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July 29th

Meeting

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CITY OF CAMBRIDGE • EXECUTIVE DEPARTMENT

Robert W. Healy, City Manager *Richard C. Rossi, Deputy City Manager*

August 26, 2002

To the Honorable, The City Council:

In response to the Council's July 29, 2002 request, I am forwarding a copy of the recently completed Incentive Zoning study. This study was prepared for the city by Barry Bluestone from Northeastern University and Jerold Kayden from Harvard University and serves as the basis for several proposed changes to the Incentive Zoning provisions of the zoning ordinance. These changes are outlined in the attached memo that was presented to the Council at the July meeting. The two primary recommendations include:

1) Increasing the fee from the current rate of $3.28 to $7.83, to be phased in over the next two years. Developers would not be required to pay the full fee of $7.83 until September 2004.

2) Requiring developers to pay the fee at the time that the Certificate of Occupancy is issued. The current ordinance requires payment based on the fee in effect at the time the building permit is issued. I recommend that the fee be calculated at the rate in effect a the time of Certificate of Occupancy, since this is when the impact on housing prices occurs.

Very truly yours,

Robert W. Healy
City Manager

Enclosures

795 Massachusetts Avenue, Cambridge, Massachusetts 02139
Voice: 617.349.4300 Fax: 617.349.4307 TTY: 617.349.4242 Web: www.ci.cambridge.ma.us

Proposed Amendments to the Incentive Zoning Provisions of the Cambridge Zoning Ordinance

Amend the Text of the Zoning Ordinance of the City of Cambridge by doing the following (new text is indicated in **Bold** and deletions are indicated with a ~~strikethrough~~):

A. Amend Section 11.200 – Incentive Zoning Provisions and Inclusionary Housing by making the additions and deletions as indicated below:

11.202 *Applicability.*

11.202.1 *Applicability of Incentive Zoning Provisions.* Where a developer chooses to seek to obtain a special permit pursuant to the sections listed below, which special permit authorizes an increase in the permissible density or intensity of a particular use in the proposed development, the developer shall be subject to the applicable provisions of this Section 11.200 et al. Increases in density or intensity of use shall include an increase in gross floor area or height, a reduction or waiver of parking requirements, or a change in dimensional requirements or the addition of uses that result in an increase in density or intensity of use.

Section 6.35	Reduction in required parking for nonresidential development
Section 20.24.2	**Special Permit for Additional Non-residential Uses in the Mixed Use Residential Overlay District**
Section 20.108	Divergence from dimensional requirements, North Massachusetts Avenue Overlay District
Section 20.54.2(2)	Additional height, Harvard Square Overlay District
Section 20.54.4(2)	Waiver of parking and loading requirements, Harvard Square Overlay District
Section 20.54.5(2)	Exemption from yard requirements, Harvard Square Overlay District
Section 20.63.7	Divergence from dimensional requirements, Parkway Overlay District
Section 20.304.2(2), (3)	Additional height, Central Square Overlay District
Section 20.304.4	Waiver of setback requirements, Central Square Overlay District
Section 20.304.6	Waiver of parking requirements, Central Square Overlay District
Section 17.13.1(b)	Additional FAR, Special District I
Section 17.17	Transfer of Development Rights, Special District I

Section 17.42.3	**Special Permit for Additional Height in Special Districts 4 and 4A**
Article 13.00	PUD Districts, all permits.

11.203 *Requirements*

11.203.1 Requirements for Incentive Zoning Contributions. A developer of an Incentive Project shall either make a Housing Contribution in accordance with this Section 11.203.1 (a) or shall create or cause to be created housing, in accordance with this Section 11.203.1 (b).

(a) Housing Contribution. For any project that is in whole or in part an Incentive Project, and that is, in total, less than thirty thousand (30,000) square feet of gross floor area, no contribution shall be required.

For any project of thirty thousand (30,000) square feet of gross floor area or more, the developer shall contribute **the following dollar amount, applicable at the time of the issuance of the Certificate of Occupancy,** for every square foot of gross floor area over two thousand five hundred (2500) square feet of that portion of the project authorized by the Special Permit that is an Incentive Project.

(i) Three dollars and twenty-eight cents ($3.28) **through September 30, 2002.**

(ii) **Five dollars and fifty-six cents ($5.56) from October 1, 2002 through September 30, 2003.**

(iii) **Six dollars and seventy cents ($6.70) from October 1, 2003 through September 30, 2004.**

(iv) **Seven dollars and eighty-three cents ($7.83) after September 30, 2004**

Before the Superintendent of Buildings issues the first occupancy permit for the Incentive Project the developer of the Incentive Project shall deliver the Housing Contribution **required above, payable to the City of Cambridge,** to the then Managing Trustee of the Affordable Housing Trust or **to the Cambridge Community Development Department,** its designee.

The amount of the **base** Housing Contribution **set forth above ~~shall~~ may** be subject to review and recalculation three (3) years after ~~**the effective date of this provision**~~ **September 30, 2004** and every three (3) years thereafter by the Cambridge City Council **as an amendment to this Section 11.200** based on a consideration of current economic trends including but not limited to development activity, commercial rents per square foot, employment growth, and housing trends measured in terms of, but not limited to, vacancy rates, production statistics, and prices for dwelling units. **However,** The Board of Trustees for the Affordable Housing Trust may adjust the amount annually **after September 30, 2005** based on **the national Consumer Price Index** (CPI) or a similar standard to reflect changes in inflation rates.

