%	16,170	100%
All Households				
<=30%	7,534	18%	8,560	19%
30% to 50%	5,150	12%	4,595	10%
50% to 80%	5,440	13%	3,780	8%
80% to 100%	5,995	14%	3,680	8%
100% to 120%	3,275	8%	3,450	8%
>120%	15,225	35%	21,330	47%
Total	42,620	100%	45,395	100%
HH <=80% AMI	**18,125**	**43%**	**16,935**	**37%**
HH 80% to 120% AMI	**9,270**	**22%**	**7,130**	**16%**
HH <=120% AMI	**27,395**	**64%**	**24,065**	**53%**

[1]Over 100% AMI category not reported. Included in 100% to 120% category.
Source: Department of Housing and Urban Development (HUD) Comprehensive Housing Affordability Strategy (CHAS) data; DRA.

Table 16 presents data on the household income distribution for household sizes of one, two, three and four or more persons in the City of Cambridge in 2000 and 2009 to 2011. These data are derived from Public Use Microdata Sample (PUMS) files from the U.S. Census for 2000 and the three-year ACS for 2009 to 2011. The data exclude households where the head of household is a student at a post-secondary institution. Since this data is based on a sample (and in the case of ACS data, a sample of a sample), it is useful for reviewing the income distribution for particular household sizes, but considered less accurate for analyzing the income distribution across the entire City population.

The data show that in 2000 the percentage of households in the 50% to 80% AMI category targeted by the City's inclusionary program was roughly similar across household sizes, ranging from 13.4% for two-person households to 15.7% for four-person households.

Between 2000 and 2011, the percentage of households in the 50% to 80% category increased for one- and two-person households but decreased for households with three persons or four or more persons. The percentage of one-person households in this income range increased from 15.4% to 17.6%, while the percentage of two-person households increased from 13.4% to 15.4%. The percentage of three-person households in the 50% to 80% AMI income group decreased sharply from 14.3% to 8.7% over the same time period, and the percentage of households with four or more persons also declined from 15.7% to 13.5%.

Overall, average household size in the City has declined from 2.08 in 1990, to 2.03 in 2000, and to 2.00 in 2010. However, the percentage of three-person households in the City increased slightly from 13% from 2000 to 14% in 2011[1]. This suggests the decline in three-person households with incomes between 50% and 80% AMI may partially be a result of decreased housing affordability.

The percentage of four or more person households in the City declined from 13% in 2000 to 11% in 2011, based on the same data sources. The decline in four or more person households in the 50% and 80% AMI appears to parallel the overall trend in larger households in the City.

[1] Based on 2000 Census data and 3-year ACS data for 2009-2011.

Table 16 Distribution of Households by Household Size and Income Level City of Cambridge 2000 to 2011				
Year/% AMI	**1 Person**	**2 Persons**	**3 Persons**	**4+ Persons**
2000				
<=50%	35.8%	16.4%	20.9%	23.6%
50% to 80%	15.4%	13.4%	14.3%	15.7%
80% to 100%	11.5%	7.4%	9.5%	11.6%
100% to 120%	8.5%	7.0%	9.5%	8.9%
>120%	28.8%	55.8%	45.8%	40.2%
Total	100.0%	100.0%	100.0%	100.0%
2009-2011				
<=50%	37.4%	18.8%	29.2%	22.9%
50% to 80%	17.6%	15.4%	8.7%	13.5%
80% to 100%	10.0%	9.9%	7.8%	3.8%
100% to 120%	6.2%	10.6%	3.0%	11.3%
>120%	28.8%	45.2%	51.2%	48.5%
Total	100.0%	100.0%	100.0%	100.0%

Source: 2000 Census Public Use Mircrosample analysis and American Community Survey 2009-2011 Three Year Public Use Microsample Analysis performed using Integrated Public Use Microdata Series Version 5.0, University of Minnesota; DRA.

Impact of Market Rate Housing on Income Diversity

Several facts indicate that new market rate housing in Cambridge is attracting and accommodating new higher-income households migrating to, rather than moving within the City, and this has had the effect of reducing the proportion of moderate and middle income households in the City and socio-economic diversity.

While the proportion of very low-income persons moving into the City is relatively stable, ACS data from 2006 to 2010 compared with ACS data from 2010 to 2014 shows an increase in the proportion of new residents with higher incomes. An evaluation of the data suggests that higher income persons in the City are increasing at a rate of about 7.5% per year while moderate and middle income persons are declining at a rate of about 6%.

A recently completed study on incentive zoning in Cambridge found that a proportionately greater number of new residents moving into the city for Cambridge-based jobs were high-income households. The study, completed in 2014 by Karl F. Seidman Consulting Services, included a survey among Cambridge employees to determine how many employees had moved into Cambridge or sought housing in Cambridge after obtaining a job in the city. The study also looked at the incomes earned by these employees and concluded that new employees moving into Cambridge to live are proportionately in higher income groups. Fifty-five percent of the employees moving into Cambridge were estimated to have incomes above 120% of median. Twelve percent of employees moving into Cambridge will be middle income from (80% to 120% AMI), 25% will have incomes between 50 and 80% AMI, and 8% will be below 50% AMI. Based on job growth from 2005 to 2013, this results in almost 1,000 new residents in the higher income levels.

Owners and property managers of newly developed market-rate housing have confirmed that the majority of new residents moving into their properties are not existing Cambridge residents, but are moving from out of state or from other communities. The market rents and sales prices in these properties far exceed affordable levels for low, moderate, or middle income households.

The result of this migration into new market rate units in Cambridge is a decrease in the City's diverse demographic profile. This migration will result in a continued decrease in the proportion of lower-income residents if current trends continue. In order to maintain, let alone increase, current levels of economic diversity in Cambridge, measures will need to be taken to maintain a stock of affordable housing that is sufficient to offset the current influx of high income residents.

Affordable Housing Stock

The City's existing stock of affordable housing units, defined as housing secured with long-term restrictions that maintain the affordability of these units to low and moderate income households, includes units made affordable through a number of programs and sources. **Table 17** summarizes data from the City's affordable housing inventories for 2008 through 2015.

The affordable units are broken down into four categories. Non-profit housing includes units in developments created and/or owned by non-profit developers as well as scattered-site homeownership units. Public housing includes both state and federal public housing that is owned and managed by the Cambridge Housing

Authority. Inclusionary includes affordable units that have been created under the inclusionary provisions in the Zoning Ordinance and similar zoning-based provisions. Private housing refers to affordable units located in privately-owned properties, including limited equity cooperatives.

The number of privately-owned restricted units has declined as projects receiving HUD assistance through such programs as the Section 236 insured mortgage program reached the end of their 40-year affordability terms. These units were not lost to the affordability housing stock, however, as they were preserved through conversion to nonprofit ownership. After accounting for the 345 formerly private units thus preserved, the number of non-profit owned restricted units has increased by about 201 new units over the 2008 to 2015 period, for an average of about 29 units per year. This reflects the challenges of developing affordable housing in a hot real estate market where non-profit developers must compete with market rate developers for sites, as well as reductions in state and federal sources of funding for affordable housing.

Over the 2008 to 2015 time period, the number of inclusionary units increased by 374 units, about 53 units per year, or at almost twice the pace of growth in newly created nonprofit-owned units. As a result, inclusionary housing units comprise an increasing percentage of total affordable housing units. As it continues to be challenging for non-profits to develop affordable housing, the importance of the Inclusionary Housing Program in creating affordable housing in Cambridge will only increase.

It is also important to note that the Inclusionary Housing Program targets households in the 50% to 80% of AMI category, while an increasing proportion of the city's public housing and non-profit stock are limited to households earning under 60% of AMI.

There are few state or federal resources available for middle-income units (80%-120% AMI). The few middle-income rental units that have been created have been required for individual projects through zoning or permitting.

Since the inclusionary units produced in Cambridge mirror the market-rate units in terms of size and bedroom count, the program produces largely studio, one- and two-bedroom units, which is what the market predominantly produces.

Table 17 Affordable Housing Inventory City of Cambridge June 2008 to June 2015						
Inventory Date	**Non-Profit Housing[1]**	**Public Housing[2]**	**Inclusionary Housing[3]**	**Private Housing[4]**	**Total Units**	**% Inclusionary**
June 19, 2008	2,358	2,710	450	1,564	7,082	6.4%
May 2, 2011	2,646	2,719	467	1,408	7,240	6.5%
Mar. 19, 2012	2,659	2,727	526	1,382	7,294	7.2%
June 30, 2013	2,682	2,727	719	1,418	7,546	9.5%
Dec. 31, 2014	2,801	2,727	818	1,324	7,670	10.7%
June 30, 2015	2,904	2,727	824	1,219	7,674	10.7%

[1]Non-profit owned or developed rental and homeownership housing and City-assisted scattered-site homeownership units.
[2]State- and federally-subsidized public housing units
[3]Affordable inclusionary housing units, including units under construction, as of June 2015. These figures include several developments that are subject to other similar inclusionary zoning like requirements, such as the recent Alexandria development in Kendall Square.
[4]Units in privately-owned and developed buildings; includes limited equity cooperatives.
[5]Inclusionary units as a percentage of total affordable units.
Source: City of Cambridge; DRA.

Table 18 summarizes trends in the City's affordable housing stock with long-term restrictions as a proportion of the total housing stock since 1997, based on data from the City's periodic housing stock inventory and estimates of total housing units in the City from the American Community Survey (ACS) three-year estimates. The City's affordable housing stock has remained relatively stable at approximately 15% of the total housing stock over the time period examined, with a slight uptick in 2013.

Table 18 Proportion of Housing Stock with Long-Term Restrictions Affordable to Low and Moderate Income Residents City of Cambridge 1997 to 2014						
	1997[1]	2008	2011	2012	2013	2014
Affordable Housing Units[2]	6,492	7,082	7,240	7,294	7,546	7,670
Total Housing Units[3]	42,073	45,544	47,400	47,500	48,400	50,100
Percent Affordable Units	15.4%	15.6%	15.3%	15.4%	15.6%	15.3%

[1]Figures for 1997 are derived from Stockard & Engler & Brigham, LLC, "Cambridge Inclusionary Housing Study," February, 1998. Affordable housing units estimated based on 15.43% affordable housing units and total housing units as of January 1, 1996 reported in the study.
[2] From City of Cambridge, affordable housing inventories.
[3] Based on American Community Survey three-year survey data and City of Cambridge housing permit data.
Source: City of Cambridge affordable housing inventories; American Community Survey; DRA.

Household Tenure and Size

Renters continue to comprise the majority of households in Cambridge. This percentage is influenced by the large student population in the City. The percentage of renter households declined slightly from 67.7% to 64.4% from 2000 to 2011, according to the CHAS data.

Table 19 displays trends in the household size distribution of renter and owner households in the City of Cambridge from 2000 to 2013. For owner households, the percentages of one-person and four-person households increased slightly since 2000, while the percentages of two-person households and five or more person households declined slightly. Among renters, the percentage of two-person households increased from 33% to 38%, while the percentages of all other household sizes declined slightly. Based on this data, there does not appear to be any significant change in the household size distribution from 2000-2013.

Table 19 Household Size Distribution City of Cambridge 2000 to 2013						
Year/Tenure	**1 Person**	**2 Person**	**3 Person**	**4 Person**	**5+ Person**	**Total**
2000						
Owners	36%	35%	14%	10%	5%	100%
Renters	44%	32%	13%	7%	4%	100%
All HH	42%	33%	13%	8%	4%	100%
2010						
Owners	37%	36%	14%	9%	4%	100%
Renters	43%	34%	14%	6%	3%	100%
All HH	41%	35%	14%	7%	4%	100%
2011-2013						
Owners	37%	33%	14%	12%	4%	100%
Renters	42%	38%	12%	6%	2%	100%
All HH	40%	36%	13%	8%	3%	100%

Source: 2000 Census; 2010 Census; 2011-2013 American Community Survey 3-Year; DRA.

Bedroom Count Distribution and Family Sized Units

Table 20a shows trends in the distribution of renter- and owner-occupied housing units by bedroom count in the City of Cambridge from 2000 to 2013. According to these data, Cambridge's housing stock is 35% studios and one-bedrooms, 37% two-bedrooms, and 28% three-bedroom and larger units. The overall breakdown of the housing stock by unit bedroom count has remained largely unchanged since 2000, though there has been a marked increase in the number of smaller-sized units being permitted in recent years so this proportion may be changing.

Table 20b shows the distribution by bedroom count of projects subject to inclusionary housing covenants. This data shows an increase in the percentage of one-bedroom units and a reduction in the number of two-bedroom units in rental projects subject to inclusionary housing covenants since FY 2012.

One other indication of the need for family sized units is evidenced by the applicant lists maintained by CDD. Applicants must apply to CDD for the inclusionary units, so the City maintains an active list of households seeking affordable housing. The one-bedroom list is very active with many applicants being housed quickly. In contrast, there is rarely a three-bedroom unit available and the list of applicants grows, with only an occasional household being housed.

Table 20a
Distribution of Housing Units by Bedroom Count
City of Cambridge
2000 to 2013

Year/Tenure	0 Bedroom	1 Bedroom	2 Bedroom	3 Bedroom	4+ Bedrooms	Total
2000						
Owners	1%	13%	37%	28%	21%	100%
Renters	10%	39%	35%	13%	3%	100%
All Units	7%	31%	35%	18%	9%	100%
2008-2010						
Owners	1%	13%	38%	26%	22%	100%
Renters	8%	38%	37%	12%	5%	100%
All Units	6%	30%	37%	16%	11%	100%
2011-2013						
Owners	1%	15%	38%	27%	19%	100%
Renters	8%	38%	37%	12%	5%	100%
All Units	5%	30%	37%	18%	10%	100%

Source: 2000 Census; 2008-2010 American Community Survey 3-Year; 2011-2013 American Community Survey 3-Year; DRA.

Table 20b
Distribution of Housing Units by Bedroom Count
Projects Under Inclusionary Housing Covenants
City of Cambridge
September, 2015

Year/Tenure	0 Bedroom	1 Bedroom	2 Bedroom	+3 Bedroom	Total
OWNER	5 (3%)	63 (33%)	92 (48%)	33 (17%)	193
RENTAL					
Total Thru FY12	39 (11%)	161 (44%)	155 (42%)	14 (4%)	369
Added FY13	11 (10%)	65 (59%)	31 (28%)	4 (4%)	111
Added 9/15	24 (14%)	89 (51%)	55 (31%)	8 (5%)	176
Total Thru 9/15	**74 (11%)**	**315 (48%)**	**241 (39%)**	**26 (4%)**	**656**

Source: City of Cambridge CDD; DRA.

Economic Feasibility Analysis

DRA prepared an economic analysis to assist the City in evaluating potential revisions to its Inclusionary Housing Program for residential development. DRA conducted the economic analysis using seven housing prototypes developed in conjunction with City staff that approximate housing developments that have been recently developed and are in the development pipeline in the City. The prototypes include low-, mid- and high-rise residential developments appropriate to a range of current zoning designations in the City. These prototypes form the basis of DRA's economic analysis. The findings of the analysis will assist in evaluating alternative policy options for revised inclusionary housing provisions in the Zoning Ordinance that will generate affordable housing while being sensitive to current and potential future real estate market conditions.

DRA reviewed available cost data and pro formas from the CDD and the Cambridge Redevelopment Authority. DRA interviewed a number of residential, mixed-use, and non-profit developers and City and Housing Authority staff in Cambridge to review the prototypes, revenue, operating cost and development cost assumptions used in the analysis. DRA considered and incorporated comments received into the analysis as we considered appropriate.

DRA also consulted with the City's Assessing Department regarding prevailing cap rates in the City, reasonable rates of return on equity, the ratio of debt to equity, and development/stabilization periods on recent residential development projects in the City of Cambridge.

Key Findings:
Cambridge, within limits, can increase the percentage of units set aside and alter the income targeting of its IHP without rendering market-rate housing economically problematic. The higher the inclusionary standard and the deeper the affordability, the greater the impact on the feasibility of residential development. As the City assesses options, these analyses are useful to consider so as not to either discourage development or tilt development in favor of commercial projects.

Methodology and Definition of Key Terms

DRA evaluated the economic feasibility of the prototype developments using both Return on Equity (ROE) and Residual Land Value (RLV) analyses. The return on equity approach calculates the value of a development based on its stabilized income potential and subtracts the costs of development (including land) to determine the net value of the investment, or developer/investor profit. Under the ROE approach, the financial feasibility of the prototypes is measured by the rate of the return on equity that the resulting net investment value (profit or loss) represents. Land costs are held fixed at an estimated market land price and the economic impact of the program is shown as a change in the dollar amount of the net value of investment in the prototype and as a change in the ROE.

Land residual analysis methodology calculates the value of a development based on its income potential and subtracts the costs of development (excluding land but including an assumed return on equity), to yield the underlying value of the land. When evaluating alternative land uses, the alternative that generates the highest value to a site is considered its highest and best use. An alternative that generates a value to the land that is negative, or well below market land sales prices, is financially infeasible.

Both the ROE and RLV analyses calculate the value of rental prototypes at a point in time based on the estimated stabilized net operating income of the prototype (see definition below). A development and stabilization/sales period of four years is assumed for the larger prototypes of 100 units or more (Prototypes 1, 2 and 3), and three years for the prototypes of 40 units or less (Prototypes 4 through 7).

DRA estimated the costs of developing each prototype, including land, site improvement, building and parking construction, and soft costs, based on a review of available pro forma data and interviews with developers and others active in the Cambridge market.

DRA calculated the net operating income (NOI) from each prototype based on estimated market rents and operating costs for the rental units and condominium sales prices for the owner units. Net operating income for the apartment uses is capitalized at estimated capitalization rates to determine the value of the developed property. Net operating income and net sales income were calculated for the prototypes assuming 100% market-rate units, and under alternative inclusionary housing set-asides and income targets. This allows a comparison of the financial performance of the prototypes under alternative inclusionary housing program options.

Key terms and assumptions used in this analysis are as follows:

Return on Equity (ROE): For the purposes of this analysis, ROE is measured as net project value (capitalized net operating income for the rental prototypes or net sales proceeds for the condo prototypes, less total development costs), averaged over the estimated term of the equity investment, divided by the total amount of the equity investment. Equity is assumed to finance 30% of total development costs, including both developer equity and investor equity. For the ROE analysis, feasibility threshold returns are estimated at 8%.

In order for a project to be financially feasible, developers must achieve certain returns. Otherwise, the project will not go forward. Therefore, the analysis of the impacts of inclusionary housing on development projects use standard expected returns in order to determine the extent to which changes can be made to the program before projects are no longer financially feasible. For the inclusionary housing ordinance to be effective and maximize the production of affordable units, projects need to be economically feasible.