(b) Housing Creation Option. The Developer of an Incentive Project required to make a Housing Contribution in Subsection 11.203.1 (a) above may create or cause to be created affordable units for occupancy exclusively by eligible households, or may donate land to be used exclusively for the development of affordable units. These

units or land donation, must be of equivalent benefit toward addressing the City's affordable housing need as the housing contribution otherwise required.

When this option is chosen a Developer shall obtain a report from the Board of Trustees of the Affordable Housing Trust, which report shall accompany the special permit application and shall advise the special permit granting authority as to whether the proposed Housing Creation conforms to the intent and purposes of this Section 11.200 et al. The report shall also recommend such conditions, if any, as the Trustees may find appropriate to the issuance of the special permit to assure full compliance with the intent of this Section 11.200.

The special permit granting authority shall give due consideration to the report of the Board of Trustees in granting any special permit subject to this Section 11.200 et al., and, in its discretion may approve the developers use of the Housing Creation Option.

B. Amend Section 10.48 of Section 10.40 – Special Permits by making the additions indicated below:

10.48 As expressly authorized in Section 9 of the Zoning Act M.G.L., Ch 40A, the following Special Permits, which authorize increases in the permissible density of population or intensity of a particular use in the proposed development, shall be subject to the provisions of Section 11.200 of this Ordinance.

Section 6.35	Reduction in required parking for nonresidential development
Section 20.24.2	**Special Permit for Additional Non-residential Uses in the Mixed Use Residential Overlay District**
Section 20.108	Divergence from dimensional requirements, North Massachusetts Avenue Overlay District
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Section 20.63.5	Parkway Overlay District
Section 20.63.7	Divergence from dimensional requirements, Parkway Overlay District
Section 20.304.2(b),(c)	Additional height, Central Square Overlay District
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Section 20.304.6	Waiver of parking requirements, Central Square Overlay District
Section 17.13.1(b)	Additional FAR, Special District I
Section 17.17	Transfer of Development Rights, Special District I
Section 17.42.3	**Special Permit for Additional Height in Special Districts 4 and 4A**
Article 13.000	PUD Districts, all permits.

THE IMPACT OF CAMBRIDGE OFFICE DEVELOPMENT ON CAMBRIDGE HOUSING PRICES

A Study Prepared for the

COMMUNITY DEVELOPMENT DEPARTMENT OF
THE CITY OF CAMBRIDGE

By

Barry Bluestone
Jerold Kayden
Ryan Allen
Nicole Lindstrom

July 9, 2002

THE CENTER FOR URBAN AND REGIONAL POLICY
NORTHEASTERN UNIVERSITY

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EXECUTIVE SUMMARY

New office development brings both benefits and burdens to cities. On the one hand, an increased amount of office space means new jobs as well as additional tax revenue to support city services. It also increases the number of consumers patronizing retail outlets and restaurants, and energizes important aspects of city life. On the other hand, more office development can generate increased rental housing prices caused by extra demand from new resident employees. For low- and moderate-income renters, this price increase may make living in the city highly difficult or even untenable, thereby mitigating the diversity of the city's population.

The Incentive Zoning Ordinance ("Ordinance") adopted by the City of Cambridge in 1988 asks office developers who have requested an increase in density or intensity of use to mitigate the impact of the demand for housing that accompanies their office development by contributing funds for the construction of affordable housing. Through these proceeds, the City helps increase the supply of affordable housing, thereby keeping pace with rising demand and allowing a diverse group of individuals and families to remain or become residents of the city.

The size of the housing contribution stipulated by the Ordinance is based, in part, on the housing price impact of new office development in Cambridge. The contribution amount, first set in 1988, was most recently adjusted in September 2000 to account for price inflation from September 1997 to September 2000. Changes since 1988 in the nature of Cambridge's economy and its regulatory environment, including the expansion of high technology research firms, the end of rent control, and the City's competitive position relative to neighboring jurisdictions, all

suggest that the overall contribution amount set by the Ordinance should be reexamined, and, if necessary, changed.

Specifically, this study measures the rental price impact of new office development on low- and moderate-income renters living in market-rate housing in Cambridge. The study has two sections:

1. The first section estimates the price impact of new office development on market-rate rental units occupied by low- and moderate-income households. This estimate is based on a survey of Cambridge office employees and information about the market-rate rental housing stock in Cambridge.

2. The second section briefly reviews the competitiveness of Cambridge in attracting economic development projects in light of the Incentive Zoning contribution and other development costs.

Based on a survey of over 1,200 Cambridge office employees in June 2001, this study finds that approximately nine percent of all office employees moved to the City to take a job in a Cambridge office building. Put another way, one new employee moves to Cambridge for every 2,778 square feet of new office space developed. Calculations indicate that between 1988 and 2000, the annual addition of these new resident employees increased the annual demand for market-rate rental housing in Cambridge by 2.16 percent, or 98 units. This increase in demand initially increased the monthly rent of each market-rate rental housing unit in Cambridge by $35. For low- and moderate-income renters in Cambridge, the first-year housing price impact

brought about by new Cambridge office development from 1988-2000 was $2.1 million. The research team assumed that this housing price impact persisted but decreased in successive years, as the market created new housing to meet the increase in demand. Assuming that the market created enough housing to meet the increase in this office-generated demand over three years, the total housing price impact on low- and moderate-income rental units in Cambridge was $4.1 million. Using this estimate and the amount of office space built from 1988 to 2000, the total housing price impact per square foot of new office development on low- and moderate-income rental units was $7.83. The methodology used to calculate this number is presented in detail in the body of the report.

At the time of this report, vacancy rates in Cambridge commercial office buildings (with the exception of biotechnology buildings) have risen sharply as a result of the slowdown in the overall economy and the particular difficulties faced by the high tech industry. Nonetheless, when the economy begins to recover, Cambridge is in a strong position to attract new office development projects. This will put new pressure on market-rate rental prices for housing. Using the proceeds from the Incentive Zoning Ordinance to offset the impact on low- and moderate-income families will help keep Cambridge the diverse city it has historically been.

I. THE STUDY

The following section outlines the methodology used to compute the impact of office development in Cambridge on the prices of market-rate rental housing that is occupied by low- and moderate-income households in Cambridge.[1] The methodology builds on the methodology used by Kayden and Pollard in their 1988 study "The Impact of Cambridge Office Development on Cambridge Housing Prices."[2] This methodology calculates the increased housing demand generated by office development based on a survey of Cambridge office employees and on a number of facts and assumptions about the City's housing market. It then calculates the price impact of the increased housing demand on market-rate rental housing occupied by low- and moderate-income households. Finally, it converts this housing price impact into a housing price impact per square foot of office development.

A. *Increase in Housing Demand*

New Cambridge office development results in residential migration to Cambridge, because some employees working in the new office buildings move to Cambridge when they start working in the new development. In order to calculate the number of these "new resident employees," the project team conducted a survey of existing office employees in Cambridge. The team conducted an intercept survey at selected office building sites around Cambridge from June 12, 2001 through June 14, 2001. Survey administrators screened potential respondents with the question, "Do you work in a Cambridge office building?" A detailed review of the survey methodology and a copy of the survey questionnaire are included as Appendices 1 and 2.

The project team distributed 3,634 questionnaires and obtained 1,440 completed questionnaires, representing a calculated response rate of nearly 40 percent. Of the 1,440 respondents, 1,262 reported that they were office workers in Cambridge, and, of these, 236 (19 percent) lived in Cambridge. Of the 236 Cambridge resident office employees, 118 (50 percent) reported that they moved to Cambridge because of a job they took in a Cambridge office building. Thus, of the 1,262 total Cambridge office employees responding to the survey, 118 (9 percent) were "new resident employees": they moved to Cambridge because of their job.[3] Selected survey results are included in Appendix 3.

Between 1988 and 2001, the percentage of Cambridge office workers who live in Cambridge increased from 12 percent to 19 percent, and the percentage of Cambridge office workers who live in Cambridge because they took a job in a Cambridge office building increased from four percent to nine percent.[4] The increase in the number of high technology firms in Cambridge during the 1990s might help explain the significant increase in the percentage of individuals moving to Cambridge because of a job in the city. The high technology job market tends to attract a young and highly educated population that often prefers living in urban areas.[5] This job market also offers relatively high salaries,[6] allowing those who have a high technology job to afford the high housing prices and other costs of living associated with Cambridge. High technology will likely continue to play a major role in the development of Cambridge office space.

The migration of people to Cambridge for a job has an impact on the existing Cambridge housing market. These new employees and their households increase the demand and

competition for housing, placing upward pressure on housing prices. If there are few vacancies in the housing market and no immediate increase in housing production to match the new demand, housing prices and rents will normally increase. Since Cambridge is largely a built-out city, development of new housing to meet the new demand is not always easy. Existing property owners are insulated from these price increases and may, in fact, enjoy increased property values and/or rental income. Existing renters, however, will likely pay a higher proportion of their income for shelter and, if prices rise high enough, be forced to leave the city altogether. This study focuses only on the housing price impact on renters in Cambridge.

B. *Housing Price Impact*

The following discussion provides an outline of the methodology for calculating the housing price impact caused by new office development on units occupied by low- and moderate-income households in Cambridge. To calculate this housing price impact, the study uses the results of the survey of Cambridge office employees, information about office development in Cambridge, and facts and assumptions about the existing housing stock in Cambridge. Constructing the estimate for the housing price impact per square foot of office development in Cambridge (over the years 1988 to 2000) involved the following steps.

Step 1: Annual number of new resident employees generated by new office development

The study calculated the annual number of new resident employees generated by new office development by multiplying the survey-derived new resident employee proportion by the number of office employees accommodated annually in newly constructed office space for the

1988-2000 period.[7] Relying on the fact that office development increased by an average of 507,285 square feet per year between 1988 and 2000 and the assumption that one office employee occupies an average of 250 square feet of space,[8] the study estimates that 2,029 employees were accommodated annually in Cambridge's new offices (507,285 gross square feet / 250 gross square feet per office employee = 2,029 employees). Applying the survey results, 183 office employees (nine percent) moved annually to Cambridge to become new resident employees in the city (2,029 employees * 9.0% = 183 employees).

Step 2: Annual number of new resident employees generated by new office development who live in market-rate rental units

The study next determined what percentage of new resident employees rent, rather than own, housing in Cambridge. Applying the survey-derived proportion of renters vs. owners, 137 (75 percent) rented, rather than owned, their housing in Cambridge.

Step 3: Annual number of market-rate rental units demanded by new resident employees

Each new resident employee does not necessarily create a demand for one unit of housing. Indeed, some new resident employees move in with others or move into an already occupied unit. Therefore, determining the number of housing units demanded by the new resident employees requires further adjustment. An estimate for the number of wage earners per household in Cambridge is 1.4.[9] Therefore, the 137 new resident employees who enter the rental market demand 98 units of market-rate rental housing (137 new resident employees / 1.4 wage earners per household = 98 units).[10]

Step 4: Annual impact on market-rate rental housing demand from new resident employees

The total supply of market-rate rental housing units in Cambridge is 22,597 units.[11] Of this number, 20 percent (4,519 units) of the units "turn-over" and are available for rental each year (22,597 units * 20% = 4,519 units).[12] With the addition of new resident employees generated by office development each year, there is demand for 98 more units of market-rate rental housing. This represents an annual increase in demand of 2.16 percent (98 units / 4,519 available units = 2.16%).