Residual land value (RLV): Land residual analysis calculates the value of a development based on its income potential and subtracts the costs of development and an assumed return on equity to yield the underlying value of the land. RLV is generally measured as the dollar value per square foot of site area. For the land residual analysis, feasibility is measured by residual land values that approach or exceed current market land sales prices after deducting development costs and an assumed return on equity of 8%. Equity is again assumed to finance 30% of total development costs.

Cap rate: A capitalization (or "cap") rate is the ratio of net operating income to project fair market value, or project sales price, exhibited in the market and reflects the rate of return required by investors in rental property. Cap rates are tracked by land use and market area based on observed property sales. This analysis uses cap rates to estimate the fair market value of the rental prototypes. Net operating income for the apartment uses is capitalized at an estimated cap rate to determine the estimated fair market value of the developed and stabilized property. The analysis was conducted under two capitalization ("cap") rate assumptions. Based on consultation with the City Assessing Department, current cap rates in Cambridge are approximately

4.00% for projects with 50 units or more and 4.25% for projects with 50 units or less. Since cap rates today are at historically low levels, the higher cap rate assumption adds 75 basis points to the lower cap rates for comparison with a prospective economic view.

Net project value: For this analysis, net project value is calculated by subtracting total project development costs from the capitalized market value of the prototype (or total combined unit sales prices for the condominium prototypes). Net project value represents the gross return to the developer and equity investor.

Stabilized net operating income: During the lease-up period, a rental development will see a gradual increase in occupancy until the development is almost fully occupied and considered stabilized. Even after initial lease-up is completed, the development will experience some level of vacancy on an annual basis as the turnover of existing tenants occurs. For the rental developments, DRA analyzes their net operating income (which equals total possible gross rental income at full occupancy less and assumed vacancy less operating costs) assuming a stabilized vacancy rate of 5%.

Development Prototypes

The seven housing prototypes used in the economic analysis are described in **Table 21**. Prototypes are characterized in terms of total housing units, number of stories, density, FAR, unit bedroom mix, unit sizes, parking requirements and other characteristics.

DRA assumes that the high-rise building reflected in Prototype 1 is built in East Cambridge, which currently commands the highest rents in the City. DRA assumes that the mid-rise building in Prototype 2 is built in West Cambridge. The remaining prototypes could be developed in a variety of locations within the City.

Table 21
Development Prototypes
Cambridge Inclusionary Housing Analysis
2015

	Prototype 1	Prototype 2	Prototype 3	Prototype 4	Prototype 5	Prototype 6	Prototype 7
Total Housing Unit Count	**300**	**300**	**100**	**25**	**40**	**6**	**6**
Tenure (Renter/Owner)	Rental	Rental	Rental	Rental	Homeownership	Rental	Homeownership
Zoning	Special Permit	Special Permit	Special Permit	Special Permit	Special Permit	By Right	By Right
FAR (1)	5.2	2.6	2.00	2.60	2.60	1.00	1.00
Product Description	High Rise	6 Stories	4 to 5 Stories	3 to 4 Stories	5 Stories	Townhomes	Townhomes
Total Site Area (Acre)	1.22 Acres	2.62 Acres	1.22 Acres	0.23 Acres	0.55 Acres	0.16 Acres	0.16 Acres
Total Site Area (SF)	53,269	113,974	53,033	10,026	23,791	6,800	6,800
Density (Units Per Acre)	245	115	82	109	73	38	38
Construction Type	Type I	Type V over Type I	Type V over Type I	Type V over Type I	Type V over Type I	Type V	Type V
Parking Type	Structured	Structured	Below Grade	Below Grade	Structured	Surface	Surface
Approximate Building Stories	17 Stories	6 Stories	5 Stories	4 Stories	5 Stories	2 Stories	2 Stories
Net Rentable SF Residential	207,750 SF	222,250 SF	79,550 SF	19,550 SF	43,300 SF	6,800 SF	6,800 SF
Building Efficiency Ratio (%)	75%	75%	75%	75%	70%	100%	100%
Gross Building SF (Excluding Parking)	277,000 SF	296,333 SF	106,067 SF	26,067 SF	61,857 SF	6,800 SF	6,800 SF
Unit Bedroom Count Distribution							
Studio/Loft	35%	18%	15%	16%	0%	0%	0%
One Bedroom	40%	50%	45%	48%	35%	0%	0%
Two Bedroom/One Bath	0%	3%	0%	0%	0%	0%	0%
Two Bedroom/Two Bath	26%	28%	38%	36%	48%	67%	67%
Three Bedroom	0%	0%	2%	0%	18%	33%	33%
Total	101%	100%	100%	100%	100%	100%	100%
Units by BR Count							
Studio/Loft	105	55	15	4	0	0	0
One Bedroom	120	150	45	12	14	0	0
Two Bedroom/One Bath	0	10	0	0	0	0	0
Two Bedroom/Two Bath	75	85	38	9	19	4	4
Three Bedroom	0	0	2	0	7	2	2
Total Residential Units	300	300	100	25	40	6	6
Residential Density (Units per Acre)	245 du/a	115 du/a	82 du/a	109 du/a	73 du/a	38 du/a	38 du/a
Unit Size (Net SF)							
Studio/Loft	500 SF	500 SF	500 SF	500 SF			
One Bedroom	700 SF	700 SF	750 SF	750 SF	900 SF		
Two Bedroom/One Bath	900 SF	900 SF					
Two Bedroom/Two Bath	950 SF	950 SF	950 SF	950 SF	1,100 SF	1,000 SF	1,000 SF
Three Bedroom			1,100 SF		1,400 SF	1,400 SF	1,400 SF
Average Unit Size	*693 SF*	*741 SF*	*796 SF*	*782 SF*	*1,083 SF*	*1,133 SF*	*1,133 SF*
Parking Spaces							
Average Spaces Per Unit	0.500	0.750	0.875	0.875	1.00	1.00	1.00
Parking Spaces Total	150	225	88	22	40	6	6
No. of Underground Parking Spaces	0 Spaces	0 Spaces	88 Spaces	22 Spaces	0 Spaces	0 Spaces	0 Spaces
No. of Structured Parking Spaces	150 Spaces	225 Spaces	0 Spaces	0 Spaces	40 Spaces	0 Spaces	0 Spaces
No. of Surface Parking Spaces	0 Spaces	0 Spaces	0 Spaces	0 Spaces	0 Spaces	6 Spaces	6 Spaces
Gross SF/Parking Space (Incl. Circulation)	400 SF	400 SF	400 SF	400 SF	400 SF	380 SF	400 SF
Total Gross Parking SF	60,000 SF	90,000 SF	35,200 SF	8,800 SF	16,000 SF	0 SF	0 SF
Total Underground Parking SF	0 SF	0 SF	35,200 SF	8,800 SF	0 SF	0 SF	0 SF
Total Parking SF Above Grade	60,000 SF	90,000 SF	0 SF	0 SF	16,000 SF	0 SF	0 SF
Bike Parking Spaces	314 Spaces	314 Spaces	104 Spaces	26 Spaces	41 Spaces	6 Spaces	6 Spaces
Bike Parking Net SF Required	6,280 SF	6,280 SF	2,080 SF	520 SF	820 SF	120 SF	120 SF

(1) Gross building square feet (excluding parking, bike parking, mechanicals).
(1) Includes below-grand and above-grade parking.
(2) Includes above-grade parking; excludes underground parking. Excludes modest ground floor retail for commercial prototypes.
(2) Excludes above-grade and below-grade parking.
Source: City of Cambridge; DRA

Inclusionary Housing Scenarios

DRA compared the financial performance of the prototypes assuming 100% market-rate development with alternative inclusionary housing scenarios providing varying affordable unit set-aside percentages and income targets. DRA analyzed the four inclusionary scenarios developed in conjunction with City staff summarized in **Table 22**.

Table 22
Inclusionary Housing Scenario Set-Aside and Income Targeting Assumptions
Cambridge Inclusionary Housing Economic Analysis
2015

	Renter		**Owner**	
	% of Built Units after Bonus	**Target Percentage of AMI**	**% of Built Units after Bonus**	**Target Percentage of AMI**
Scenario 1[1] (Existing Program)	11.5%	65% of AMI	11.5%	65% of AMI
Scenario 2	15.0% plus 5.0%	65% of AMI 100% of AMI	15.0% 5.0%	65% of AMI 100% of AMI
Scenario 3	20.0%	65% of AMI	20.0%	65% of AMI
Scenario 4	20.0% plus 5.0%	65% of AMI 100% of AMI	20.0% plus 5.0%	65% of AMI 100% of AMI
Owner Only			20.0%	75% of AMI
Owner Only			20.0%	90% of AMI

1Under the current program requirement of 15%, after the density bonus is applied the typical inclusionary requirement for a project results in11.5% of total units.

Source: City of Cambridge; DRA.

Estimated Prototype Development Costs

DRA estimated development costs for each of the seven prototypes, including land acquisition costs, hard construction costs, soft or indirect costs, and sales/marketing costs.

Land Acquisition Costs

Land acquisition costs were estimated for the prototypes based on a review of land sales comparables data and interviews with local developers. The costs are intended to reflect recent purchases in the market. Land costs are shown on an estimated per housing unit and a per site square foot basis. Since both residential and commercial development is allowed on many sites, residential and commercial developers compete for some the same sites.

Hard Construction Costs

Hard construction costs were estimated for the prototypes based on a review of available studies, recent pro formas, and interviews with developers active in the Cambridge market. Hard building construction costs are assumed to reflect costs for projects beginning construction in the current market. Hard costs include on-site improvements, building and parking costs.

Soft (Indirect) Development Costs

Soft or indirect costs were estimated based on DRA's experience with development nationwide, as well as information on local development projects. Soft costs include:

- Architectural, engineering and design fees;
- Legal and closing costs;
- Taxes and insurance (during the construction period);
- Interest during construction (land and construction loans);
- Financing fees;
- Marketing and leasing (for the rental prototypes);
- Marketing costs (for the owner prototypes).

Total soft costs are estimated to total 20% of hard costs for the larger prototypes (Prototypes 1 through 4) and 25% of hard costs for the smaller prototypes (Prototypes 5 through 7).

Total Development Costs

Total development costs, as defined for the purposes of this report, equal the sum of the above categories of development costs. DRA assumes that the prototypes would be financed, on average, through a combination of 70% debt and 30% equity. The 30% of equity assumed to finance the prototypes includes both developer equity and investor equity. Therefore, return on equity to the developer is included in the overall return on equity calculations.

The development cost assumptions used in this analysis and the resulting development cost budgets for each prototype are detailed in **Table 23.** This table and the rest of the tables referred to in this section are presented at the end of the text.

Estimated Market Rents and Sales Prices

Apartment Rents, Vacancy Rates and Operating Costs

DRA developed apartment rent and operating cost assumptions for the rental prototypes based on an analysis of market data, review of available pro formas, and interviews with local developers and other professionals involved in the Cambridge rental market. Estimated rental income is calculated based on an average rent per net square foot that varies by prototype. As noted above, Prototype 1 is assumed to represent market conditions in East Cambridge, Prototype 2 is assumed to represent market conditions in West Cambridge, and the others could be developed in multiple locations in the City.

The net operating income calculations assume a 5% vacancy rate on the rental units and monthly income from parking spaces in addition to the unit rents.

DRA developed per unit stabilized operating costs for the rental properties. Operating costs vary depending upon the level of services and amenities expected with a certain rent level and the property taxes associated with the location of the property. The highest operating costs are for the high-rise properties, which offer a high level of services and amenities and have the highest property taxes because of their high property values.

Net operating income assumptions and calculations for the market-rate housing units are shown in **Table 24**.

Condominium Sales Prices

Most of the residential development since 2010 has served the rental market. However, a few successful condominium developments in recent years suggest that the condo market is improving and may soon comprise a larger share of new development. According to City assessing data, the average price per square foot for condominium resales in 2014 was $601. Adding a 20% premium for new units, condominium sales prices for the owner prototypes are estimated at $720 per square foot. Condominium sales costs are estimated at 5% of gross sales prices.

Estimated condominium sales prices and projected net sales income are shown in **Table 25.**

Affordable Rents and Sales Prices

In order to analyze the impact of inclusionary affordable housing percentages on prototype financial feasibility, DRA calculated affordable monthly net rents for units ranging from studios to three-bedroom units. For the purposes of this analysis, we calculated affordable rents at 33% of gross income to include parking charges as provided for in the Zoning Ordinance. Affordable monthly housing expense is adjusted by household size based on an assumed average occupancy of 1 person for a studio and 1.5 persons per bedroom for the larger units. These figures indicate that a family of three at 65 percent of area median income should have to spend no more than $1,585 per month for rent plus utilities based on 2015 income limits.

DRA estimated utility costs for the inclusionary housing units based on utility allowances from the Cambridge Housing Authority (CHA), effective April 1, 2015. The CHA utility allowance schedule for apartments is summarized in **Table 26**. CHA varies heating utility allowances for Low-Rise/Garden and Elevator High Rise buildings. For this analysis, DRA deducted utility allowances for gas heating, cooking and water heating and base electric services.

DRA estimated the net operating income from affordable units by income level, for income levels ranging from 50% of AMI to 100% of AMI, after deducting a 3% vacancy allowance and estimated operating costs, which vary for low-, mid- and high-rise buildings. DRA adjusted the operating costs to account for lower property taxes for affordable units based on their lower net operating income. **Tables 27** through **29** show the calculations of net operating income for the affordable units for the high-, mid-, and low-rise prototype buildings, respectively. The tables also show the supportable per unit mortgage by income unit size and income level. Comparing the affordable mortgage per unit with per unit development costs reveals the per unit “affordability gap” between the cost of developing the unit and the amount of financing the unit can support at affordable rents. For high-rise buildings at the 50% of AMI level, affordable rents for the smaller units sizes are less than per unit operating costs, indicating the units generate a net operating deficit and do not contribute toward construction cost of the unit.

For the inclusionary condominium units, DRA estimated the affordable sales price by calculating affordable housing expense at 30% of gross income, assuming 6% of gross income for property taxes, insurance and HOA fees, and the remaining 24% for principal and interest.

The affordable mortgage is calculated assuming a mortgage interest rate of 5.25% and a 30-year mortgage term. The affordable sales price equals the affordable mortgage plus a 3% downpayment. Calculation of affordable sales prices by income level is shown in **Table 30** for owner Prototype 5 and **Table 31** for owner Prototype 7**.**

Inclusionary Housing Scenarios and Calculations

DRA analyzed four inclusionary housing scenarios, including the current inclusionary housing standards in the City of Cambridge and three alternative set-aside standards. **Tables 32** and **33** calculate the number of affordable units by income level under the four scenarios for rental and homeownership prototypes, respectively. **Table 34** calculates the number of market-rate units by income level and scenario. **Tables 35** and **36** repeat the calculations for the number of square feet of affordable and market-rate units, respectively.

Table 37 calculates the rental income from affordable units for each inclusionary scenario and rental prototype. **Tables 38** and **39** calculate total rental income and net operating income, respectively, for each inclusionary scenario and rental prototype, including both the affordable and market-rate units.

Table 40 calculates the sales proceeds from affordable units for each inclusionary scenario and owner prototype. **Table 41** calculates the total net sales income for each inclusionary scenario and owner prototype, including both the affordable and market-rate units.

Return on Equity and Land Residual Analysis Results

Tables 42 and **43** detail the return on equity analysis calculations for the prototypes by inclusionary housing set-aside scenario, assuming low and higher cap rates, respectively.

Tables 44 and **45** detail the land residual analysis calculations for the prototypes by inclusionary housing set-aside scenario, assuming low and higher cap rates, respectively. Residual land value is shown per square foot of site area and per housing unit.

The findings of the economic analysis are summarized as follows:

1. For the rental prototypes under the low cap rate assumption, the ROE for all of the prototypes substantially exceeds the acceptable rate of return threshold of 8% for Scenarios 1, 2 and 3. The ROE also equals or exceeds the acceptable rate of return under Scenario 4.

2. For the rental prototypes under the higher cap rate assumption, the ROE exceeds the acceptable rate of return for all rental prototypes for 100% market-rate development. Under Scenario 1 (the existing program), the ROE exceeds the acceptable rate of return for Prototypes 2, 3, and 6, and falls slightly below the acceptable rate of return for Prototypes 1 and 4. It also exceeds the acceptable rate of return under Scenarios 2 and 3 for Prototypes 3 and 6. The ROE falls below the acceptable rate of return for all prototypes except Prototype 6 under Scenario 4.

3. For owner Prototype 5, the ROE exceeds the acceptable rate of return for the market-rate development and Scenario 1 (the existing program). It drops slightly below the acceptable rate of return to 7% for Scenarios 2 and 3, and below the acceptable rate of return under Scenario 4. DRA also examined an owner housing set-aside of 20% at average income levels of 75% and 90% AMI. The ROE meets or exceeds the acceptable rate of return under both alternatives.

4. For the small six-unit owner Prototype 7, the ROE exceeds the acceptable rate of return for the 100% market-rate development and all Scenarios examined (assuming one affordable unit, or 17% of total units, in each case).

5. The RLV analysis shows similar results. Those scenarios with ROEs in excess of the acceptable rate of return generate land values in excess of the assumed land

sales prices. Those that fall below the acceptable rate of return also generate land values less than the assumed land sales prices, in some cases substantially less.

Regulation and development impact fees on residential development that increase the costs of development, including inclusionary housing standards, will ultimately be passed through to the land owner in the form of reduced land prices. In order for developers to profitably develop new housing, they will bid down land prices to the level that makes development feasible, given market economics and zoning regulations affecting the amount of development that can be built on a particular site. However, land prices react more quickly to factors that increase land prices, such as increases in rents. Land prices tend to be slower to respond to factors that decrease land prices, including changing market conditions and increased regulation or fees, as owners who purchased recently may be reluctant to take a loss and others may be hesitant to adjust their expectations downward.

Land prices are also volatile in response to economic cycles and factors beyond the control of local government. Land will lose value in the higher cap rate environments.

If the residual land value is negative, that indicates that capitalized values are not sufficient to cover the other development costs besides land, and new development will be halted until market conditions change. Therefore, very low or negative RLVs such as shown for all rental prototypes under Scenario 4 with the higher cap rate assumption, and for owner Prototype 5 under several of the scenarios suggest that development of these project types would not occur until market conditions change.