Step 5: Impact of annual increase in demand for market-rate rental units on average rents in Cambridge

With an average monthly rent for market-rate rental units of $1,623 and a price elasticity of demand of 1.0,[13] the average rent without the increase in demand for market-rate rental units generated by new resident employees would have been $1,588 [$1,623 – ($1,623 * (2.16% * 1.0)) = $1,588]. Therefore, the increase in demand for market-rate rental housing units resulted in an increase in average monthly rent for available units of $35 ($1,623 - $1,588 = $35).

Step 6: Annual housing price impact for market-rate rental units occupied by low- and moderate-income households

This study is concerned with the price impact on market-rate rental units occupied by low- and moderate-income households. According to income figures calculated by the U.S. Department of Housing and Urban Development,[14] a four-person low- and moderate-income household in Cambridge earns up to $58,300. Low- and moderate-income households are assumed to inhabit 12,863 (44.3 percent) of the 29,037 total rental units in Cambridge.[15] Of these 12,863 units

inhabited by low- and moderate-income households, 6,440 are subsidized units, leaving 6,423 market-rate units for low- and moderate-income households.[16]

Rents for market-rate apartments typically increase at different rates depending upon whether a lease is renewed or new. Available evidence suggests that renewal leases only increase by 71 percent of the amount that new leases increase.[17] Using this information, the monthly price impact on a rental unit that has a new lease will be $35 and the monthly price impact on a rental unit that has a renewed lease will be $24.85. Step 4 states that twenty percent of units turn over in a year and that eighty percent of units are re-leased. As a result, the total annual housing price impact generated by new resident employees for market-rate rental units for low- and moderate-income households is $539,532 for units that turn-over and have a new lease and $1,532,271 for units that are re-leased. The total annual housing price impact is $2,071,803. This is calculated as follows:

Units that turn over: [(20% * 6,423) * $35 * 12 months] = $539,532 plus,

Unit that are re-leased: [(80% * 6,423) * ($35 * 71%) * 12 months] = $1,532,271.

$539,532 + $1,532,271 = $2,071,803

Step 7: The annual housing price impact on market-rate rental housing occupied by low- and moderate-income households per square foot of new office space

The annual housing price impact on market-rate rental housing occupied by low- and moderate-income households per square foot of office space is $4.08 ($2,071,803 / 507,285 square feet of commercial office space per year = $4.08).

Step 8: Supply response to the increased demand for market-rate rental housing

The housing price impact per square foot of office space of $4.08 represents the price impact for only one year, but the impact of the new demand for housing will have a longer-term effect because of lags in housing supply adjusting to new housing demand. There will be a continuing, albeit decreasing, price impact on renters until enough new rental housing has been supplied to meet the increased demand. Therefore, to calculate the total housing price impact, it is necessary to aggregate annual housing price impacts until the rental housing supply has increased enough to meet the increased rental housing demand.

At the beginning of the first year of impact generated by new office development the housing price impact is $4.08. Over the course of the first year, this study assumes that the supply of housing will increase to meet 33 percent of the increased demand for housing. Therefore, at the beginning of the second year, there is a housing price impact of $2.70 (66 percent of the original housing price impact of $4.08). Over the course of the second year, there is a supply response from the market of another 33 percent. Therefore, at the beginning of the third year, there is a housing price impact of $1.35 (33 percent of the original housing price impact of $4.08). Over the course of the third year, there is a supply response from the market of the last 33 percent. Therefore, at the beginning of the fourth year, there is no longer any housing price impact. Taking this supply response into account, the following chart indicates the annual price impact per square foot of office space for the four years following an increase in office development.

	Year			
	1	2	3	4
Annual Payment	$4.08	$2.70	$1.35	$0.00

Step 9: Present value total of the annual price impacts per square foot of office space

Using a discount rate of six percent[18] to discount price impacts due to office development, the *total* price impact of a square foot of office space is $7.83 [($4.08) + ($2.70 / $(1.06)^1$) + ($1.35 / $(1.06)^2$) + ($0.00 / $(1.06)^3$) = $7.83].[19]

The housing price impact of a square foot of new office development on low- and moderate-income rental units is estimated to be $7.83.

Comparison with the 1988 Housing Price Impact

This result represents an increase from the housing price impact of $3.00 per square foot of office space determined in the 1988 Kayden and Pollard study. This increase is explained by two main factors. First, the percentage of Cambridge office employees who said they moved to Cambridge to take a job more than doubled – from four percent in 1988 to nine percent in 2001. Second, the 1988 study looked at the housing price impact for one year only, while the 2001 study looks at the housing price impact over a time span of four years.[20] Looking at the housing price impact over four years provides a more accurate assessment of the total housing price impact. Appendix 4 provides a more in-depth comparison of these calculations for the housing price impact calculations in 1988 and 2001.

II. INCENTIVE ZONING AND ECONOMIC DEVELOPMENT IN CAMBRIDGE

The rationale for the Incentive Zoning Ordinance must be considered in light of the City's interest in encouraging continued economic growth and development. To evaluate the impact of the Incentive Zoning Ordinance on the pace and type of growth and development in Cambridge, this section:

- Surveys development trends in Cambridge; and
- Considers the relationship between Cambridge's commercial tax rate and the proposed housing contribution on the decision of developers to locate new development in the City.

The methodology for this section consisted of interviewing developers and real estate representatives and gathering data from assessor and community development offices of Cambridge, Boston and surrounding communities.[21]

A. *Office Development Trends in Cambridge*

Office development in Cambridge in the 1990s was targeted to provide space for "new economy" firms. Indeed, Cambridge is a world capital for biotechnology and home to leading business consulting, computer engineering, software development, telecommunications, medical equipment, architectural design, and environmental engineering and research firms. In many ways, Cambridge has been a leader in the Greater Boston area's transformation from an old and declining manufacturing region to a high quality labor market area. Of particular note, this transformation has been accompanied by low vacancy rates and high real estate prices. For

instance, in 1999 – a banner year for office and research and development space in Cambridge – vacancy rates hovered below one percent.

Office development trends in Cambridge are influenced by larger economic cycles. The low vacancy rates that accompanied the economic boom of the late 1990s have increased with the slowing of the economy. By the end of 2000, vacancy rates had increased to just over three percent. By the end of June 2001, vacancy rates had increased to nearly 12 percent.[22]

With rents down from their peak levels in 2000, Insignia/ESG reports that office tenants who were priced out of the Cambridge market over the last several years are returning.[23] Recent rent proposals for Class A space (e.g. Kendall Square and East Cambridge) are in the $40-50 per square foot range, for example, as compared to $60-75 in November 2000. Firms can find rents as low as $36 per square foot in West Cambridge. Increasingly aggressive sublease offerings are also contributing to the decline in rents.

Cambridge's biotech industry provides an exception to these trends. Rents charged for "biotech ready" buildings have remained stable at around $50-60 per square foot. Vacancy rates for biotech space have also remained within the two to four percent range. These rates may change over the next several years as 1.5 million square feet of new biotech-ready space become available in Cambridge.

B. *Development Location Decisions*

Office developers base city location decisions on a myriad of factors: demand for and supply of office space, land availability, and tax burdens and tax incentives, among others. On the basis of these factors, Cambridge continues to have powerful locational advantages in comparison to surrounding communities.

Cambridge has one of the lowest commercial tax rates among surrounding towns and cities, as illustrated in Appendix 5. At $23.39 per $1,000 in assessed value, Cambridge's rate is considerably lower than its main competitor for office development, Boston, which has a rate of $30.14. Boston's higher commercial tax rate raises the cost of operation, especially for large developments, with limits on what may be passed on to the tenant. Since asking rents are virtually the same in the two cities – an average of $52 per square foot in Boston versus $54 in Cambridge[24] – lower commercial tax rates give Cambridge an advantage over Boston for office development.

Cambridge, Boston, and Somerville are the only cities in the Greater Boston area that have adopted incentive zoning ordinances specifically designed to mitigate the effects of office development on housing costs. Appendix 6 compares these Incentive Zoning programs in the three cities.

According to interviews with local developers, the cost of the Incentive Zoning contribution plays only a small role in development decisions. Some reported that existing contributions are neither prohibitive nor an impediment to development.[25]

Cambridge offers many other locational advantages that attract office developers. Cambridge's distinctive business environment begins with its major academic institutions, MIT and Harvard. These institutions produce a top-notch labor pool and stimulate a great deal of office development through spin-off research projects. The concentration of so many high quality biotechnology and information technology businesses has resulted in excellent name recognition for the City of Cambridge, making it a highly sought after address for many businesses. Together, these non-pecuniary factors weigh heavily in the decision-making process for businesses considering Cambridge as a potential home, making it unlikely that a small increase in the Incentive Zoning contribution will impede future office development in the city.

Endnotes

[1] In this study, the terms "low" and "moderate-income" refer to households earning no more than 80% of Area Median Income (AMI) as defined by the U.S. Department of Housing and Urban Development.

[2] For a discussion of conceptual issues related to this methodology, see Jerold Kayden and Robert Pollard, "Linkage Ordinances and Traditional Exactions Analysis: The Connection Between Office Development and Housing," in 50 Law and Contemporary Problems 127, 131-32, 134 (1987). See also Alan Altshuler and Jose Gomez-Ibanez, Regulation for Revenue: The Political Economy of Land Use Exactions, Washington, D.C./Cambridge: Brookings/Lincoln Institute, 1993): 132-34.

[3] This figure may actually underestimate the number of people moving to Cambridge because of their job in Cambridge, because it does not necessarily include students who graduate from a university in Cambridge and then stay in Cambridge to take a job. While technically these individuals may not think of themselves as having "moved" to Cambridge to take a job in Cambridge, it would be possible for this study to classify them as such.

[4] The statistics from 1988 are from the study by Kayden and Pollard (1988). These results are significant at the 99 percent confidence level.

[5] Hecker, Daniel. "High Technology Employment: A Broader View," *Monthly Labor Review*, June 1999.

[6] Ibid.

[7] The study did not take account of office space demolition figures for the 1988-2000 period, nor did it add figures for substantially rehabilitated office space. The magnitude of demolition for this period was insignificant.

[8] The figure of 507,285 square feet was calculated from new construction figures from the Office of the Assessor, The City of Cambridge. The *Office Development Handbook* (1998), by the Urban Land Institute, indicates that a standard design parameter for employee density in office buildings is four persons per 1,000 square feet of office space. Employee densities will fluctuate depending upon market conditions including vacancy rates, and whether or not one is using gross or net rentable square feet measurements. This study assumes that four employees per 1,000 square feet of gross office space is a reasonable estimate for the Cambridge area.

[9] The housing price impact study completed by Kayden and Pollard in 1988 also divided the number of new resident employees by a factor of 1.4 to calculate the number of demanded units of housing. Based on analysis conducted by the Center for Labor Market Studies at Northeastern University on recent census data, the number of wage earners per household is still approximately 1.4.