Policy Options and Recommendations

Cambridge's Inclusionary Housing Program has proven to be a successful and reliable vehicle for the production of new affordable housing units throughout Cambridge. As of the end of 2015, there are nearly 740 units completed and over 100 are in construction. In addition, there continues to be an active and steady pipeline of projects. A current list of almost 1,500 applicants for the inclusionary rental units demonstrates the demand and need for these units. The policy options and recommendations build upon the success of the program.

This section reviews policy issues of concern to the City of Cambridge regarding the inclusionary housing provisions of the Zoning Ordinance, as well as several additional issues identified by DRA in its review of the City's program. DRA describes policy options for these issues and makes policy recommendations for the City's consideration. These options and recommendations are based on the socioeconomic diversity analysis, the economic feasibility assessment, the review of selected inclusionary housing programs in other communities, and DRA's experience with inclusionary housing best practices nationwide.

1. Set-Aside Percentages and Target Income Levels

Cambridge specifies identical percentage set-asides and income targeting for rental and homeownership developments. Raising the percentage of affordable units and/or lowering income targeting have a measurable effect on the feasibility of residential projects in Cambridge. While market rents and prices are high and have been increasing, land and development costs are also high and increasing, reducing the margin of return to developers. If the inclusionary housing provisions become so onerous as to make new residential development problematic, then new affordable units will not be created. As Cambridge looks to update the Zoning Ordinance, the City will need to balance these concerns.

In Cambridge, sales prices for affordable owner units are set to be affordable to a target income of 65% AMI. Increasing the existing 65% AMI income targeting to a higher income target could enable more ownership units to be created. Based on the assumptions used in the economic analysis for Prototype 5 (mid-rise, 40 units), the supportable mortgage at 65% AMI versus 80% AMI and 100% AMI is summarized below. The supportable mortgage for a two-bedroom unit at 80% AMI is 1.25 times that at 65% AMI, so the City could require 25% more units with the same economic impact on the developer.

	65% AMI	80% AMI	100% AMI
Per Unit Affordable Mortgage: 2 BR Unit	$213,200	$265,600	$335,600
Per Unit Affordable Mortgage: 3 BR Unit	$252,700	$335,600	$396,600

The City's experience in marketing middle-income ownership units is primarily in the 80% to 100% AMI range. Although there are fewer applications for this income group than for those for units under 80%, there is steady demand. Current demand is strong for affordable homeownership units above the 80% AMI income level for one-bedroom units. A lower demand for larger middle-income units may be because there are more options outside of Cambridge for affordable units at this income level, or may be attributed to the declining middle class nationwide. In any event, the ownership component of the inclusionary program in Cambridge has been working well, with virtually no defaults by buyers of ownership inclusionary units. Despite the nationwide trend toward higher income targeting for owner units, these factors suggest that retaining the current income targeting in Cambridge for the ownership units is feasible if set-asides are not increased.

The percentage of renter households with incomes between 50% and 80% of AMI declined by one-third from 15% in 2000 to 10% in 2011. This points to a continued need for affordable rental units in the income range served by the IHP. For rental projects, the results of the economic analysis suggest that the rental housing prototypes can support increased housing set-asides of 15% of total units at 65% of AMI plus 5% of units at 100% of AMI or 20% of total units at 65% of AMI. On the owner side, prototypes can support set-asides of 20% of units at 75% of AMI or 90% of AMI.

Changing the rental housing set-aside to 15% of total units at 65% of AMI plus 5% at 100% of AMI would allow the City to create affordable units for the segment of the population with incomes between 80% and 100% of AMI, which has been shrinking since the year 2000. However, compared to a set-aside of 20% of units at 65% AMI, it would produce fewer units affordable to households with incomes below 80%. The segment of the population below 80% AMI has also been shrinking and experiences a much higher level of cost-burden than 80% AMI to 100% AMI group. Inclusionary is an important resource for households between 50% to 80% AMI, as it is one of the few resources for this income group. There are additional and steady resources for household in lower income groups.

Recommendations:

Rental Housing: DRA recommends increasing the set-aside percentages for rental housing to 15% of total units at 65% of AMI plus 5% of units at 100% of AMI; or 20% of total units at 65% of AMI.

Owner Housing: DRA recommends increasing the income limit to 100% AMI, and increase the target income level above 65%, with a 20% set-aside.

2. Use of Density Bonuses

The density bonus provides significant and predictable value to the developer. One of the recurring comments from the developers surveyed is that Cambridge's current program is predictable and consistent, providing certainty that is invaluable to developers.

Increasing the amount of the density bonus would provide additional value to the developer that could be used to offset increased inclusionary percentages, but must be assessed in terms of the feasibility of implementation (can more development actually fit on the site?) and in light of other land use policy goals for the City, such as those relating to the height and bulk of development.

Recommendation: DRA recommends keeping the existing density bonus under 30%. There are cases in which a greater percentage of affordable units, which exceed the inclusionary housing standards, may be warranted. In those cases, zoning changes could be enacted to add additional affordable units beyond the standards set forth in the inclusionary housing provisions of the Zoning Ordinance.

3. Creation of Family Units

The socioeconomic analysis indicates that unit sizes in Cambridge have remained relatively stable since 2000. However, in recent years there has been a trend among the larger rental developments toward smaller market-rate housing units. The City's 2014 asking rent survey indicated that 16.7% of two-bedroom listings are affordable to households earning 100% of AMI, and only 1.7% of three-bedroom listings.

One way to increase the number of affordable family-sized units created through the Inclusionary Housing Program would be to create specific standards, or incentives, for creating family-sized units. However, standards such as these would need to be weighed against policy priorities for higher unit counts as more family-sized units would result in fewer overall affordable units within a development.

Options that may be used to require or encourage the creation of family-sized affordable units include the following:

a. A standard for the provision of a certain percentage of units with three bedrooms, even when the market-rate development does not include these unit sizes.

b. Application of the set-aside percentage on other than a per unit basis, such as:

    i. A per square foot basis, allowing developers to provide different floor plans for (some or all) of the affordable units, resulting in fewer larger units than would be required applying the requirement on an identical unit basis. If this approach is used, DRA recommends setting minimum unit sizes (square feet) by unit bedroom count.

    ii. A bedroom count specification. This standard would be based on a percentage of total bedrooms in the market-rate project, rather than total units. A developer could meet the standard by providing fewer units with higher bedroom counts.

Developers have indicated that applying inclusionary housing percentages on a per square foot or per bedroom basis could be less expensive, since bedrooms are less expensive to build than baths or kitchens, so a three-bedroom/two-bath unit is less expensive on a per square foot basis than a two-bedroom/two-bath unit. On the other hand, floor plans usually stack bathrooms and baths on top of each other, which is more efficient from a construction perspective. This makes it harder to add different floor plans with varying bedroom counts, especially if they must be distributed equally throughout the building. The economic cost of alternative floor plans is greatest for high-rise buildings, which have less flexibility for creation of a few units of an alternative bedroom count.

The two approaches could be combined, whereby the standard for a certain percentage of three-bedroom units is combined with the ability to have the additional bedrooms and/or square footage count toward meeting the set-aside. This combination may result in fewer total affordable units being developed.

DRA is not aware of communities that have specifically required larger units, although there are communities such as Washington DC that apply inclusionary requirements as a percentage of FAR. We were not able to ascertain the effect of this type of requirement on the size of inclusionary units.

Recommendations: If the creation of larger affordable family units is a high policy priority for Cambridge, DRA recommends specifying a percentage of affordable units be three-bedroom units. Alternatively, or in combination with a three-bedroom unit requirement, DRA recommends that the City consider applying the set-aside percentage on a per bedroom or per square foot basis.

DRA further recommends that the City disallow the provision of studio units to meet inclusionary housing obligations, or create a structure through which studio units can be offered at a lower cost than one-bedroom units. These units are inadequately sized for even smaller families and are the hardest to fill of the City's inclusionary inventory.

4. Threshold Project Size and Fees for Partial Units

In Cambridge inclusionary zoning applies to new or converted residential projects with 10 or more units or with over 10,000 square feet of residential space. When projects result in a fractional unit, the number of inclusionary units is rounded up of .5 or above or down if under .5. Sometimes projects are built just under the threshold size (e.g. 9 unit projects, just under the 10 unit threshold). The analysis in this report suggests that the proportional impact on the City's diversity from a project under 10 units is not different than a 10 or more unit project and that one inclusionary unit requirement on smaller projects may be financially feasible. Therefore, lowering the threshold for the inclusionary housing provisions to projects with fewer than 10 units could be considered. In addition, for projects that result in a requirement of at least one inclusionary unit and a fractional unit, a payment reflecting the costs of providing the fractional units could be calculated and requested rather than rounding the unit numbers up or down.

Recommendations: DRA recommends that reducing the threshold size for an on-site requirement should be considered. For any fractional unit DRA recommends that the City request a payment representing the cost of a fractional unit.

5. Location of Affordable Units/Buildings with View Premiums

In luxury high-rise buildings with excellent views, units on higher floors command a view premium that can be a multiple of the rent or sales price for units on lower floors without views. In Cambridge, except for the exclusion of the very best and worst units, affordable units are required to be spread proportionately throughout the building. If affordable units include fewer premium units, this may allow for the provision of additional affordable units beyond the specified inclusionary housing standards. The city has already employed this strategy in some inclusionary projects.

Recommendation: DRA recommends allowing the option of selecting less premium units in exchange for an increase in the number of affordable units. Implementation of this option could be accomplished through establishment of quantifiable standards or by mutual agreement.

6. Residential versus Commercial Development

As the City looks to update its inclusionary housing standards, it is useful to put the inclusionary housing standards in context of broader land use regulation and market conditions that affect residential and non-residential development. As in many urban areas, a number of sites in Cambridge, particularly in areas such as Kendall Square, can be used for either residential, commercial and/or mixed-use development. Where this is the case, residential developers must compete with commercial developers to purchase sites for new development. As noted above, increasing the stringency of the inclusionary housing standards, holding rents/prices and development costs constant, will result in developers being able to pay less for the land. This, in turn, will make it more difficult for residential developers to compete with commercial developers for sites. The City recently increased its incentive fee for commercial development to the highest level in the region.

Recommendation: As Cambridge goes forward with potential changes to its affordable housing standards for residential and commercial development, DRA recommends that the City consider the impacts of its standards on the market competitiveness of residential versus commercial land uses.

7. Grandfathering Provisions

As noted above, increasing the percentage of affordable units and/or lowering income targeting has a measurable impact on development. Over time, land markets will adjust to increased affordable housing standards through a reduction in the land prices that developers can (and will) pay for new project sites, or at least a slowing of the escalation in land prices and landowner price expectations. Developers will adjust the land prices they can and will pay to maintain required rates of return to make development feasible. To allow time for market adjustments, changes to the ordinance should not apply to projects in construction or with a recorded IZ covenant

Recommendation: DRA recommends that changes to the ordinance not apply to projects in construction or with a recorded affordable housing covenant.

Table 23
Development Cost Assumptions and Budgets
Cambridge Inclusionary Housing Analysis
2015

		Prototype 1	Prototype 2	Prototype 3	Prototype 4	Prototype 5	Prototype 6	Prototype 7
ASSUMPTIONS								
Total Residential Units		*300*	*300*	*100*	*25*	*40*	*6*	*6*
Average Unit Size (Net SF)		*693*	*741*	*796*	*782*	*1,083*	*1,133*	*1,133*
Residential Net SF		*207,750*	*222,250*	*79,550*	*19,550*	*43,300*	*6,800*	*6,800*
Total Gross SF Building Area (Excluding Parking)		*277,000*	*296,333*	*106,067*	*26,067*	*61,857*	*6,800*	*6,800*
Underground Parking Spaces		*0*	*0*	*88*	*22*	*0*	*0*	*0*
Structured Parking Spaces		*150*	*225*	*0*	*0*	*40*	*0*	*0*
Surface Parking Spaces		*0*	*0*	*0*	*0*	*0*	*6*	*6*
Total Parking Spaces		*150*	*225*	*88*	*22*	*40*	*6*	*6*
Total Parking SF		*60,000*	*90,000*	*35,200*	*8,800*	*16,000*	*0*	*0*
Site Area (SF)		*53,269*	*113,974*	*53,033*	*10,026*	*23,791*	*6,800*	*6,800*
Approximate Building Stories		*17*	*6*	*5*	*4*	*5*	*2*	*2*
FAR (Based on Gross SF)		*5.2*	*2.6*	*2.0*	*2.6*	*2.6*	*1.0*	*1.0*
Zoning		*Special Permit*	*Special Permit*	*Special Permit*	*Special Permit*	*Special Permit*	*By Right*	*By Right*
Hard Cost Assumptions								
Land Price	Per Hsg. Unit	$50,000	$85,000	$85,000	$85,000	$85,000	$170,000	$170,000
	Per Site SF	$282	$224	$160	$212	$143	$150	$150
Site Improvements	Per Acre Site Area	$500,000	$500,000	$500,000	$500,000	$500,000	$500,000	$500,000
Hard Construction Cost (Per Gross SF)		$350	$230	$230	$230	$240	$225	$240
Underground Parking - Cost Per Space (1)		$90,000	$90,000	$90,000	$90,000	$90,000	$90,000	$90,000
Above-Grade Structured Parking - Cost Per Space (1)		$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000
On-Grade Surface Parking - Cost Per Space (1)		$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Soft Costs	% of Hard Costs	20.0%	20.0%	20.0%	20.0%	25.0%	25.0%	25.0%
DEVELOPMENT BUDGET								
Land Acquisition		$15,022,000	$25,530,000	$8,485,000	$2,125,000	$3,402,000	$1,020,000	$1,020,000
Site Improvements		$611,000	$1,308,000	$609,000	$115,000	$273,000	$78,000	$78,000
Building Construction Costs		$96,950,000	$68,157,000	$24,395,000	$5,995,000	$14,846,000	$1,530,000	$1,632,000
Underground Parking		$0	$0	$7,920,000	$1,980,000	$0	$0	$0
Above Grade Structured Parking		$3,750,000	$5,625,000	$0	$0	$1,000,000	$0	$0
On-Grade Surface Parking		$0	$0	$0	$0	$0	$60,000	$60,000
Soft Costs		$20,140,000	$14,756,400	$6,463,000	$1,595,000	$3,961,500	$382,500	$408,000
Total Development Costs, Including Land		**$136,473,000**	**$115,376,400**	**$47,872,000**	**$11,810,000**	**$23,482,500**	**$3,070,500**	**$3,198,000**
TDC Per Housing Unit		$454,910	$384,588	$478,720	$472,400	$587,063	$511,750	$533,000
TDC per SF Living Area		$657	$519	$602	$604	$542	$452	$470
TDC per Gross SF, Excluding Parking SF		$493	$389	$451	$453	$380	$452	$470
Total Development Costs, Excluding Land		**$121,451,000**	**$89,846,400**	**$39,387,000**	**$9,685,000**	**$20,080,500**	**$2,050,500**	**$2,178,000**

Source: DRA

Table 24
Net Operating Income from Market-Rate Apartments
100% Market Rate Units
Cambridge Inclusionary Housing Analysis

	Prototype 1	Prototype 2	Prototype 3	Prototype 4	Prototype 6
Tenure	Rental	Rental	Rental	Rental	Rental
Net Rentable SF of Apartment Space	207,750	222,250	79,550	19,550	6,800
Parking Spaces	150	225	88	22	6
Net Rentable SF of Retail Space	0	0	0	0	0
Approximate Building Stories	17	6	5	4	2
Number of Apartment Units					
Studio/Loft	105	55	15	4	0
One Bedroom	120	150	45	12	0
Two Bedroom/One Bath	0	10	0	0	0
Two Bedroom/Two Bath	75	85	38	9	4
Three Bedroom	0	0	2	0	2
Total	**300**	**300**	**100**	**25**	**6**
Unit Size (Square Feet)					
Studio/Loft	500	500	500	500	-
One Bedroom	700	700	750	750	-
Two Bedroom/One Bath	900	900	-	-	-
Two Bedroom/Two Bath	950	950	950	950	1,000
Three Bedroom	-	-	1,100	-	1,400
Average	*693*	*741*	*796*	*782*	*1,133*
Average Monthly Rent Per Square Foot	**$4.50**	**$3.25**	**$4.00**	**$3.75**	**$3.00**
Average Monthly Rent Per Unit	$3,119	$2,408	$3,184	$2,933	$3,399
Studio/Loft	$2,250	$1,625	$2,000	$1,875	$0
One Bedroom	$3,150	$2,275	$3,000	$2,813	$0
Two Bedroom/One Bath	$4,050	$2,925	$0	$0	$0
Two Bedroom/Two Bath	$4,275	$3,088	$3,800	$3,563	$3,000
Three Bedroom	$0	$0	$4,400	$0	$4,200
Parking Income ($/Space/Year)	$250	$170	$165	$165	$0
Parking Usage Rate	90%	85%	85%	85%	85%
Miscellaneous Income ($/Unit/Year)	$120	$120	$120	$120	$120
Rental Vacancy Rate	5.0%	5.0%	5.0%	5.0%	5.0%
Rental Operating Cost/Unit (2)	**$11,000**	**$8,000**	**$8,000**	**$8,000**	**$6,500**
Total Monthly Gross Rental Income	**$934,875**	**$722,313**	**$318,200**	**$73,313**	**$20,400**
Annual Gross Income	**$11,218,500**	**$8,667,750**	**$3,818,400**	**$879,750**	**$244,800**
Less: Vacancy	($560,925)	($433,388)	($190,920)	($43,988)	($12,240)
Plus: Parking Income	$405,000	$390,150	$148,104	$37,026	$0
Plus: Misc. Income	$36,000	$36,000	$12,000	$3,000	$720
Plus: Retail Income	$0	$0	$0	$0	$0
Adjusted Annual Gross Income	**$11,098,575**	**$8,660,513**	**$3,787,584**	**$875,789**	**$233,280**
Operating Costs					
Apartment Operating Costs	($3,300,000)	($2,400,000)	($800,000)	($200,000)	($39,000)
Net Operating Income	**$7,798,575**	**$6,260,513**	**$2,987,584**	**$675,789**	**$194,280**

Source: DRA

Table 25
Net Sales Proceeds from Market-Rate Owner Housing
100% Market Rate Units
Cambridge Inclusionary Housing Analysis

	Prototype 5	Prototype 7
Net Saleable SF of Living Area	43,300	6,800
Number of Owner Hsg. Units		
Studio/Loft	0	0
One Bedroom	14	0
Two Bedroom/One Bath	0	0
Two Bedroom/Two Bath	19	4
Three Bedroom	7	2
Total	**40**	**6**
Unit Size (Square Feet)		
Studio/Loft	-	-
One Bedroom	900	-
Two Bedroom/One Bath	-	-
Two Bedroom/Two Bath	1,100	1,000
Three Bedroom	1,400	1,400
Average	1,083	1,133
Average Sales Price Per Square Foot	$720.00	$720.00
Average Sales Price Per Unit	$779,760	$815,760
Sales Costs (% of Gross Sales Income)	5%	5%
Total Gross Sales Proceeds	**$31,176,000**	**$4,896,000**
Less: Sales Costs	($1,558,800)	($244,800)
Net Sales Proceeds	**$29,617,200**	**$4,651,200**
Net Sales Proceeds Per Net Saleable SF	**$684**	**$684**

Source: DRA

Table 26
Utility Allowances
Cambridge Inclusionary Housing Analysis

No. of Bedrooms	**Studio**	**1 Bedroom**	**2 Bedroom**	**3 Bedroom**	**4 Bedroom**
Heating: Low Rise Garden					
Natural Gas	$79	$80	$96	$96	$110
Electric	$94	$94	$122	$149	$188
Oil	$132	$131	$166	$166	$198
Heating: Elevator High-Rise					
Natural Gas	$56	$56	$67	$67	$79
Electric	$65	$66	$85	$105	$131
Oil	$92	$92	$117	$117	$138
Cooking					
Natural Gas	$14	$15	$17	$18	$19
Electric	$11	$12	$14	$17	$18
Water Heating					
Natural Gas	$10	$15	$28	$36	$69
Electric	$31	$46	$61	$92	$122
Oil	$15	$22	$45	$60	$75
Other Electric	$63	$63	$76	$90	$108
Assumed Tenant-Paid Utilities (1)					
Low Rise	**$166**	**$173**	**$217**	**$240**	**$306**
High Rise	**$143**	**$149**	**$188**	**$211**	**$275**

(1) Assumes tenant pays gas heating, cooking and water heating, and other electric.
Source: Cambridge Housing Authority, effective April 1, 2015.

Table 27
Supportable Mortgage Calculations, Affordable Rental Housing
High-Rise Prototypes
Cambridge Inclusionary Housing Analysis

Assumptions

HUD Median Household Income, Boston-Cambridge-Quincy, 2015			$98,500		
Affordable Housing Expense As a % of Income (1)			33%		
No. of Bedrooms	**Studio**	**1 Bedroom**	**2 Bedroom**	**3 Bedroom**	**4 Bedroom**
Household Size	1.0 Persons	1.5 Persons	3.0 Persons	4.5 Persons	6.0 Persons
Household Size Income Adjust. Factor	70%	75%	90%	104%	116%
Renter Utility Allowance, City of Cambridge (2)					
Low-Rise	$166	$173	$217	$240	$306
Mid-Rise/High-Rise	$143	$149	$188	$211	$275
Miscellaneous Income Per Unit Per Year	$100				
Vacancy Rate	3.00%				
Operating Cost Per Unit Per Year					
High Rise	$11,000				
Mid Rise	$8,000				
Low Rise	$6,500				
Mortgage Interest Rate	6.50%				
Mortgage Amortization (Years)	30				

	Studio	**1 Bedroom**	**2 Bedroom**	**3 Bedroom**	**4 Bedroom**
Per Unit Supportable Mortgage By Income Level					
<u>50% of Median</u>					
Annual Income Limit	$34,475	$36,938	$44,325	$51,220	$57,130
Affordable Monthly Housing Expense	$948	$1,016	$1,219	$1,409	$1,571
Less: Monthly Utility Allowance	($143)	($149)	($188)	($211)	($275)
Affordable Monthly Rent	$805	$867	$1,031	$1,198	$1,296
Annual Gross Rental Income Per Unit	$9,660	$10,404	$12,372	$14,376	$15,552
Plus: Miscellaneous Income	$100	$100	$100	$100	$100
Less: Vacancy	($290)	($312)	($371)	($431)	($467)
Less: Annual Unit Operating Costs	($11,000)	($11,000)	($11,000)	($11,000)	($11,000)
Net Operating Income Per Unit	($1,530)	($808)	$1,101	$3,045	$4,185
Available for Debt Service	($1,530)	($808)	$1,101	$3,045	$4,185
Supportable Mortgage Per Unit	($20,200)	($10,700)	$14,500	$40,100	$55,200
<u>65% of Median</u>					
Annual Income Limit	$44,818	$48,019	$57,623	$66,586	$74,269
Affordable Monthly Housing Expense	$1,232	$1,321	$1,585	$1,831	$2,042
Less: Monthly Utility Allowance	($143)	($149)	($188)	($211)	($275)
Affordable Monthly Rent	$1,089	$1,172	$1,397	$1,620	$1,767
Annual Gross Rental Income Per Unit	$13,068	$14,064	$16,764	$19,440	$21,204
Plus: Miscellaneous Income	$100	$100	$100	$100	$100
Less: Vacancy	($392)	($422)	($503)	($583)	($636)
Less: Annual Unit Operating Costs	($11,000)	($11,000)	($11,000)	($11,000)	($11,000)
Net Operating Income Per Unit	$1,776	$2,742	$5,361	$7,957	$9,668
Available for Debt Service	$1,776	$2,742	$5,361	$7,957	$9,668
Supportable Mortgage Per Unit	$23,400	$36,200	$70,700	$104,900	$127,500
<u>80% of Median</u>					
Annual Income Limit	$55,160	$59,100	$70,920	$81,952	$91,408
Affordable Monthly Housing Expense	$1,517	$1,625	$1,950	$2,254	$2,514
Less: Monthly Utility Allowance	($143)	($149)	($188)	($211)	($275)
Affordable Monthly Rent	$1,374	$1,476	$1,762	$2,043	$2,239
Annual Gross Rental Income Per Unit	$16,488	$17,712	$21,144	$24,516	$26,868
Plus: Miscellaneous Income	$100	$100	$100	$100	$100
Less: Vacancy	($495)	($531)	($634)	($735)	($806)
Less: Annual Unit Operating Costs	($11,000)	($11,000)	($11,000)	($11,000)	($11,000)
Net Operating Income Per Unit	$5,093	$6,281	$9,610	$12,881	$15,162
Available for Debt Service	$5,093	$6,281	$9,610	$12,881	$15,162
Supportable Mortgage Per Unit	$67,200	$82,800	$126,700	$169,800	$199,900
<u>100% of AMI</u>					
Annual Income Limit	$68,950	$73,875	$88,650	$102,440	$114,260
Affordable Monthly Housing Expense	$1,896	$2,032	$2,438	$2,817	$3,142
Less: Monthly Utility Allowance	($143)	($149)	($188)	($211)	($275)
Affordable Monthly Rent	$1,753	$1,883	$2,250	$2,606	$2,867
Annual Gross Rental Income Per Unit	$21,036	$22,596	$27,000	$31,272	$34,404
Plus: Miscellaneous Income	$100	$100	$100	$100	$100
Less: Vacancy	($631)	($678)	($810)	($938)	($1,032)
Less: Annual Unit Operating Costs	($11,000)	($11,000)	($11,000)	($11,000)	($11,000)
Net Operating Income Per Unit	$9,505	$11,018	$15,290	$19,434	$22,472
Available for Debt Service	$9,505	$11,018	$15,290	$19,434	$22,472
Supportable Mortgage Per Unit	$125,300	$145,300	$201,600	$256,200	$296,300

(1) Includes 30% for rent plus utilities plus 3% for parking, per the Cambridge IHO.
(2) Source: Cambridge Housing Authority, effective April 1, 2015.

Source: DRA

Table 28
Supportable Mortgage Calculations, Affordable Rental Housing
Mid-Rise Prototypes
Cambridge Inclusionary Housing Analysis

Assumptions

HUD Median Household Income, Boston-Cambridge-Quincy, 2015			$98,500		
Affordable Housing Expense As a % of Income (1)			33%		
No. of Bedrooms	**Studio**	**1 Bedroom**	**2 Bedroom**	**3 Bedroom**	**4 Bedroom**
Household Size	1.0 Persons	1.5 Persons	3.0 Persons	4.5 Persons	6.0 Persons
Household Size Income Adjust. Factor	70%	75%	90%	104%	116%
Renter Utility Allowance, City of Cambridge (2)					
Low-Rise	$166	$149	$188	$211	$275
Mid-Rise/High-Rise	$143	$173	$217	$240	$306
Miscellaneous Income Per Unit Per Year	$100				
Vacancy Rate	3.00%				
Operating Cost Per Unit Per Year					
High Rise	$11,000				
Mid Rise	$8,000				
Low Rise	$6,500				
Mortgage Interest Rate	6.50%				
Mortgage Amortization (Years)	30				
Debt Coverage Ratio	1.00				

	Studio	**1 Bedroom**	**2 Bedroom**	**3 Bedroom**	**4 Bedroom**
Per Unit Supportable Mortgage By Income Level					
50% of Median					
Annual Income Limit	$34,475	$36,938	$44,325	$51,220	$57,130
Affordable Monthly Housing Expense	$948	$1,016	$1,219	$1,409	$1,571
Less: Monthly Utility Allowance	($166)	($149)	($188)	($211)	($275)
Affordable Monthly Rent	$782	$867	$1,031	$1,198	$1,296
Annual Gross Rental Income Per Unit	$9,384	$10,404	$12,372	$14,376	$15,552
Plus: Miscellaneous Income	$100	$100	$100	$100	$100
Less: Vacancy	($282)	($312)	($371)	($431)	($467)
Less: Annual Unit Operating Costs (1)	($8,000)	($8,000)	($8,000)	($8,000)	($8,000)
Net Operating Income Per Unit	$1,202	$2,192	$4,101	$6,045	$7,185
Available for Debt Service	$1,202	$2,192	$4,101	$6,045	$7,185
Supportable Mortgage Per Unit	$15,900	$28,900	$54,100	$79,700	$94,700
65% of Median					
Annual Income Limit	$44,818	$48,019	$57,623	$66,586	$74,269
Affordable Monthly Housing Expense	$1,232	$1,321	$1,585	$1,831	$2,042
Less: Monthly Utility Allowance	($166)	($149)	($188)	($211)	($275)
Affordable Monthly Rent	$1,066	$1,172	$1,397	$1,620	$1,767
Annual Gross Rental Income Per Unit	$12,792	$14,064	$16,764	$19,440	$21,204
Plus: Miscellaneous Income	$100	$100	$100	$100	$100
Less: Vacancy	($384)	($422)	($503)	($583)	($636)
Less: Annual Unit Operating Costs (1)	($8,000)	($8,000)	($8,000)	($8,000)	($8,000)
Net Operating Income Per Unit	$4,508	$5,742	$8,361	$10,957	$12,668
Available for Debt Service	$4,508	$5,742	$8,361	$10,957	$12,668
Supportable Mortgage Per Unit	$59,400	$75,700	$110,200	$144,500	$167,000
80% of Median					
Annual Income Limit	$55,160	$59,100	$70,920	$81,952	$91,408
Affordable Monthly Housing Expense	$1,517	$1,625	$1,950	$2,254	$2,514
Less: Monthly Utility Allowance	($166)	($149)	($188)	($211)	($275)
Affordable Monthly Rent	$1,351	$1,476	$1,762	$2,043	$2,239
Annual Gross Rental Income Per Unit	$16,212	$17,712	$21,144	$24,516	$26,868
Plus: Miscellaneous Income	$100	$100	$100	$100	$100
Less: Vacancy	($486)	($531)	($634)	($735)	($806)
Less: Annual Unit Operating Costs (1)	($8,000)	($8,000)	($8,000)	($8,000)	($8,000)
Net Operating Income Per Unit	$7,826	$9,281	$12,610	$15,881	$18,162
Available for Debt Service	$7,826	$9,281	$12,610	$15,881	$18,162
Supportable Mortgage Per Unit	$103,200	$122,400	$166,200	$209,400	$239,500
100.0% of AMI					
Annual Income Limit	$68,950	$73,875	$88,650	$102,440	$114,260
Affordable Monthly Housing Expense	$1,896	$2,032	$2,438	$2,817	$3,142
Less: Monthly Utility Allowance	($166)	($149)	($188)	($211)	($275)
Affordable Monthly Rent	$1,730	$1,883	$2,250	$2,606	$2,867
Annual Gross Rental Income Per Unit	$20,760	$22,596	$27,000	$31,272	$34,404
Plus: Miscellaneous Income	$100	$100	$100	$100	$100
Less: Vacancy	($623)	($678)	($810)	($938)	($1,032)
Less: Annual Unit Operating Costs (1)	($8,000)	($8,000)	($8,000)	($8,000)	($8,000)
Net Operating Income Per Unit	$12,237	$14,018	$18,290	$22,434	$25,472
Available for Debt Service	$12,237	$14,018	$18,290	$22,434	$25,472
Supportable Mortgage Per Unit	$161,300	$184,800	$241,100	$295,800	$335,800

(1) Includes 30% for rent plus utilities plus 3% for parking, per the Cambridge IHO.
(2) Source: Cambridge Housing Authority, effective April 1, 2015.

Source: DRA

Table 29
Supportable Mortgage Calculations, Affordable Rental Housing
Low-Rise Prototypes
Cambridge Inclusionary Housing Analysis

Assumptions

HUD Median Household Income, Boston-Cambridge-Quincy, 2015			$98,500		
Affordable Housing Expense As a % of Income (1)			33%		
No. of Bedrooms	**Studio**	**1 Bedroom**	**2 Bedroom**	**3 Bedroom**	**4 Bedroom**
Household Size	1.0 Persons	1.5 Persons	3.0 Persons	4.5 Persons	6.0 Persons
Household Size Income Adjust. Factor	70%	75%	90%	104%	116%
Renter Utility Allowance, City of Cambridge (2)					
Low-Rise	$166	$173	$217	$240	$306
Mid-Rise/High-Rise	$143	$149	$188	$211	$275
Miscellaneous Income Per Unit Per Year	$100				
Vacancy Rate	3.00%				
Operating Cost Per Unit Per Year					
High Rise	$11,000				
Mid Rise	$8,000				
Low Rise	$6,500				
Mortgage Interest Rate	6.50%				
Mortgage Amortization (Years)	30				
Debt Coverage Ratio	1.00				

	Studio	**1 Bedroom**	**2 Bedroom**	**3 Bedroom**	**4 Bedroom**
Per Unit Supportable Mortgage By Income Level					
50% of Median					
Annual Income Limit	$34,475	$36,938	$44,325	$51,220	$57,130
Affordable Monthly Housing Expense	$948	$1,016	$1,219	$1,409	$1,571
Less: Monthly Utility Allowance	($166)	($173)	($217)	($240)	($306)
Affordable Monthly Rent	$782	$843	$1,002	$1,169	$1,265
Annual Gross Rental Income Per Unit	$9,384	$10,116	$12,024	$14,028	$15,180
Plus: Miscellaneous Income	$100	$100	$100	$100	$100
Less: Vacancy	($282)	($303)	($361)	($421)	($455)
Less: Annual Unit Operating Costs (1)	($6,500)	($6,500)	($6,500)	($6,500)	($6,500)
Net Operating Income Per Unit	$2,702	$3,413	$5,263	$7,207	$8,325
Available for Debt Service	$2,702	$3,413	$5,263	$7,207	$8,325
Supportable Mortgage Per Unit	$35,600	$45,000	$69,400	$95,000	$109,800
65% of Median					
Annual Income Limit	$44,818	$48,019	$57,623	$66,586	$74,269
Affordable Monthly Housing Expense	$1,232	$1,321	$1,585	$1,831	$2,042
Less: Monthly Utility Allowance	($166)	($173)	($217)	($240)	($306)
Affordable Monthly Rent	$1,066	$1,148	$1,368	$1,591	$1,736
Annual Gross Rental Income Per Unit	$12,792	$13,776	$16,416	$19,092	$20,832
Plus: Miscellaneous Income	$100	$100	$100	$100	$100
Less: Vacancy	($384)	($413)	($492)	($573)	($625)
Less: Annual Unit Operating Costs (1)	($6,500)	($6,500)	($6,500)	($6,500)	($6,500)
Net Operating Income Per Unit	$6,008	$6,963	$9,524	$12,119	$13,807
Available for Debt Service	$6,008	$6,963	$9,524	$12,119	$13,807
Supportable Mortgage Per Unit	$79,200	$91,800	$125,600	$159,800	$182,000
80% of Median					
Annual Income Limit	$55,160	$59,100	$70,920	$81,952	$91,408
Affordable Monthly Housing Expense	$1,517	$1,625	$1,950	$2,254	$2,514
Less: Monthly Utility Allowance	($166)	($173)	($217)	($240)	($306)
Affordable Monthly Rent	$1,351	$1,452	$1,733	$2,014	$2,208
Annual Gross Rental Income Per Unit	$16,212	$17,424	$20,796	$24,168	$26,496
Plus: Miscellaneous Income	$100	$100	$100	$100	$100
Less: Vacancy	($486)	($523)	($624)	($725)	($795)
Less: Annual Unit Operating Costs (1)	($6,500)	($6,500)	($6,500)	($6,500)	($6,500)
Net Operating Income Per Unit	$9,326	$10,501	$13,772	$17,043	$19,301
Available for Debt Service	$9,326	$10,501	$13,772	$17,043	$19,301
Supportable Mortgage Per Unit	$123,000	$138,500	$181,600	$224,700	$254,500

Table 30
Affordable Home Sales Price Calculations, Owner Housing
Prototype 5
Cambridge Inclusionary Housing Analysis

Assumptions

HUD Median Household Income, Boston-Cambridge-Quincy, 2015			$98,500	
Affordable Mortgage Principal and Interest as a % of Income			24%	
No. of Bedrooms		**1 Bedroom**	**2 Bedroom**	**3 Bedroom**
Household Size		2 Persons	3 Persons	4 Persons
Household Size Income Adjust. Factor		80%	90%	100%
Mortgage Interest Rate	5.25%			
Term (Years)	30			
Downpayment (% of Sales Price)	3.00%			