[10] It is assumed that the new resident employees are not receiving housing subsidies.

[11] The Cambridge Community Development Department calculated this figure in "Housing Market Information" (September 26, 2000), p. 3.

[12] This rate of turnover is based on information found in "Cambridge Housing Study: Final Report," Abt Associates (June 1987).

[13] The average rent of $1,623 was reported in the Cambridge Community Development Department's "Housing Market Information" (September 26, 2000), p. 3. The figure is based on average rents advertised in the *Boston Globe* on June 6, June 30, and July 18, 1999. The price elasticity of demand in the market-rate rental housing

market is assumed to be 1.0 – for a one percent increase (decrease) in demand, there is a one percent increase (decrease) in rents. See E. Mills, Urban Economics 164 (1972).

[14] These income limits are current as of January 31, 2002 and are available on the website http://www.ci.cambridge.ma.us/~CDD/housing/misc/incomelimits.html.

[15] This is based on the fact that the 1990 Census classified 44.3 percent of the residents in Cambridge as low or moderate-income (earning 80% or less of the Area Median Income). The Cambridge Community Development Department calculated that there were 29,037 total rental units in Cambridge in August 2000 in "Housing Market Information" (September 26, 2000), p. 3, including the 22,597 market-rate rental units.

[16] The Cambridge Community Development Department calculated that there were 6,440 subsidized rental units in Cambridge in August 2000 in "Housing Market Information" (September 26, 2000), p. 3. Many low- and moderate-income households in the Greater Boston area pay more than 30 percent of their household income on housing. Paying 30 percent of household income for housing is the conventionally accepted proportion, but some households may pay as much as 50 percent. See "A New Paradigm for Housing in Greater Boston," The Center for Urban and Regional Policy, Northeastern University, February 2001, p. 4.

[17] The March 1, 2001 issue of the Harvard University Gazette announced that the fair market rents in Harvard-owned apartments would increase by five percent for renewed leases and seven percent for new leases. This means that renewal leases only increased by 71 percent of the amount that new leases increased.

[18] A six percent discount rate is consistent with long-term interest rates at the time of this study.

[19] This calculation assumes that the housing price impact occurs at the beginning of the year.

[20] Another difference between the 1988 study and this study is the specification of impacted units. The 1988 study looked at the 7,400 market-rate units that were not subsidized or subject to rent control. Because rent control ended in 1995, this study looks at the housing price impact on all market-rate, non-subsidized units occupied by low- and moderate-income households.

[21] This section of the report is based largely on an economic development study completed by Rick Ward, a graduate student at Northeastern University, during the Summer of 2001.

[22] Meredith & Grew's Market Viewpoint Report, 2nd Quarter 2001. www.m-g.com.

[23] I on the Market – Boston, mid-year 2001 report, www.iesg.com.

[24] Meredith & Grew. 2001. "Market Viewpoint." www.m-g.com

[25] Based on communication between Rick Ward and David Aposhian, President, Cambridge Design and Development, and Michael Manzo, Partner, Beal Companies (August 2001).

Appendix 1: Commercial Development Survey (2001) Methodology

The project team administered an intercept survey of Cambridge office workers at select sites around Cambridge from June 12, 2001 through June 14, 2001. The team concentrated the survey administration around the following central locations:

Lechmere
Canal Park I & II

Kendall Square
Cambridge Center
One Kendall Square
The U.S. Trust Complex

Central Square
University Park

Alewife
Alewife MBTA Station
250 Cambridge Park Dr.

Using these locations as a starting point, survey administrators targeted office workers from the various Cambridge office buildings that surround them.

The locations of the survey sites, the times that the survey was administered, and the number of surveys distributed are detailed below.

Tuesday, June 12, 2001, 8:00 AM – 10:00 AM, 795 surveys distributed
- Cambridge Center (intersection of Main St. and Ames St. in Kendall Square)
- One Kendall Square (intersection of Hampshire St. and Cardinal Medieros Ave.)
- U.S. Trust Complex (intersection of Broadway and Moore St. in Kendall Square)

Tuesday, June 12, 2001, 4:00 PM – 6:30 PM, 713 surveys distributed
- Cambridge Center (intersection of Main St. and Ames St. in Kendall Square)
- One Kendall Square (intersection of Hampshire St. and Cardinal Medieros Ave.)
- U.S. Trust Complex (intersection of Broadway and Moore St. in Kendall Square)

Wednesday, June 13, 2001, 8:00 AM – 10:00 AM, 188 surveys distributed
- Alewife MBTA Station
- 250 Cambridgepark Dr.

Wednesday, June 13, 2001, 11:30 AM – 1:30 PM, 185 surveys distributed
- 250 Cambridgepark Dr.

Wednesday, June 13, 2001, 4:00 PM – 6:30 PM, 605 surveys distributed
- Alewife MBTA Station

- 250 Cambridgepark Dr. (the survey administrator posted at this site was asked to leave by a private security officer after distributing surveys for approximately 30 minutes)

Thursday, June 14, 2001, 8:00 AM – 10:00 AM, 510 surveys distributed

- Cambridge Center (Main St. adjacent to the MIT Coop)
- University Park (intersection of Massachusetts Ave. and Main St.)

Thursday, June 14, 2001, 11:15 AM – 1:30 PM, 145 surveys distributed

- Canal Park I & II (intersection of First St. and Cambridge St.)