Per Unit Affordable Sales Price by Unit Bedroom Count

		1 Bedroom	**2 Bedroom**	**3 Bedroom**
50% AMI				
Annual Income Limit		$39,400	$44,325	$49,250
Available for Mortg. Principal and Interest		$788	$887	$985
Supportable Mortgage		$142,701	$160,629	$178,376
Plus: Downpayment @	3.00%	$4,413	$4,968	$5,517
Affordable Sales Price (Rounded)		**$147,100**	**$165,600**	**$183,900**
65% AMI				
Annual Income Limit		$51,220	$57,623	$64,025
Affordable Monthly Housing Expense		$1,024	$1,152	$1,281
Plus: Downpayment @	3.00%	$5,736	$6,453	$7,176
Affordable Sales Price (Rounded)		**$191,200**	**$215,100**	**$239,200**
75% AMI				
Annual Income Limit		$59,100	$66,488	$73,875
Affordable Monthly Housing Expense		$1,182	$1,330	$1,478
Supportable Mortgage		$214,051	$240,853	$267,655
Plus: Downpayment @	3.00%	$6,621	$7,449	$8,277
Affordable Sales Price (Rounded)		**$220,700**	**$248,300**	**$275,900**
80% AMI				
Annual Gross Income		$63,040	$70,920	$78,800
Available for Mortg. Principal and Interest		$1,261	$1,418	$1,576
Supportable Mortgage		$228,358	$256,789	$285,402
Plus: Downpayment @	3.00%	$7,062	$7,941	$8,826
Affordable Sales Price (Rounded)		**$235,400**	**$264,700**	**$294,200**
90% of AMI				
Annual Gross Income		$70,920	$79,785	$88,650
Affordable Monthly Housing Expense		$1,418	$1,596	$1,773
Supportable Mortgage		$256,789	$289,024	$321,077
Plus: Downpayment @	3.00%	$7,941	$8,940	$9,930
Affordable Sales Price (Rounded)		**$264,700**	**$298,000**	**$331,000**
100% of AMI				
Annual Gross Income		$78,800	$88,650	$98,500
Available for Mortg. Principal and Interest		$1,576	$1,773	$1,970
Supportable Mortgage		$285,402	$321,077	$356,752
Plus: Downpayment @	3.00%	$8,826	$9,930	$11,034
Affordable Sales Price (Rounded)		**$294,200**	**$331,000**	**$367,800**

Source: DRA

Table 31
Affordable Home Sales Price Calculations, Owner Housing
Prototype 7
Cambridge Inclusionary Housing Analysis

Assumptions

HUD Median Household Income, Boston-Cambridge-Quincy, 2015	$98,500		
Affordable Mortgage Principal and Interest as a % of Income	24%		
No. of Bedrooms		**2 Bedroom**	**3 Bedroom**
Household Size		3 Persons	4 Persons
Household Size Income Adjust. Factor		90%	100%
Mortgage Interest Rate	5.25%		
Term (Years)	30		
Downpayment (% of Sales Price)	3.00%		

Per Unit Affordable Sales Price by Unit Bedroom Count

		2 Bedroom	3 Bedroom
50% AMI			
Annual Income Limit		$44,325	$49,250
Available for Mortg. Principal and Interest		$887	$985
Supportable Mortgage		$160,629	$178,376
Plus: Downpayment @	3.00%	$4,968	$5,517
Affordable Sales Price (Rounded)		**$165,600**	**$183,900**
65% AMI			
Annual Income Limit		$57,623	$64,025
Available for Mortg. Principal and Interest		$1,152	$1,281
Supportable Mortgage		$208,619	$231,980
Plus: Downpayment @	3.00%	$6,453	$7,176
Affordable Sales Price (Rounded)		**$215,100**	**$239,200**
75% AMI			
Annual Income Limit		$66,488	$73,875
Affordable Monthly Housing Expense		$1,330	$1,478
Supportable Mortgage		$240,853	$267,655
Plus: Downpayment @	3.00%	$7,449	$8,277
Affordable Sales Price (Rounded)		**$248,300**	**$275,900**
80% AMI			
Annual Gross Income		$70,920	$78,800
Available for Mortg. Principal and Interest		$1,418	$1,576
Supportable Mortgage		$256,789	$285,402
Plus: Downpayment @	3.00%	$7,941	$8,826
Affordable Sales Price (Rounded)		**$264,700**	**$294,200**
90% AMI			
Annual Gross Income		$79,785	$88,650
Affordable Monthly Housing Expense		$1,596	$1,773
Supportable Mortgage		$289,024	$321,077
Plus: Downpayment @	3.00%	$8,940	$9,930
Affordable Sales Price (Rounded)		**$298,000**	**$331,000**
100% of AMI			
Annual Gross Income		$88,650	$98,500
Available for Principal, Interest, Taxes		$1,773	$1,970
Supportable Mortgage		$321,077	$356,752
Plus: Downpayment @	3.00%	$9,930	$11,034
Affordable Sales Price (Rounded)		**$331,000**	**$367,800**

Source: DRA

Table 32
Affordable Units by Prototype and Income Level
Rental Housing Inclusionary Scenarios
Cambridge Inclusionary Housing Analysis

		Prototype 1	Prototype 2	Prototype 3	Prototype 4	Prototype 6
Tenure		Rental	Rental	Rental	Rental	Rental
Net Rentable SF of Residential Space		207,750	222,250	79,550	19,550	6,800
Net Rentable SF of Retail Space		0	0	0	0	0
Approximate Building Stories		17	6	5	4	2
Number of Apartment Units						
Studio/Loft		105	55	15	4	0
One Bedroom		120	150	45	12	0
Two Bedroom/One Bath		0	10	0	0	0
Two Bedroom/Two Bath		75	85	38	9	4
Three Bedroom		0	0	2	0	2
Total Units		**300**	**300**	**100**	**25**	**6**
Affordable Units by Income Level and Scenario	***% Affordable***					
SCENARIO 1						
65% of AMI	11.5%					
Studio/Loft		12	6	2	0	0
One Bedroom		14	18	6	2	0
Two Bedroom/One Bath		0	1	0	0	0
Two Bedroom/Two Bath		9	10	4	1	1
Three Bedroom		0	0	0	0	0
SCENARIO 2						
65% of AMI	15.0%					
Studio/Loft		16	8	2	1	0
One Bedroom		18	22	7	2	0
Two Bedroom/One Bath		0	2	0	0	0
Two Bedroom/Two Bath		11	12	6	1	1
Three Bedroom		0	0	0	0	0
100.0% of AMI	5.0%					
Studio/Loft		5	3	1	0	0
One Bedroom		6	8	2	1	0
Two Bedroom/One Bath		0	1	0	0	0
Two Bedroom/Two Bath		4	4	2	0	0
Three Bedroom		0	0	0	0	0
SCENARIO 3						
65% of AMI	20.0%					
Studio/Loft		21	11	3	1	0
One Bedroom		24	30	9	2	0
Two Bedroom/One Bath		0	2	0	0	0
Two Bedroom/Two Bath		15	17	8	2	1
Three Bedroom		0	0	0	0	0
SCENARIO 4						
65% of AMI	20.0%					
Studio/Loft		21	11	3	1	0
One Bedroom		24	30	9	2	0
Two Bedroom/One Bath		0	2	0	0	0
Two Bedroom/Two Bath		15	17	8	2	1
Three Bedroom		0	0	0	0	0
100.0% of AMI	5.0%					
Studio/Loft		5	3	1	0	0
One Bedroom		6	7	2	1	0
Two Bedroom/One Bath		0	1	0	0	0
Two Bedroom/Two Bath		4	4	2	0	0
Three Bedroom		0	0	0	0	0
Total Inclusionary Units by Scenario						
Scenario 1: No. of Units		35	35	12	3	1
Scenario 1: % of Units		11.7%	11.5%	11.5%	12.0%	16.7%
Scenario 2: No. of Units		60	60	20	5	1
Scenario 2: % of Units		20.0%	20.0%	20.0%	20.0%	16.7%
Scenario 3: No. of Units		60	60	20	5	1
Scenario 3: % of Units		20.0%	20.0%	20.0%	20.0%	16.7%
Scenario 4: No. of Units		75	75	25	6	1
Scenario 4: % of Units		25.0%	25.0%	25.0%	24.0%	16.7%

Source: DRA.

Table 33
Affordable Units by Prototype and Income Level
Owner Housing Inclusionary Scenarios
Cambridge Inclusionary Housing Analysis

		Prototype 5	Prototype 7
Tenure		Homeownership	Homeownership
Net Rentable SF of Residential Space		43,300	6,800
Net Rentable SF of Retail Space		0	0
Approximate Building Stories		5	2
Number of Apartment Units			
Studio/Loft		0	0
One Bedroom		14	0
Two Bedroom/One Bath		0	0
Two Bedroom/Two Bath		19	4
Three Bedroom		7	2
Total Units		**40**	**6**
Affordable Units by Income Level and Scenario	***% Affordable***		
SCENARIO 1			
65% of AMI	11.5%		
Studio/Loft		0	0
One Bedroom		2	0
Two Bedroom/One Bath		0	0
Two Bedroom/Two Bath		2	1
Three Bedroom		1	0
SCENARIO 2			
65% of AMI	15.0%		
Studio/Loft		0	0
One Bedroom		2	0
Two Bedroom/One Bath		0	0
Two Bedroom/Two Bath		3	1
Three Bedroom		1	0
100.0% of AMI	5.0%		
Studio/Loft		0	0
One Bedroom		1	0
Two Bedroom/One Bath		0	0
Two Bedroom/Two Bath		1	0
Three Bedroom		0	0
SCENARIO 3			
65% of AMI	20.0%		
Studio/Loft		0	0
One Bedroom		3	0
Two Bedroom/One Bath		0	0
Two Bedroom/Two Bath		4	1
Three Bedroom		1	0
SCENARIO 4			
65% of AMI	20.0%		
Studio/Loft		0	0
One Bedroom		3	0
Two Bedroom/One Bath		0	0
Two Bedroom/Two Bath		4	1
Three Bedroom		1	0
100.0% of AMI	5.0%		
Studio/Loft		0	0
One Bedroom		1	0
Two Bedroom/One Bath		0	0
Two Bedroom/Two Bath		1	0
Three Bedroom		0	0
Total Inclusionary Units by Scenario			
Scenario 1: No. of Units		5	1
Scenario 1: % of Units		12.5%	16.7%
Scenario 2: No. of Units		8	1
Scenario 2: % of Units		20.0%	16.7%
Scenario 3: No. of Units		8	1
Scenario 3: % of Units		20.0%	16.7%
Scenario 4: No. of Units		10	1
Scenario 4: % of Units		25.0%	16.7%

Source: DRA

Total affordable check

Table 34
Market-Rate Units by Prototype
Inclusionary Housing Scenarios
Cambridge Inclusionary Housing Analysis

	Prototype 1	Prototype 2	Prototype 3	Prototype 4	Prototype 5	Prototype 6	Prototype 7
Net Rentable SF of Apartment Space	207,750	222,250	79,550	19,550	43,300	6,800	6,800
Net Rentable SF of Retail Space	0	0	0	0	0	0	0
Approximate Building Stories	17	6	5	4	5	2	2
Number of Apartment Units							
Studio/Loft	105	55	15	4	0	0	0
One Bedroom	120	150	45	12	14	0	0
Two Bedroom/One Bath	0	10	0	0	0	0	0
Two Bedroom/Two Bath	75	85	38	9	19	4	4
Three Bedroom	0	0	2	0	7	2	2
Total Units	**300**	**300**	**100**	**25**	**40**	**6**	**6**
Market-Rate Units by Scenario							
SCENARIO 1							
Studio/Loft	93	49	13	4	0	0	0
One Bedroom	106	133	40	10	12	0	0
Two Bedroom/One Bath	0	9	0	0	0	0	0
Two Bedroom/Two Bath	66	75	34	8	17	3	3
Three Bedroom	0	0	2	0	6	2	2
Total	265	266	89	22	35	5	5
Market-Rate Units as % of Total Units	88%	89%	89%	88%	88%	83%	83%
SCENARIO 2							
Studio/Loft	84	44	12	3	0	0	0
One Bedroom	96	120	36	9	11	0	0
Two Bedroom/One Bath	0	7	0	0	0	0	0
Two Bedroom/Two Bath	60	69	30	8	15	3	3
Three Bedroom	0	0	2	0	6	2	2
Total	240	240	80	20	32	5	5
Market-Rate Units as % of Total Units	80%	80%	80%	80%	80%	83%	83%
SCENARIO 3							
Studio/Loft	84	44	12	3	0	0	0
One Bedroom	96	120	36	10	11	0	0
Two Bedroom/One Bath	0	8	0	0	0	0	0
Two Bedroom/Two Bath	60	68	30	7	15	3	3
Three Bedroom	0	0	2	0	6	2	2
Total	240	240	80	20	32	5	5
Market-Rate Units as % of Total Units	80%	80%	80%	80%	80%	83%	83%
SCENARIO 4							
Studio/Loft	79	41	11	3	0	0	0
One Bedroom	90	113	34	9	10	0	0
Two Bedroom/One Bath	0	7	0	0	0	0	0
Two Bedroom/Two Bath	56	64	28	7	14	3	3
Three Bedroom	0	0	2	0	6	2	2
Total	225	225	75	19	30	5	5
Market-Rate Units as % of Total Units	75%	75%	75%	76%	75%	83%	83%
Total Market-Rate Units by Scenario							
Scenario 1	265	266	89	22	35	5	5
Scenario 2	240	240	80	20	32	5	5
Scenario 3	240	240	80	20	32	5	5
Scenario 4	225	225	75	19	30	5	5

Source: DRA

Table 35
Affordable Unit Square Feet by Prototype and Income Level
Inclusionary Housing Scenarios
Cambridge Inclusionary Housing Analysis

	Prototype 1	Prototype 2	Prototype 3	Prototype 4	Prototype 5	Prototype 6	Prototype 7
Net Rentable SF of Apartment Space	207,750	222,250	79,550	19,550	43,300	6,800	6,800
Net Rentable SF of Retail Space	0	0	0	0	0	0	0
Approximate Building Stories	17	6	5	4	5	2	2
Total Apartment Units							
Studio/Loft	105	55	15	4	0	0	0
One Bedroom	120	150	45	12	14	0	0
Two Bedroom/One Bath	0	10	0	0	0	0	0
Two Bedroom/Two Bath	75	85	38	9	19	4	4
Three Bedroom	0	0	2	0	7	2	2
Total Units	**300**	**300**	**100**	**25**	**40**	**6**	**6**
Unit Size (Square Feet): Affordable Units							
Studio/Loft	500	500	500	500	-	-	-
One Bedroom	700	700	750	750	900	-	-
Two Bedroom/One Bath	900	900	-	-	-	-	-
Two Bedroom/Two Bath	950	950	950	950	1,100	1,000	1,000
Three Bedroom	-	-	1,100	-	1,400	1,400	1,400
Average	693	741	796	782	1,083	1,133	1,133
Square Feet of Affordable Units by Bedroom Count and Income Level							
SCENARIO 1							
65% of AMI							
Studio/Loft	6,000	3,000	1,000	-	-	-	-
One Bedroom	9,800	12,250	4,125	1,500	1,800	-	-
Two Bedroom/One Bath	-	900	-	-	-	-	-
Two Bedroom/Two Bath	8,550	9,500	3,800	950	2,200	1,000	1,000
Three Bedroom	-	-	-	-	1,400	-	-
80% of AMI							
Studio/Loft	-	-	-	-	-	-	-
One Bedroom	-	-	-	-	-	-	-
Two Bedroom/One Bath	-	-	-	-	-	-	-
Two Bedroom/Two Bath	-	-	-	-	-	-	-
Three Bedroom	-	-	-	-	-	-	-
100.0% of AMI							
Studio/Loft	-	-	-	-	-	-	-
One Bedroom	-	-	-	-	-	-	-
Two Bedroom/One Bath	-	-	-	-	-	-	-
Two Bedroom/Two Bath	-	-	-	-	-	-	-
Three Bedroom	-	-	-	-	-	-	-
SCENARIO 2							
65% of AMI							
Studio/Loft	8,000	4,000	1,000	500	-	-	-
One Bedroom	12,600	15,400	5,250	1,500	1,800	-	-
Two Bedroom/One Bath	-	1,800	-	-	-	-	-
Two Bedroom/Two Bath	10,450	11,400	5,700	950	3,300	1,000	1,000
Three Bedroom	-	-	-	-	1,400	-	-
100.0% of AMI							
Studio/Loft	2,500	1,500	500	-	-	-	-
One Bedroom	4,200	5,600	1,500	750	900	-	-
Two Bedroom/One Bath	-	900	-	-	-	-	-
Two Bedroom/Two Bath	3,800	3,800	1,900	-	1,100	-	-
Three Bedroom	-	-	-	-	-	-	-
SCENARIO 3							
50% of AMI							
Studio/Loft	-	-	-	-	-	-	-
One Bedroom	-	-	-	-	-	-	-
Two Bedroom/One Bath	-	-	-	-	-	-	-
Two Bedroom/Two Bath	-	-	-	-	-	-	-
Three Bedroom	-	-	-	-	-	-	-
65% of AMI							
Studio/Loft	10,500	5,500	1,500	500	-	-	-
One Bedroom	16,800	21,000	6,750	1,500	2,700	-	-
Two Bedroom/One Bath	-	1,800	-	-	-	-	-
Two Bedroom/Two Bath	14,250	16,150	7,600	1,900	4,400	1,000	1,000
Three Bedroom	-	-	-	-	1,400	-	-
80% of AMI							
Studio/Loft	-	-	-	-	-	-	-
One Bedroom	-	-	-	-	-	-	-
Two Bedroom/One Bath	-	-	-	-	-	-	-
Two Bedroom/Two Bath	-	-	-	-	-	-	-
Three Bedroom	-	-	-	-	-	-	-
100.0% of AMI							
Studio/Loft	-	-	-	-	-	-	-
One Bedroom	-	-	-	-	-	-	-
Two Bedroom/One Bath	-	-	-	-	-	-	-
Two Bedroom/Two Bath	-	-	-	-	-	-	-
Three Bedroom	-	-	-	-	-	-	-
SCENARIO 4							
65% of AMI							
Studio/Loft	10,500	5,500	1,500	500	-	-	-
One Bedroom	16,800	21,000	6,750	1,500	2,700	-	-
Two Bedroom/One Bath	-	1,800	-	-	-	-	-
Two Bedroom/Two Bath	14,250	16,150	7,600	1,900	4,400	1,000	1,000
Three Bedroom	-	-	-	-	1,400	-	-
100.0% of AMI							
Studio/Loft	2,500	1,500	500	-	-	-	-
One Bedroom	4,200	4,900	1,500	750	900	-	-
Two Bedroom/One Bath	-	900	-	-	-	-	-
Two Bedroom/Two Bath	3,800	3,800	1,900	-	1,100	-	-
Three Bedroom	-	-	-	-	-	-	-
Total Affordable SF by Scenario							
Scenario 1	24,350	25,650	8,925	2,450	5,400	1,000	1,000
Scenario 2	41,550	44,400	15,850	3,700	8,500	1,000	1,000
Scenario 3	41,550	44,450	15,850	3,900	8,500	1,000	1,000
Scenario 4	52,050	55,550	19,750	4,650	10,500	1,000	1,000

Source: DRA

Table 36
Market-Rate Unit Square Feet by Prototype
Inclusionary Housing Scenarios
Cambridge Inclusionary Housing Analysis

	Prototype 1	Prototype 2	Prototype 3	Prototype 4	Prototype 5	Prototype 6	Prototype 7
Net Rentable SF of Apartment Space	207,750	222,250	79,550	19,550	43,300	6,800	6,800
Net Rentable SF of Retail Space	0	0	0	0	0	0	0
Approximate Building Stories	17	6	5	4	5	2	2
Total Apartment Units							
Studio/Loft	105	55	15	4	0	0	0
One Bedroom	120	150	45	12	14	0	0
Two Bedroom/One Bath	0	10	0	0	0	0	0
Two Bedroom/Two Bath	75	85	38	9	19	4	4
Three Bedroom	0	0	2	0	7	2	2
Total Units	**300**	**300**	**100**	**25**	**40**	**6**	**6**
Unit Size (Square Feet): Affordable Units							
Studio/Loft	500	500	500	500	-	-	-
One Bedroom	700	700	750	750	900	-	-
Two Bedroom/One Bath	900	900	-	-	-	-	-
Two Bedroom/Two Bath	950	950	950	950	1,100	1,000	1,000
Three Bedroom	-	-	1,100	-	1,400	1,400	1,400
Average	693	741	796	782	1,083	1,133	1,133
Total Unit Square Feet							
Studio/Loft	52,500	27,500	7,500	2,000	-	-	-
One Bedroom	84,000	105,000	33,750	9,000	12,600	-	-
Two Bedroom/One Bath	-	9,000	-	-	-	-	-
Two Bedroom/Two Bath	71,250	80,750	36,100	8,550	20,900	4,000	4,000
Three Bedroom	-	-	2,200	-	9,800	2,800	2,800
Total Living Area	207,750	222,250	79,550	19,550	43,300	6,800	6,800
Square Feet of Market-Rate Units by Bedroom Count and Income Level							
SCENARIO 1							
Studio/Loft	46,500	24,500	6,500	2,000	-	-	-
One Bedroom	74,200	92,750	29,625	7,500	10,800	-	-
Two Bedroom/One Bath	-	8,100	-	-	-	-	-
Two Bedroom/Two Bath	62,700	71,250	32,300	7,600	18,700	3,000	3,000
Three Bedroom	-	-	2,200	-	8,400	2,800	2,800
Total Market-Rate Living Area	183,400	196,600	70,625	17,100	37,900	5,800	5,800
Market-Rate Living Areas as % of Total	88%	88%	89%	87%	88%	85%	85%
SCENARIO 2							
Studio/Loft	42,000	22,000	6,000	1,500	-	-	-
One Bedroom	67,200	84,000	27,000	6,750	9,900	-	-
Two Bedroom/One Bath	-	6,300	-	-	-	-	-
Two Bedroom/Two Bath	57,000	65,550	28,500	7,600	16,500	3,000	3,000
Three Bedroom	-	-	2,200	-	8,400	2,800	2,800
Total Market-Rate Living Area	166,200	177,850	63,700	15,850	34,800	5,800	5,800
Market-Rate Living Areas as % of Total	80%	80%	80%	81%	80%	85%	85%
SCENARIO 3							
Studio/Loft	42,000	22,000	6,000	1,500	-	-	-
One Bedroom	67,200	84,000	27,000	7,500	9,900	-	-
Two Bedroom/One Bath	-	7,200	-	-	-	-	-
Two Bedroom/Two Bath	57,000	64,600	28,500	6,650	16,500	3,000	3,000
Three Bedroom	-	-	2,200	-	8,400	2,800	2,800
Total Market-Rate Living Area	166,200	177,800	63,700	15,650	34,800	5,800	5,800
Market-Rate Living Areas as % of Total	80%	80%	80%	80%	80%	85%	85%
SCENARIO 4							
Studio/Loft	39,500	20,500	5,500	1,500	-	-	-
One Bedroom	63,000	79,100	25,500	6,750	9,000	-	-
Two Bedroom/One Bath	-	6,300	-	-	-	-	-
Two Bedroom/Two Bath	53,200	60,800	26,600	6,650	15,400	3,000	3,000
Three Bedroom	-	-	2,200	-	8,400	2,800	2,800
Total Market-Rate Living Area	155,700	166,700	59,800	14,900	32,800	5,800	5,800
Market-Rate Living Areas as % of Total	75%	75%	75%	76%	76%	85%	85%
Total Market SF by Scenario							
Scenario 1	183,400	196,600	70,625	17,100	37,900	5,800	5,800
Scenario 2	166,200	177,850	63,700	15,850	34,800	5,800	5,800
Scenario 3	166,200	177,800	63,700	15,650	34,800	5,800	5,800
Scenario 4	155,700	166,700	59,800	14,900	32,800	5,800	5,800
Total Affordable SF by Scenario							
Scenario 1	24,350	25,650	8,925	2,450	5,400	1,000	1,000
Scenario 2	41,550	44,400	15,850	3,700	8,500	1,000	1,000
Scenario 3	41,550	44,450	15,850	3,900	8,500	1,000	1,000
Scenario 4	52,050	55,550	19,750	4,650	10,500	1,000	1,000

Source: DRA

Table 37
Rental Housing Income from Inclusionary Units
Rental Housing Inclusionary Scenarios
Cambridge Inclusionary Housing Analysis

		Prototype 1	Prototype 2	Prototype 3	Prototype 4	Prototype 6
Tenure		Rental	Rental	Rental	Rental	Rental
Net Rentable SF of Apartment Space		207,750	222,250	79,550	19,550	6,800
Net Rentable SF of Retail Space		0	0	0	0	0
Approximate Building Stories		17	6	5	4	2
Total Housing Units						
Studio/Loft		105	55	15	4	0
One Bedroom		120	150	45	12	0
Two Bedroom/One Bath		0	10	0	0	0
Two Bedroom/Two Bath		75	85	38	9	4
Three Bedroom		0	0	2	0	2
Total Units		**300**	**300**	**100**	**25**	**6**
Total Monthly Rents for Affordable Units by Income Level and Scenario	***% Affordable***					
SCENARIO 1						
65% of AMI	11.5%					
Studio/Loft		$13,068	$6,396	$2,132	$0	$0
One Bedroom		$16,408	$20,510	$6,446	$2,344	$0
Two Bedroom/One Bath		$0	$1,397	$0	$0	$0
Two Bedroom/Two Bath		$12,573	$13,970	$5,588	$1,397	$1,368
Three Bedroom		$0	$0	$0	$0	$0
SCENARIO 2						
65% of AMI	15.0%					
Studio/Loft		$17,424	$8,528	$2,132	$1,066	$0
One Bedroom		$21,096	$25,784	$8,204	$2,344	$0
Two Bedroom/One Bath		$0	$2,794	$0	$0	$0
Two Bedroom/Two Bath		$15,367	$16,764	$8,382	$1,397	$1,368
Three Bedroom		$0	$0	$0	$0	$0
SCENARIO 3						
65% of AMI	20.0%					
Studio/Loft		$22,869	$11,726	$3,198	$1,066	$0
One Bedroom		$28,128	$35,160	$10,548	$2,344	$0
Two Bedroom/One Bath		$0	$2,794	$0	$0	$0
Two Bedroom/Two Bath		$20,955	$23,749	$11,176	$2,794	$1,368
Three Bedroom		$0	$0	$0	$0	$0
SCENARIO 4						
65% of AMI	20.0%					
Studio/Loft		$22,869	$11,726	$3,198	$1,066	$0
One Bedroom		$28,128	$35,160	$10,548	$2,344	$0
Two Bedroom/One Bath		$0	$2,794	$0	$0	$0
Two Bedroom/Two Bath		$20,955	$23,749	$11,176	$2,794	$1,368
Three Bedroom		$0	$0	$0	$0	$0
100.0% of AMI	5.0%					
Studio/Loft		$8,765	$5,190	$1,730	$0	$0
One Bedroom		$11,298	$13,181	$3,766	$1,883	$0
Two Bedroom/One Bath		$0	$2,250	$0	$0	$0
Two Bedroom/Two Bath		$9,000	$9,000	$4,500	$0	$0
Three Bedroom		$0	$0	$0	$0	$0
Total Affordable Unit Rents by Scenario						
Scenario 1		$42,049	$42,273	$14,166	$3,741	$1,368
Scenario 2		$82,950	$85,374	$28,714	$6,690	$1,368
Scenario 3		$71,952	$73,429	$24,922	$6,204	$1,368
Scenario 4		$101,015	$103,050	$34,918	$8,087	$1,368

Source: DRA

Table 38
Total Rental Housing Income by Scenario
Rental Housing Inclusionary Scenarios
Cambridge Inclusionary Housing Analysis

	Prototype 1	Prototype 2	Prototype 3	Prototype 4	Prototype 6
Tenure	Rental	Rental	Rental	Rental	Rental
Net Rentable SF of Apartment Space	207,750	222,250	79,550	19,550	6,800
Net Rentable SF of Retail Space	0	0	0	0	0
Approximate Building Stories	17	6	5	4	2
Total Housing Units					
Studio/Loft	105	55	15	4	0
One Bedroom	120	150	45	12	0
Two Bedroom/One Bath	0	10	0	0	0
Two Bedroom/Two Bath	75	85	38	9	4
Three Bedroom	0	0	2	0	2
Total Housing Units	**300**	**300**	**100**	**25**	**6**
Average Monthly Market Rent Per Unit	$3,119	$2,408	$3,184	$2,933	$3,399
Average Unit Size (SF)					
Studio/Loft	500	500	500	500	-
One Bedroom	700	700	750	750	-
Two Bedroom/One Bath	900	900	-	-	-
Two Bedroom/Two Bath	950	950	950	950	1,000
Three Bedroom	-	-	1,100	-	1,400
Average	*693*	*741*	*796*	*782*	*1,133*
Monthly Market Rent Per SF	*$4.50*	*$3.25*	*$4.00*	*$3.75*	*$3.00*
Net SF of Market Rate Units by Scenario					
Scenario 1	183,400	196,600	70,625	17,100	5,800
Scenario 2	166,200	177,850	63,700	15,850	5,800
Scenario 3	166,200	177,800	63,700	15,650	5,800
Scenario 4	155,700	166,700	59,800	14,900	5,800
Monthly Gross Rental Income, Market Rate Units					
100% Market Rate	$934,875	$722,313	$318,200	$73,313	$20,400
Scenario 1	$825,300	$638,950	$282,500	$64,125	$17,400
Scenario 2	$747,900	$578,013	$254,800	$59,438	$17,400
Scenario 3	$747,900	$577,850	$254,800	$58,688	$17,400
Scenario 4	$700,650	$541,775	$239,200	$55,875	$17,400
Monthly Gross Rental Income, Inclusionary Units					
Scenario 1	$42,049	$42,273	$14,166	$3,741	$1,368
Scenario 2	$82,950	$85,374	$28,714	$6,690	$1,368
Scenario 3	$71,952	$73,429	$24,922	$6,204	$1,368
Scenario 4	$101,015	$103,050	$34,918	$8,087	$1,368
Total Monthly Gross Rental Income					
100% Market Rate	$934,875	$722,313	$318,200	$73,313	$20,400
Scenario 1	$867,349	$681,223	$296,666	$67,866	$18,768
Scenario 2	$830,850	$663,387	$283,514	$66,128	$18,768
Scenario 3	$819,852	$651,279	$279,722	$64,892	$18,768
Scenario 4					

Source: DRA

Table 39
Apartment NOI by Scenario
Rental Housing Inclusionary Scenarios
Cambridge Inclusionary Housing Analysis

	Prototype 1	Prototype 2	Prototype 3	Prototype 4	Prototype 6
Tenure	Rental	Rental	Rental	Rental	Rental
Net Rentable SF of Apartment Space	207,750	222,250	79,550	19,550	6,800
Parking Spaces	150	225	88	22	6
Net Rentable SF of Retail Space	0	0	0	0	0
Approximate Building Stories	17	6	5	4	2
Number of Apartment Units					
Studio/Loft	105	55	15	4	0
One Bedroom	120	150	45	12	0
Two Bedroom/One Bath	0	10	0	0	0
Two Bedroom/Two Bath	75	85	38	9	4
Three Bedroom	0	0	2	0	2
Total	**300**	**300**	**100**	**25**	**6**
Unit Size (Square Feet)					
Studio/Loft	500	500	500	500	-
One Bedroom	700	700	750	750	-
Two Bedroom/One Bath	900	900	-	-	-
Two Bedroom/Two Bath	950	950	950	950	1,000
Three Bedroom	-	-	1,100	-	1,400
Average	*693*	*741*	*796*	*782*	*1,133*
Parking Income ($/Space/Year)	$250	$170	$165	$165	$0
Parking Usage Rate (Marke- Rate Spaces)	90%	85%	85%	85%	85%
Miscellaneous Income ($/Unit/Year)	$120	$120	$120	$120	$120
Rental Vacancy Rate: Market Units	5.0%	5.0%	5.0%	5.0%	5.0%
Rental Vacancy Rate: Inclusionary Units	3.0%	3.0%	3.0%	3.0%	3.0%
Rental Operating Cost/Market Rate Unit (1)	$11,000	$8,000	$8,000	$8,000	$6,500
Retail Income ($/NSF/Year)	$20.00	$20.00	$20.00	$20.00	$20.00
Retail Vacancy Rate (% Gross Retail Income)	10%	10%	10%	10%	10%
Retail Operating Cost (% of Gross Retail Income)	40%	40%	40%	40%	40%
SCENARIO 1					
Market-Rate Units	265	265.5	88.5	22	5
Inclusionary Units	35	34.5	11.5	3	1
Inclusionary Parking Spaces	20	29	11	3	1
Market-Rate Parking Spaces	130	196	77	19	5
Operating Cost per Unit for Inclusionary Units (2)	$8,600	$6,600	$6,300	$6,400	$5,100
Total Monthly Gross Rental Income					
Market-Rate Units	$825,300	$638,950	$282,500	$64,125	$17,400
Inclusionary Units	$42,049	$42,273	$14,166	$3,741	$1,368
Annual Gross Rental Income	$10,408,188	$8,174,676	$3,559,992	$814,392	$225,216
Less: Vacancy, Market-Rate Units	($495,180)	($383,370)	($169,500)	($38,475)	($10,440)
Less: Vacancy, Inclusionary Units	($15,138)	($15,218)	($5,100)	($1,347)	($492)
Plus: Parking Income	$351,000	$339,864	$129,591	$31,977	$0
Plus: Misc. Income	$36,000	$36,000	$12,000	$3,000	$720
Plus: Retail Income	$0	$0	$0	$0	$0
Adjusted Annual Gross Income	**$10,284,870**	**$8,151,952**	**$3,526,983**	**$809,547**	**$215,004**
Operating Costs					
Less: Operating Costs, Market-Rate Units	($2,915,000)	($2,124,000)	($708,000)	($176,000)	($32,500)
Less: Operating Costs, Inclusionary Units	($301,000)	($227,700)	($72,450)	($19,200)	($5,100)
Less: Retail Operating Costs	$0	$0	$0	$0	$0
Net Operating Income	**$7,068,870**	**$5,800,252**	**$2,746,533**	**$614,347**	**$177,404**
SCENARIO 2					
Market-Rate Units	240	240	80	20	5
Inclusionary Units	60	60	20	5	1
Inclusionary Parking Spaces	38	56	22	6	1
Market-Rate Parking Spaces	112	169	66	16	5
Operating Cost per Unit for Inclusionary Units (2)	$8,900	$6,900	$6,500	$6,500	$5,100
Total Monthly Gross Rental Income					
Market-Rate Units	$747,900	$578,013	$254,800	$59,438	$17,400
Inclusionary Units	$82,950	$85,374	$28,714	$6,690	$1,368
Annual Gross Rental Income	**$9,970,200**	**$7,960,638**	**$3,402,168**	**$793,530**	**$225,216**
Less: Vacancy, Market-Rate Units	($448,740)	($346,808)	($152,880)	($35,663)	($10,440)
Less: Vacancy, Inclusionary Units	($29,862)	($30,735)	($10,337)	($2,408)	($492)
Plus: Parking Income	$302,400	$293,046	$111,078	$26,928	$0
Plus: Misc. Income	$36,000	$36,000	$12,000	$3,000	$720
Plus: Retail Income	$0	$0	$0	$0	$0
Adjusted Annual Gross Income	**$9,829,998**	**$7,912,142**	**$3,362,029**	**$785,387**	**$215,004**
Operating Costs					
Less: Operating Costs, Market-Rate Units	($2,640,000)	($1,920,000)	($640,000)	($160,000)	($32,500)
Less: Operating Costs, Inclusionary Units	($534,000)	($414,000)	($130,000)	($32,500)	($5,100)
Less: Retail Operating Costs	$0	$0	$0	$0	$0
Net Operating Income	**$6,655,998**	**$5,578,142**	**$2,592,029**	**$592,887**	**$177,404**
SCENARIO 3					
Market-Rate Units	240	240	80	20	5
Inclusionary Units	60	60	20	5	1
Inclusionary Parking Spaces	38	56	22	6	1
Market-Rate Parking Spaces	112	169	66	16	5
Operating Cost per Unit for Inclusionary Units (2)	$8,600	$6,600	$6,300	$6,400	$5,100
Total Monthly Gross Rental Income					
Market-Rate Units	$747,900	$577,850	$254,800	$58,688	$17,400
Inclusionary Units	$71,952	$73,429	$24,922	$6,204	$1,368
Annual Gross Rental Income	**$9,838,224**	**$7,815,348**	**$3,356,664**	**$778,698**	**$225,216**
Less: Vacancy, Market-Rate Units	($448,740)	($390,767)	($167,833)	($38,935)	($11,261)
Less: Vacancy, Inclusionary Units	($25,903)	($26,434)	($8,972)	($2,233)	($492)
Plus: Parking Income	$302,400	$293,046	$111,078	$26,928	$0
Plus: Misc. Income	$36,000	$36,000	$12,000	$3,000	$720
Plus: Retail Income	$0	$0	$0	$0	$0
Adjusted Annual Gross Income	**$9,701,981**	**$7,727,192**	**$3,302,937**	**$767,458**	**$214,183**
Operating Costs					
Less: Operating Costs, Market-Rate Units	($2,640,000)	($1,920,000)	($640,000)	($160,000)	($32,500)
Less: Operating Costs, Inclusionary Units	($516,000)	($396,000)	($126,000)	($32,000)	($5,100)
Less: Retail Operating Costs	$0	$0	$0	$0	$0
Net Operating Income	**$6,545,981**	**$5,411,192**	**$2,536,937**	**$575,458**	**$176,583**
SCENARIO 4					
Market-Rate Units	225	225	75	19	5
Inclusionary Units	75	75	25	6	1
Inclusionary Parking Spaces	50	75	29	7	1
Market-Rate Parking Spaces	100	150	59	15	5
Operating Cost per Unit for Inclusionary Units (2)	$8,600	$6,600	$6,300	$6,400	$5,100
Total Monthly Gross Rental Income					
Market-Rate Units	$700,650	$541,775	$239,200	$55,875	$17,400
Inclusionary Units	$101,015	$103,050	$34,918	$8,087	$1,368
Annual Gross Rental Income	**$9,619,980**	**$7,737,900**	**$3,289,416**	**$767,544**	**$225,216**
Less: Vacancy, Market-Rate Units	($420,390)	($325,065)	($143,520)	($33,525)	($10,440)
Less: Vacancy, Inclusionary Units	($60,609)	($61,830)	($20,951)	($4,852)	($821)
Plus: Parking Income	$270,000	$260,100	$99,297	$25,245	$0
Plus: Misc. Income	$36,000	$36,000	$12,000	$3,000	$720
Plus: Retail Income	$0	$0	$0	$0	$0
Adjusted Annual Gross Income	**$9,444,981**	**$7,647,105**	**$3,236,242**	**$757,412**	**$214,675**
Operating Costs					
Less: Operating Costs, Market-Rate Units	($2,640,000)	($1,920,000)	($640,000)	($160,000)	($32,500)
Less: Operating Costs, Inclusionary Units	($645,000)	($495,000)	($157,500)	($38,400)	($5,100)
Less: Retail Operating Costs	$0	$0	$0	$0	$0
Net Operating Income	**$6,159,981**	**$5,232,105**	**$2,438,742**	**$559,012**	**$177,075**

(1) For market-rate units, including property taxes.
(2) The property tax portion of market-rate unit operating costs (estimated at 35%) is adjusted downward for inclusionary units based on their lower rent/NOI levels.