Thursday, June 14, 2001, 4:00 PM – 6:30 PM, 462 surveys distributed

- University Park (intersection of Massachusetts Ave. and Main St.)
- Canal Park I & II (intersection of Massachusetts Ave. and Main St.)

The survey administrators working at each session numbered between four and seven people. Survey administrators intercepted individuals entering or exiting targeted commercial developments, and also individuals walking on the sidewalk around the developments. In the case of Alewife, the majority of respondents were intercepted in or around the transit station. Intercepting office workers at the actual site of Alewife developments when they arrived or left work was extremely difficult given the high percentage of workers who drive and park in the private parking lots of the developments. Therefore, questionnaires were distributed during the lunch hour (11:30 AM – 1:30 PM) on Wednesday, June 13, 2001 to catch office workers as they took breaks or walked from their buildings to get lunch. Whenever possible, administrators screened intercepted individuals at every location with the question, "Do you work in a Cambridge office building?"

After each survey session, survey administrators counted the number of questionnaires that they had distributed. The total number of questionnaires distributed according to a calculation based on these counts is 3,603 (out of 4,000 questionnaires printed). However, the final count of remaining questionnaires is 366, meaning that the surveyors actually distributed 3,634. One possible explanation for this discrepancy is the likelihood that survey administrators made mistakes when counting the number of questionnaires that they distributed. With this in mind, the research team decided to use 3,634 as the official number of surveys administered.

Survey respondents were encouraged to answer the survey questions on the spot. Of the 3,634 questionnaires distributed over the three-day period, 579 (15.9%) were filled out and turned in on the spot. Respondents who did not fill out the questionnaire on the spot were asked to complete the questionnaire and mail it in (pre-paid postage) as soon as possible.

Appendix 2: Survey Questionnaire

Northeastern University's Center for Urban and Regional Policy is conducting a survey of employment, housing and commuting patterns in Cambridge. Please take a few moments to answer the following questions and drop this pre-paid postcard in the mail. Your cooperation is appreciated.

1. Do you **work** in a Cambridge office building?

_____ YES If **YES**, where:_____
(Name of Employer)

_____ NO _____
(Street Address)

2. Do you **live**:

_____ In Cambridge

_____ Elsewhere _____
(Name of city or town)

3. Do you:

_____ **OWN** your own residence _____ **RENT** your residence

4. If you rent your residence, what is your **MONTHLY RENT**?

$ _____

5. **FOR CAMBRIDGE RESIDENTS ONLY**: Did you move to Cambridge because of a job you took in a Cambridge office building?

_____ YES _____NO If **YES**, in what year: _____

6. How do you typically **commute** to work?

- ❑ Drive alone
- ❑ Carpool/vanpool
- ❑ Take public transit
- ❑ Walk
- ❑ Bike
- ❑ Other

Appendix 3: Selected Survey Results, 2001

Table 1:

	n	%
Total number of respondents	1440	100%
Respondents who work in a Cambridge office building	1262	88%
Respondents who work elsewhere	178	12%

Table 2:

	n	%
All Cambridge office employees	1262	100%
Cambridge office employees who live in Cambridge	236	19%
Cambridge office employees who live elsewhere	1021	81%

Table 3:

	n	%
Cambridge office employees who live in Cambridge	236	100%
Cambridge office employees who rent their residence in Cambridge	176	75%
Cambridge office employees who own their residence in Cambridge	57	24%

Table 4:

	n	%
Cambridge office employees who live in Cambridge	236	100%
Cambridge office employees who moved to Cambridge to take a job in a Cambridge office building	118	50%

Table 5:

	n	%
Cambridge office employees who moved to Cambridge to take a job in a Cambridge office building	118	100%
Cambridge office employees who moved to Cambridge because they took a job in a Cambridge office building and rent their residence	89	75%
Cambridge office employees who moved to Cambridge because they took a job in a Cambridge office building and bought their residence in Cambridge	29	25%

Table 6:

	n	%
All Cambridge office employees	1262	100%
Cambridge office employees who moved to Cambridge to take a job in a Cambridge office building	118	9%
Those who moved to Cambridge to take a job in a Cambridge office building who rent their residence	89	7%
Those who moved to Cambridge to take a job in a Cambridge office building who own their residence	29	2%

Table 7:

	n	%
Cambridge office employees who live outside Cambridge	1021	100%
Cambridge office employees who rent their residence outside Cambridge	558	55%
Cambridge office employees who own their residence outside Cambridge	454	45%

Table 8:

	n	%
Cambridge office employees who live outside Cambridge	1021	100%
Location of residence:		
Boston	256	25%
Somerville	106	10%
Brookline	54	5%
Arlington	44	4%
Medford	31	3%
Quincy	28	3%
Newton	26	2%
Watertown	23	2%
Malden	22	2%
Belmont	17	2%
Lexington	15	1%
Waltham	14	1%
Everett	10	1%
Framingham	10	1%
Revere	10	1%
Woburn	10	1%
Other (Jurisdictions with 9 or less Cambridge office workers in residence)	336	33%
No answer	9	1%

Table 9: **The Top 20 Employers in the Sample**

	n	%
Employer		
Massachusetts Institute of Technology	111	8.8%
Genzyme	106	8.4%
Biogen	82	6.5%
Millenium Pharmaceuticals	51	4.0%
Lotus	48	3.8%
Genetics Institute	36	2.9%
Whitehead Institute	36	2.9%
Akamai Technologies	30	2.4%
Cambridge Technology Partners	24	1.9%
Draper Laboratories	24	1.9%
Forrester Research	24	1.9%
Monitor Group	21	1.7%
Genuity	18	1.4%
Add Inc.	16	1.3%
Camp Dresser & McKee	15	1.2%
Cereon Geonomics	15	1.2%
EMC	14	1.1%
Harvard University	14	1.1%
Cambridge Systematics	13	1.0%
Alkermes	11	0.9%