Source: DRA

Total Unit Check

Table 40
For-Sale Housing Sales Proceeds from Inclusionary Units
Owner Housing Inclusionary Scenarios
Cambridge Inclusionary Housing Analysis

		Prototype 5	Prototype 7
Tenure		Homeownership	Homeownership
Net SF of For-Sale Housing		43,300	6,800
Net SF of Retail Space		0	0
Approximate Building Stories		5	2
Total Housing Units			
Studio/Loft		0	0
One Bedroom		14	0
Two Bedroom/One Bath		0	0
Two Bedroom/Two Bath		19	4
Three Bedroom		7	2
Total Units		**40**	**6**
Total Affordable Unit Sales Income by Income Level and Scenario	***% Affordable***		
SCENARIO 1			
65% of AMI	11.5%		
Studio/Loft		$0	$0
One Bedroom		$382,400	$0
Two Bedroom/One Bath		$0	$0
Two Bedroom/Two Bath		$430,200	$215,100
Three Bedroom		$239,200	$0
SCENARIO 2			
65% of AMI	15.0%		
Studio/Loft		$0	$0
One Bedroom		$382,400	$0
Two Bedroom/One Bath		$0	$0
Two Bedroom/Two Bath		$645,300	$215,100
Three Bedroom		$239,200	$0
100.0% of AMI	5.0%		
Studio/Loft		$0	$0
One Bedroom		$294,200	$0
Two Bedroom/One Bath		$0	$0
Two Bedroom/Two Bath		$331,000	$0
Three Bedroom		$0	$0
SCENARIO 3			
65% of AMI	20.0%		
Studio/Loft		$0	$0
One Bedroom		$573,600	$0
Two Bedroom/One Bath		$0	$0
Two Bedroom/Two Bath		$860,400	$215,100
Three Bedroom		$239,200	$0
SCENARIO 4			
65% of AMI	20.0%		
Studio/Loft		$0	$0
One Bedroom		$573,600	$0
Two Bedroom/One Bath		$0	$0
Two Bedroom/Two Bath		$860,400	$215,100
Three Bedroom		$239,200	$0
100.0% of AMI	5.0%		
Studio/Loft		$0	$0
One Bedroom		$294,200	$0
Two Bedroom/One Bath		$0	$0
Two Bedroom/Two Bath		$331,000	$0
Three Bedroom		$0	$0
Total Affordable Unit Sales Prices by Scenario (1)			
Scenario 1		$1,051,800	$215,100
Scenario 2		$1,892,100	$215,100
Scenario 3		$1,673,200	$215,100
Scenario 4		$2,298,400	$215,100

(1) If market prices are less than maximum affordable prices, market prices are used.
Source: DRA

Table 41
Total Net Sales Proceeds for Owner Housing by Scenario
Owner Housing Inclusionary Scenarios
Cambridge Inclusionary Housing Analysis

	Prototype 5	Prototype 7
Tenure	Homeownership	Homeownership
Net SF of For-Sale Housing	43,300	6,800
Net SF of Retail Space	0	0
Approximate Building Stories	5	2
Total Housing Units		
Studio/Loft	0	0
One Bedroom	14	0
Two Bedroom/One Bath	0	0
Two Bedroom/Two Bath	19	4
Three Bedroom	7	2
Total Housing Units	**40**	**6**
Market Sales Price Per Unit		
Studio/Loft	$0	$0
One Bedroom	$648,000	$0
Two Bedroom/One Bath	$0	$0
Two Bedroom/Two Bath	$792,000	$720,000
Three Bedroom	$1,008,000	$1,008,000
Average Unit Size (SF)		
Studio/Loft	-	-
One Bedroom	900	-
Two Bedroom/One Bath	-	-
Two Bedroom/Two Bath	1,100	1,000
Three Bedroom	1,400	1,400
Average	*1,083*	*1,133*
Average Sales Price Per SF	$720	$720
Net SF of Market Rate Units by Scenario		
Scenario 1	37,900	5,800
Scenario 2	34,800	5,800
Scenario 3	34,800	5,800
Scenario 4	32,800	5,800
Sales Costs (% of Gross Sales Income)	5%	5%
SCENARIO 1		
Sales Proceeds from Market-Rate Units	$27,288,000	$4,176,000
Sales Proceeds from Inclusionary Units	$1,051,800	$215,100
Gross Sales Proceeds	$28,339,800	$4,391,100
Less: Sales Costs	($1,416,990)	($219,555)
Net Sales Proceeds	$26,922,810	$4,171,545
SCENARIO 2		
Sales Proceeds from Market-Rate Units	$25,056,000	$4,176,000
Sales Proceeds from Inclusionary Units	$1,892,100	$215,100
Gross Sales Proceeds	$26,948,100	$4,391,100
Less: Sales Costs	($1,347,405)	($219,555)
Net Sales Proceeds	$25,600,695	$4,171,545
SCENARIO 3		
Sales Proceeds from Market-Rate Units	$25,056,000	$4,176,000
Sales Proceeds from Inclusionary Units	$1,673,200	$215,100
Gross Sales Proceeds	$26,729,200	$4,391,100
Less: Sales Costs	($1,336,460)	($219,555)
Net Sales Proceeds	$25,392,740	$4,171,545
SCENARIO 4		
Sales Proceeds from Market-Rate Units	$23,616,000	$4,176,000
Sales Proceeds from Inclusionary Units	$2,298,400	$215,100
Gross Sales Proceeds	$25,914,400	$4,391,100
Less: Sales Costs	($1,295,720)	($219,555)
Net Sales Proceeds	$24,618,680	$4,171,545

Source: DRA

Table 42
Return on Equity Analysis
Residential Development Prototypes
Low Cap Rate Assumption
Cambridge Inclusionary Housing Analysis

	Resid. Cap Rate
Under 50 Units	4.25%
50 Units or More	4.00%

	Prototype 1	Prototype 2	Prototype 3	Prototype 4	Prototype 5	Prototype 6	Prototype 7
Tenure	*Rental*	*Rental*	*Rental*	*Rental*	*Homeownership*	*Rental*	*Homeownership*
Residential Units	*300*	*300*	*100*	*25*	*40*	*6*	*6*
Site Area (SF)	*53,269*	*113,974*	*53,033*	*10,026*	*23,791*	*6,800*	*6,800*
Residential Net SF	*207,750*	*222,250*	*79,550*	*19,550*	*43,300*	*6,800*	*6,800*
Total Net SF	*207,750*	*222,250*	*79,550*	*19,550*	*43,300*	*6,800*	*6,800*
Approximate Building Stories	*17*	*6*	*5*	*4*	*5*	*2*	*2*
Total Annual Net Operating Income, Apartments							
100% Market Rate	$7,798,575	$6,260,513	$2,987,584	$675,789		$194,280	
NOI Per NSF	$37.54	$28.17	$37.56	$34.57		$28.57	
Scenario 1: Existing IHO	$7,068,870	$5,800,252	$2,746,533	$614,347		$177,404	
NOI Per NSF	$34.03	$26.10	$34.53	$31.42		$26.09	
Scenario 2	$6,655,998	$5,578,142	$2,592,029	$592,887		$177,404	
NOI Per NSF	$32.04	$25.10	$32.58	$30.33		$26.09	
Scenario 3	$6,545,981	$5,411,192	$2,536,937	$575,458		$176,583	
NOI Per NSF	$31.51	$24.35	$31.89	$29.44		$25.97	
Scenario 4	$6,159,981	$5,232,105	$2,438,742	$559,012		$177,075	
NOI Per NSF	$29.65	$23.54	$30.66	$28.59		$26.04	
Cap Rate, Residential	4.00%	4.00%	4.00%	4.25%		4.25%	
Equity Yield on NOI	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
Capitalized Value, Apartments							
100% Market Rate	$194,964,375	$156,512,813	$74,689,600	$15,900,906		$4,571,294	
Scenario 1: Existing IHO	$176,721,759	$145,006,293	$68,663,331	$14,455,229		$4,174,200	
Scenario 2	$166,399,950	$139,453,547	$64,800,724	$13,950,285		$4,174,200	
Scenario 3	$163,649,532	$135,279,804	$63,423,422	$13,540,180		$4,154,888	
Scenario 4	$153,999,525	$130,802,625	$60,968,555	$13,153,219		$4,166,475	
Net Home Sales Proceeds							
100% Market Rate					$29,617,200		$4,651,200
Scenario 1: Existing IHO					$26,922,810		$4,171,545
Scenario 2					$25,600,695		$4,171,545
Scenario 3					$25,392,740		$4,171,545
Scenario 4					$24,618,680		$4,171,545
Total Market Value (Capitalized NOI for Rental; Net Sales Proceeds for Ownership)							
100% Market Rate	$194,964,375	$156,512,813	$74,689,600	$15,900,906	$29,617,200	$4,571,294	$4,651,200
Per NSF	$938	$704	$939	$813	$684	$672	$684
Scenario 1: Existing IHO	$176,721,759	$145,006,293	$68,663,331	$14,455,229	$26,922,810	$4,174,200	$4,171,545
Per NSF	$851	$652	$863	$739	$622	$614	$613
Scenario 2	$166,399,950	$139,453,547	$64,800,724	$13,950,285	$25,600,695	$4,174,200	$4,171,545
Per NSF	$801	$627	$815	$714	$591	$614	$613
Scenario 3	$163,649,532	$135,279,804	$63,423,422	$13,540,180	$25,392,740	$4,154,888	$4,171,545
Per NSF	$788	$609	$797	$693	$586	$611	$613
Scenario 4	$153,999,525	$130,802,625	$60,968,555	$13,153,219	$24,618,680	$4,166,475	$4,171,545
Per NSF	$741	$589	$766	$673	$569	$613	$613
Less: Total Development Cost, Include. Land	$136,473,000	$115,376,400	$47,872,000	$11,810,000	$23,482,500	$3,070,500	$3,198,000
Per NSF	$657	$519	$602	$604	$542	$452	$470
Net Value of Investment							
100% Market Rate	$58,491,375	$41,136,413	$26,817,600	$4,090,906	$6,134,700	$1,500,794	$1,453,200
Per SF Site Area	$1,098.03	$360.93	$505.67	$408.04	$257.86	$220.71	$213.71
Per Dwelling Unit	$194,971	$137,121	$268,176	$163,636	$153,368	$250,132	$242,200
Return on Equity (1)	36%	30%	47%	38%	29%	54%	50%
Scenario 1: Existing IHO	$40,248,759	$29,629,893	$20,791,331	$2,645,229	$3,440,310	$1,103,700	$973,545
Per SF Site Area	$755.57	$259.97	$392.04	$263.85	$144.60	$162.31	$143.17
Per Dwelling Unit	$134,163	$98,766	$207,913	$105,809	$86,008	$183,950	$162,258
Return on Equity (1)	25%	21%	36%	25%	16%	40%	34%
Scenario 2	$29,926,950	$24,077,147	$16,928,724	$2,140,285	$2,118,195	$1,103,700	$973,545
Per SF Site Area	$561.81	$211.25	$319.21	$213.48	$89.03	$162.31	$143.17
Per Dwelling Unit	$99,757	$80,257	$169,287	$85,611	$52,955	$183,950	$162,258
Return on Equity (1)	18%	17%	29%	20%	10%	40%	34%
Scenario 3	$27,176,532	$19,903,404	$15,551,422	$1,730,180	$1,910,240	$1,084,388	$973,545
Per SF Site Area	$510.17	$174.63	$293.24	$172.58	$80.29	$159.47	$143.17
Per Dwelling Unit	$90,588	$66,345	$155,514	$69,207	$47,756	$180,731	$162,258
Return on Equity (1)	17%	14%	27%	16%	9%	39%	34%
Scenario 4	$17,526,525	$15,426,225	$13,096,555	$1,343,219	$1,136,180	$1,095,975	$973,545
Per SF Site Area	$329.02	$135.35	$246.95	$133.98	$47.76	$161.17	$143.17
Per Dwelling Unit	$58,422	$51,421	$130,966	$53,729	$28,405	$182,663	$162,258
Return on Equity (1)	11%	11%	23%	13%	5%	40%	34%
Equity Investment @ 30%	$40,941,900	$34,612,920	$14,361,600	$3,543,000	$7,044,750	$921,150	$959,400
Assumed Investment Period (Years)	4	4	4	3	3	3	3

(1) Return on equity measured as net project value divided by the number of years equity investment divided by total equity investment.
(2) Annual net cash flow (NOI less debt service) divided by total equity investment.

Source: DRA.

Table 43
Return on Equity Analysis
Residential Development Prototypes
High Cap Rate Assumption
Cambridge Inclusionary Housing Analysis

	Resid. Cap Rate
Under 50 Units	**5.00%**
50 Units or More	**4.75%**

	Prototype 1	Prototype 2	Prototype 3	Prototype 4	Prototype 5	Prototype 6	Prototype 7
Tenure	*Rental*	*Rental*	*Rental*	*Rental*	*Homeownership*	*Rental*	*Homeownership*
Residential Units	*300*	*300*	*100*	*25*	*40*	*6*	*6*
Site Area (SF)	*53,269*	*113,974*	*53,033*	*10,026*	*23,791*	*6,800*	*6,800*
Residential Net SF	*207,750*	*222,250*	*79,550*	*19,550*	*43,300*	*6,800*	*6,800*
Total Net SF	*207,750*	*222,250*	*79,550*	*19,550*	*43,300*	*6,800*	*6,800*
Approximate Building Stories	*17*	*6*	*5*	*4*	*5*	*2*	*2*
Total Annual Net Operating Income, Apartments							
100% Market Rate	$7,798,575	$6,260,513	$2,987,584	$675,789		$194,280	
NOI Per NSF	$37.54	$28.17	$37.56	$34.57		$28.57	
Scenario 1: Existing IHO	$7,068,870	$5,800,252	$2,746,533	$614,347		$177,404	
NOI Per NSF	$34.03	$26.10	$34.53	$31.42		$26.09	
Scenario 2	$6,655,998	$5,578,142	$2,592,029	$592,887		$177,404	
NOI Per NSF	$32.04	$25.10	$32.58	$30.33		$26.09	
Scenario 3	$6,545,981	$5,411,192	$2,536,937	$575,458		$176,583	
NOI Per NSF	$31.51	$24.35	$31.89	$29.44		$25.97	
Scenario 4	$6,159,981	$5,232,105	$2,438,742	$559,012		$177,075	
NOI Per NSF	$29.65	$23.54	$30.66	$28.59		$26.04	
Cap Rate, Residential	4.75%	4.75%	4.75%	5.00%		5.00%	
Equity Yield on NOI	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	
Capitalized Value, Apartments							
100% Market Rate	$164,180,526	$131,800,263	$62,896,505	$13,515,770		$3,885,600	
Scenario 1: Existing IHO	$148,818,323	$122,110,563	$57,821,752	$12,286,945		$3,548,070	
Scenario 2	$140,126,274	$117,434,565	$54,569,031	$11,857,742		$3,548,070	
Scenario 3	$137,810,132	$113,919,835	$53,409,197	$11,509,153		$3,531,654	
Scenario 4	$129,683,811	$110,149,579	$51,341,941	$11,180,236		$3,541,504	
Net Home Sales Proceeds							
100% Market Rate					$29,617,200		$4,651,200
Scenario 1: Existing IHO					$26,922,810		$4,171,545
20% of Units at 75' Owner					$25,637,840		$4,203,085
20% of Units at 90' Owner					$26,004,445		$4,250,300
Total Market Value (Capitalized NOI for Rental; Net Sales Proceeds for Ownership)							
100% Market Rate	$164,180,526	$131,800,263	$62,896,505	$13,515,770	$29,617,200	$3,885,600	$4,651,200
Per NSF	$790	$593	$791	$691	$684	$571	$684
Scenario 1: Existing IHO	$148,818,323	$122,110,563	$57,821,752	$12,286,945	$26,922,810	$3,548,070	$4,171,545
Per NSF	$716	$549	$727	$628	$622	$522	$613
Scenario 2 20% of Units at 75' Owner	$140,126,274	$117,434,565	$54,569,031	$11,857,742	$25,637,840	$3,548,070	$4,203,085
Per NSF	$674	$528	$686	$607	$592	$522	$618
Scenario 3 20% of Units at 90' Owner	$137,810,132	$113,919,835	$53,409,197	$11,509,153	$26,004,445	$3,531,654	$4,250,300
Per NSF	$663	$513	$671	$589	$601	$519	$625
Scenario 4	$129,683,811	$110,149,579	$51,341,941	$11,180,236		$3,541,504	
Per NSF	$624	$496	$645	$572		$521	
Less: Total Development Cost, Include. Land	$136,473,000	$115,376,400	$47,872,000	$11,810,000	$23,482,500	$3,070,500	$3,198,000
Per NSF	$657	$519	$602	$604	$542	$452	$470
Net Value of Investment							
100% Market Rate	$27,707,526	$16,423,863	$15,024,505	$1,705,770	$6,134,700	$815,100	$1,453,200
Per SF Site Area	$520.14	$144.10	$283.30	$170.14	$257.86	$119.87	$213.71
Per Dwelling Unit	$92,358	$54,746	$150,245	$68,231	$153,368	$135,850	$242,200
Return on Equity (1)	17%	12%	26%	16%	29%	29%	50%
Scenario 1: Existing IHO	$12,345,323	$6,734,163	$9,949,752	$476,945	$3,440,310	$477,570	$973,545
Per SF Site Area	$231.75	$59.08	$187.61	$47.57	$144.60	$70.23	$143.17
Per Dwelling Unit	$41,151	$22,447	$99,498	$19,078	$86,008	$79,595	$162,258
Return on Equity (1)	8%	5%	17%	4%	16%	17%	34%
Scenario 2 % of Units at 75% A Owner	$3,653,274	$2,058,165	$6,697,031	$47,742	$2,155,340	$477,570	$1,005,085
Per SF Site Area	$68.58	$18.06	$126.28	$4.76	$90.59	$70.23	$147.81
Per Dwelling Unit	$12,178	$6,861	$66,970	$1,910	$53,884	$79,595	$167,514
Return on Equity (1)	2%	1%	12%	0%	10%	17%	35%
Scenario 3 % of Units at 90% A Owner	$1,337,132	($1,456,565)	$5,537,197	($300,847)	$2,521,945	$461,154	$1,052,300
Per SF Site Area	$25.10	($12.78)	$104.41	($30.01)	$106.00	$67.82	$154.75
Per Dwelling Unit	$4,457	($4,855)	$55,372	($12,034)	$63,049	$76,859	$175,383
Return on Equity (1)	1%	-1%	10%	-3%	12%	17%	37%
Scenario 4	($6,789,189)	($5,226,821)	$3,469,941	($629,764)		$471,004	
Per SF Site Area	($127.45)	($45.86)	$65.43	($62.82)		$69.27	
Per Dwelling Unit	($22,631)	($17,423)	$34,699	($25,191)		$78,501	
Return on Equity (1)	-4%	-4%	6%	-6%		17%	
Equity Investment 30%	$40,941,900	$34,612,920	$14,361,600	$3,543,000	$7,044,750	$921,150	$959,400
Assumed Investment Period (Years)	4	4	4	3	3	3	3

(1) Return on equity measured as net project value divided by the number of years equity investment divided by total equity investment.
(2) Annual net cash flow (NOI less debt service) divided by total equity investment.

Source: DRA.

Table 44
Land Residual Analysis
Residential Development Prototypes
Low Cap Rate Assumption
Cambridge Inclusionary Housing Analysis

	Resid. Cap Rate
Under 50 Units	**4.25%**
50 Units or More	**4.00%**

	Prototype 1	Prototype 2	Prototype 3	Prototype 4	Prototype 5	Prototype 6	Prototype 7
Tenure	*Rental*	*Rental*	*Rental*	*Rental*	*Homeownership*	*Rental*	*Homeownership*
Residential Units	*300*	*300*	*100*	*25*	*40*	*6*	*6*
Site Area (SF)	*53,269*	*113,974*	*53,033*	*10,026*	*23,791*	*6,800*	*6,800*
Residential Net SF	*207,750*	*222,250*	*79,550*	*19,550*	*43,300*	*6,800*	*6,800*
Total Net SF	*207,750*	*222,250*	*79,550*	*19,550*	*43,300*	*6,800*	*6,800*
Approximate Building Stories	*17*	*6*	*5*	*4*	*5*	*2*	*2*
Total Annual Net Operating Income, Apartments							
100% Market Rate	$7,798,575	$6,260,513	$2,987,584	$675,789		$194,280	
NOI Per NSF	$37.54	$28.17	$37.56	$34.57		$28.57	
Scenario 1: Existing IHO	$7,068,870	$5,800,252	$2,746,533	$614,347		$177,404	
NOI Per NSF	$34.03	$26.10	$34.53	$31.42		$26.09	
Scenario 2	$6,655,998	$5,578,142	$2,592,029	$592,887		$177,404	
NOI Per NSF	$32.04	$25.10	$32.58	$30.33		$26.09	
Scenario 3	$6,545,981	$5,411,192	$2,536,937	$575,458		$176,583	
NOI Per NSF	$31.51	$24.35	$31.89	$29.44		$25.97	
Scenario 4	$6,159,981	$5,232,105	$2,438,742	$559,012		$177,075	
NOI Per NSF	$29.65	$23.54	$30.66	$28.59		$26.04	
Cap Rate, Residential	4.00%	4.00%	4.00%	4.25%		4.25%	
Total Market Value (Capitalized NOI for Rental; Net Sales Proceeds for Ownership)							
100% Market Rate	$194,964,375	$156,512,813	$74,689,600	$15,900,906	$29,617,200	$4,571,294	$4,651,200
Per NSF	$938	$704	$939	$813	$684	$672	$684
Scenario 1: Existing IHO	$176,721,759	$145,006,293	$68,663,331	$14,455,229	$26,922,810	$4,174,200	$4,171,545
Per NSF	$851	$652	$863	$739	$622	$614	$613
Scenario 2	$166,399,950	$139,453,547	$64,800,724	$13,950,285	$25,600,695	$4,174,200	$4,171,545
Per NSF	$801	$627	$815	$714	$591	$614	$613
Scenario 3	$163,649,532	$135,279,804	$63,423,422	$13,540,180	$25,392,740	$4,154,888	$4,171,545
Per NSF	$788	$609	$797	$693	$586	$611	$613
Scenario 4	$153,999,525	$130,802,625	$60,968,555	$13,153,219	$24,618,680	$4,166,475	$4,171,545
Per NSF	$741	$589	$766	$673	$569	$613	$613
Less: Total Development Cost, Excluding Land	$121,451,000	$89,846,400	$39,387,000	$9,685,000	$20,080,500	$2,050,500	$2,178,000
Per NSF	$585	$404	$495	$495	$464	$302	$320
Less: Assumed Return on Equity (See Below)	$11,659,296	$8,625,254	$3,781,152	$697,320	$1,445,796	$147,636	$156,816
Residual Land Value							
100% Market Rate	$61,854,079	$58,041,158	$31,521,448	$5,518,586	$8,090,904	$2,373,158	$2,316,384
Per SF Site Area	$1,161	$509	$594	$550	$340	$349	$341
Per Dwelling Unit	$206,180	$193,471	$315,214	$220,743	$202,273	$395,526	$386,064
Scenario 1: Existing IHO	$43,611,463	$46,534,639	$25,495,179	$4,072,909	$5,396,514	$1,976,064	$1,836,729
Per SF Site Area	$819	$408	$481	$406	$227	$291	$270
Per Dwelling Unit	$145,372	$155,115	$254,952	$162,916	$134,913	$329,344	$306,122
Scenario 2	$33,289,654	$40,981,892	$21,632,572	$3,567,965	$4,074,399	$1,976,064	$1,836,729
Per SF Site Area	$625	$360	$408	$356	$171	$291	$270
Per Dwelling Unit	$110,966	$136,606	$216,326	$142,719	$101,860	$329,344	$306,122
Scenario 3	$30,539,236	$36,808,150	$20,255,270	$3,157,860	$3,866,444	$1,956,752	$1,836,729
Per SF Site Area	$573	$323	$382	$315	$163	$288	$270
Per Dwelling Unit	$101,797	$122,694	$202,553	$126,314	$96,661	$326,125	$306,122
Scenario 4	$20,889,229	$32,330,971	$17,800,403	$2,770,899	$3,092,384	$1,968,339	$1,836,729
Per SF Site Area	$392	$284	$336	$276	$130	$289	$270
Per Dwelling Unit	$69,631	$107,770	$178,004	$110,836	$77,310	$328,057	$306,122
Equity Investment @ 30% of TDC	$36,435,300.00	$26,953,920	$11,816,100	$2,905,500	$6,024,150	$615,150	$653,400
Assumed Investment Period (Years)	4	4	4	3	3	3	3
Assumed Return on Equity (1)	8%	8%	8%	8%	8%	8%	8%

(1) Return on equity calculated as total equity investment multiplied by the assumed return on equity multiiplied by the investment period.

Source: DRA.

Table 45
Land Residual Analysis
Residential Development Prototypes
High Cap Rate Assumption
Cambridge Inclusionary Housing Analysis

	Resid. Cap Rate
Under 50 Units	**5.00%**
50 Units or More	**4.75%**

	Prototype 1	Prototype 2	Prototype 3	Prototype 4	Prototype 5	Prototype 6	Prototype 7
Tenure	*Rental*	*Rental*	*Rental*	*Rental*	*Homeownership*	*Rental*	*Homeownership*
Residential Units	*300*	*300*	*100*	*25*	*40*	*6*	*6*
Site Area (SF)	*53,269*	*113,974*	*53,033*	*10,026*	*23,791*	*6,800*	*6,800*
Residential Net SF	*207,750*	*222,250*	*79,550*	*19,550*	*43,300*	*6,800*	*6,800*
Total Net SF	*207,750*	*222,250*	*79,550*	*19,550*	*43,300*	*6,800*	*6,800*
Approximate Building Stories	*17*	*6*	*5*	*4*	*5*	*2*	*2*
Total Annual Net Operating Income, Apartments							
100% Market Rate	$7,798,575	$6,260,513	$2,987,584	$675,789		$194,280	
NOI Per NSF	$37.54	$28.17	$37.56	$34.57		$28.57	
Scenario 1: Existing IHO	$7,068,870	$5,800,252	$2,746,533	$614,347		$177,404	
NOI Per NSF	$34.03	$26.10	$34.53	$31.42		$26.09	
Scenario 2	$6,655,998	$5,578,142	$2,592,029	$592,887		$177,404	
NOI Per NSF	$32.04	$25.10	$32.58	$30.33		$26.09	
Scenario 3	$6,545,981	$5,411,192	$2,536,937	$575,458		$176,583	
NOI Per NSF	$31.51	$24.35	$31.89	$29.44		$25.97	
Scenario 4	$6,159,981	$5,232,105	$2,438,742	$559,012		$177,075	
NOI Per NSF	$29.65	$23.54	$30.66	$28.59		$26.04	
Cap Rate, Residential	4.75%	4.75%	4.75%	5.00%		5.00%	
Total Market Value (Capitalized NOI for Rental; Net Sales Proceeds for Ownership)							
100% Market Rate	$164,180,526	$131,800,263	$62,896,505	$13,515,770	$29,617,200	$3,885,600	$4,651,200
Per NSF	$790	$593	$791	$691	$684	$571	$684
Scenario 1: Existing IHO	$148,818,323	$122,110,563	$57,821,752	$12,286,945	$26,922,810	$3,548,070	$4,171,545
Per NSF	$716	$549	$727	$628	$622	$522	$613
Scenario 2 20% of Units at 75 Owner	$140,126,274	$117,434,565	$54,569,031	$11,857,742	$25,637,840	$3,548,070	$4,203,085
Per NSF	$674	$528	$686	$607	$592	$522	$618
Scenario 3 20% of Units at 90 Owner	$137,810,132	$113,919,835	$53,409,197	$11,509,153	$26,004,445	$3,531,654	$4,250,300
Per NSF	$663	$513	$671	$589	$601	$519	$625
Scenario 4	$129,683,811	$110,149,579	$51,341,941	$11,180,236		$3,541,504	
Per NSF	$624	$496	$645	$572		$521	
Less: Total Development Cost, Excluding Land	$121,451,000	$89,846,400	$39,387,000	$9,685,000	$20,080,500	$2,050,500	$2,178,000
Per NSF	$585	$404	$495	$495	$464	$302	$320
Less: Assumed Return on Equity (See Below)	$11,659,296	$8,625,254	$3,781,152	$697,320	$1,445,796	$147,636	$156,816
Residual Land Value							
100% Market Rate	$31,070,230	$33,328,609	$19,728,353	$3,133,450	$8,090,904	$1,687,464	$2,316,384
Per SF Site Area	$583	$292	$372	$313	$340	$248	$341
Per Dwelling Unit	$103,567	$111,095	$197,284	$125,338	$202,273	$281,244	$386,064
Scenario 1: Existing IHO	$15,708,027	$23,638,908	$14,653,600	$1,904,625	$5,396,514	$1,349,934	$1,836,729
Per SF Site Area	$295	$207	$276	$190	$227	$199	$270
Per Dwelling Unit	$52,360	$78,796	$146,536	$76,185	$134,913	$224,989	$306,122
Scenario 2 % of Units at 75% A Owner	$7,015,978	$18,962,911	$11,400,879	$1,475,422	$4,111,544	$1,349,934	$1,868,269
Per SF Site Area	$132	$166	$215	$147	$173	$199	$275
Per Dwelling Unit	$23,387	$63,210	$114,009	$59,017	$102,789	$224,989	$311,378
Scenario 3 % of Units at 90% A Owner	$4,699,836	$15,448,181	$10,241,045	$1,126,833	$4,478,149	$1,333,518	$1,915,484
Per SF Site Area	$88	$136	$193	$112	$188	$196	$282
Per Dwelling Unit	$15,666	$51,494	$102,410	$45,073	$111,954	$222,253	$319,247
Scenario 4	($3,426,485)	$11,677,925	$8,173,789	$797,916		$1,343,368	
Per SF Site Area	($64)	$102	$154	$80		$198	
Per Dwelling Unit	($11,422)	$38,926	$81,738	$31,917		$223,895	
Equity Investment @ 30% of TDC	$36,435,300.00	$26,953,920	$11,816,100	$2,905,500	$6,024,150	$615,150	$653,400
Assumed Investment Period (Years)	4	4	4	3	3	3	3
Assumed Return on Equity (1)	8%	8%	8%	8%	8%	8%	8%

(1) Return on equity calculated as total equity investment multiplied by the assumed return on equity multiiplied by the investment period.

Source: DRA.

Table 46
For-Sale Housing Sales Proceeds from Inclusionary Units
Owner Housing Inclusionary Scenarios
Alternative Set Aside Scenarios
Cambridge Inclusionary Housing Analysis

		Prototype 5	Prototype 7
Tenure		Homeownership	Homeownership
Net SF of For-Sale Housing		43,300	6,800
Net SF of Retail Space		0	0
Approximate Building Stories		5	2
Total Housing Units			
Studio/Loft		0	0
One Bedroom		14	0
Two Bedroom/One Bath		0	0
Two Bedroom/Two Bath		19	4
Three Bedroom		7	2
Total Units		**40**	**6**
Total Affordable Unit Sales Income by Income Level and Scenario	***% Affordable Units***		
Scenario 1			
65% of AMI	11.5%		
Studio/Loft		$0	$0
One Bedroom		$382,400	$0
Two Bedroom/One Bath		$0	$0
Two Bedroom/Two Bath		$430,200	$215,100
Three Bedroom		$239,200	$0
20% of Units at 75% AMI			
75% of AMI	20.0%		
Studio/Loft		$0	$0
One Bedroom		$662,100	$0
Two Bedroom/One Bath		$0	$0
Two Bedroom/Two Bath		$993,200	$248,300
Three Bedroom		$275,900	$0
20% of Units at 90% AMI			
90% of AMI	20.0%		
Studio/Loft		$0	$0
One Bedroom		$794,100	$0
Two Bedroom/One Bath		$0	$0
Two Bedroom/Two Bath		$1,192,000	$298,000
Three Bedroom		$331,000	$0
Total Affordable Unit Sales Prices by Scenario (1)			
Scenario 1		$1,051,800	$215,100
20% of Units at 75% AMI		$1,931,200	$248,300
20% of Units at 90% AMI		$2,317,100	$298,000

(1) If market prices are less than maximum affordable prices, market prices are used.
Source: DRA

Table 47
Total Net Sales Proceeds for Owner Housing by Scenario
Owner Housing Inclusionary Scenarios
Alternative Set Aside Scenarios
Cambridge Inclusionary Housing Analysis

	Prototype 5	Prototype 7
Tenure	Homeownership	Homeownership
Net SF of For-Sale Housing	43,300	6,800
Net SF of Retail Space	0	0
Approximate Building Stories	5	2
Total Housing Units		
Studio/Loft	0	0
One Bedroom	14	0
Two Bedroom/One Bath	0	0
Two Bedroom/Two Bath	19	4
Three Bedroom	7	2
Total Housing Units	**40**	**6**
Market Sales Price Per Unit		
Studio/Loft	$0	$0
One Bedroom	$648,000	$0
Two Bedroom/One Bath	$0	$0
Two Bedroom/Two Bath	$792,000	$720,000
Three Bedroom	$1,008,000	$1,008,000
Average Unit Size (SF)		
Studio/Loft	-	-
One Bedroom	900	-
Two Bedroom/One Bath	-	-
Two Bedroom/Two Bath	1,100	1,000
Three Bedroom	1,400	1,400
Average	*1,083*	*1,133*
Average Sales Price Per SF	$720	$720
Net SF of Market Rate Units by Scenario		
Scenario 1	37,900	5,800
Scenario 2	34,800	5,800
Scenario 3	34,800	5,800
Scenario 3	32,800	5,800
Sales Costs (% of Gross Sales Income)	5%	5%
Total Net Sales Prices by Scenario		
Scenario 1		
Sales Proceeds from Market-Rate Units	$27,288,000	$4,176,000
Sales Proceeds from Inclusionary Units	$1,051,800	$215,100
Gross Sales Proceeds	$28,339,800	$4,391,100
Less: Sales Costs	($1,416,990)	($219,555)
Net Sales Proceeds	$26,922,810	$4,171,545
20% of Units at 75% AMI		
Sales Proceeds from Market-Rate Units	$25,056,000	$4,176,000
Sales Proceeds from Inclusionary Units	$1,931,200	$248,300
Gross Sales Proceeds	$26,987,200	$4,424,300
Less: Sales Costs	($1,349,360)	($221,215)
Net Sales Proceeds	$25,637,840	$4,203,085
20% of Units at 90% AMI		
Sales Proceeds from Market-Rate Units	$25,056,000	$4,176,000
Sales Proceeds from Inclusionary Units	$2,317,100	$298,000
Gross Sales Proceeds	$27,373,100	$4,474,000
Less: Sales Costs	($1,368,655)	($223,700)
Net Sales Proceeds	$26,004,445	$4,250,300

Source: DRA