Table 10: **The Types of Employers in the Sample** [1]

	n	%
All Cambridge Office Workers	1262	100%
Type of Employer		
Biotechnology Organizations	425	34%
Information Technology Organizations	327	26%
General Office	209	17%
Institutions	138	11%
Hotel/Entertainment/Retail	28	2%
Other	31	3%
Unknown	104	8%

[1] **Biotechnology** employers include those researching, developing, or marketing substances related to advanced biological techniques. Examples include pharmaceutical companies and organizations involved in medical research.
Information Technology employers include those researching, developing, or marketing computer or communication technologies. Examples include computer software development organizations and Internet consulting organizations.
General Office employers include business consulting organizations, marketing firms, banks, and social science research firms.
Institutions employers include universities, governmental offices, and hospitals.
Hotel/Entertainment/Retail employers are a self-defined category.
Other is the catchall category that includes doctors' offices, utilities, day care, and landscaping firms.
Unknown represents all of the respondents that did not include the name of their employer. A small percentage of these respondents included the name of their employer, but the research team was unable to identify the type of employer.

Appendix 4: Comparison of Cambridge Incentive Zoning Study Results, 1988 and 2001[1]

	1988	2001
SURVEY RESULTS		
Surveys distributed	3,500	3,634
Surveys returned	795	1,440
Response rate	23%	40%
Cambridge office employees	781 (98%)	1,262 (88%)
Cambridge office employees who live in Cambridge	92 (12%)	236 (19%)
Cambridge office employees who live in Cambridge who moved to take a job in Cambridge	31 (4% of all Cambridge office employees)	118 (9% of all Cambridge office employees)
Cambridge office employees who live in Cambridge who moved to take a job in Cambridge living in non-controlled rental units	22 (71%)[2]	89 (75%)
NEW OFFICE EMPLOYEES IN CAMBRIDGE		
Increase in office space (sq. ft.)	6 million (1981 – 1987)	6,594,705 (1988 – 2000)
Annual increase in office space (sq. ft.)	1 million	507,285
Annual number of new Cambridge office employees	4,000	2,029
Annual number of new Cambridge office employees who move to Cambridge to take a job in a Cambridge office building[3]	160	183

NUMBER OF UNITS DEMANDED		
Annual number of new Cambridge office employees who move to Cambridge to take a job in a Cambridge office building living in non-subsidized rental units[4]	114	137
Annual number of market-rate rental units demanded by Cambridge office employees who move to Cambridge to take a job in a Cambridge office building	80	98
Total number of market rate (non-rent controlled in 1988) rental units in Cambridge	7,400	22,597
Total number of market rate (non-rent controlled in 1988) rental units available annually	1,480	4,519
Percent increase in housing demand generated by Cambridge office employees who move to Cambridge to take a job in Cambridge	5.4%	2.16%
HOUSING PRICE IMPACT		
Average market rate (non-rent controlled in 1988) Cambridge rents	$622	$1,623
Average market rate (non-rent controlled in 1988) Cambridge rents without increased demand from new Cambridge office employees who move to Cambridge	$588	$1,588
Difference in rent without increased demand from new Cambridge office employees who move to Cambridge	$34	$35
Housing price impact per one square foot of office space	$3.00	$7.83

[1] This appendix compares the results of the original 1988 study and the 2001 study.

[2] Rent control was in effect in 1988. An additional 4 employees (or 13 percent) who moved to Cambridge to take an office job in Cambridge rented rent-controlled units in the 1988 sample.

[3] Findings from the 1988 survey suggest that **four** percent of new Cambridge office workers move to Cambridge to take a job. Therefore of the 4,000 annual new Cambridge office workers, 160 move to Cambridge annually to take a job in Cambridge (4,000 * 0.04 = 160). Findings from the 2001 survey suggest that **nine** percent of new Cambridge office workers move to Cambridge to take a job. Therefore, of the 2,029 annual new Cambridge office workers, 183 move to Cambridge annually to take a job in Cambridge (2,029 * 0.09 = 183).

[4] The research teams in 1988 and 2001 assumed that renters of non-controlled units were most affected by Cambridge new resident employees. In 1988, of the 160 new Cambridge employees who arrived annually in the City, 114 (**71%**) could be expected to live in non-controlled units. In 2001, of the 183 new Cambridge employees who arrive annually in the City, it is expected that 137 (or **75%**) will live in non-controlled units.

Appendix 5: Commercial Tax Rate Comparison of Boston-Area Communities

CITY	TAX RATE (PER $1,000)
Chelsea	$33.54
Boston	$30.14
Everett	$29.02
Malden	$26.37
Medford	$25.09
Waltham	$24.46
Cambridge	**$23.39**
Watertown	$23.06
Somerville	$22.00
Newton	$21.93

Source: Office of the Assessor, various localities (8/01).

Appendix 6: Comparison of Incentive Zoning Programs in Greater Boston

City and Year Established	Current Rate	Payment Schedule	Threshold / Exemption	Amount Contributed to Housing
Boston 1983	$7.18 per sq. ft. + $1.44 per sq. ft. for jobs	7 years	100,000 sq. ft. 100,000 sq. ft.	$45 million
Cambridge 1988	$3.28 per sq. ft.	Due before occupancy	30,000 sq. ft. 2,500 sq. ft.	$721,000
Somerville 1990	$2.60 per sq. ft.	5 equal annual payments upon occupancy	30,000 sq. ft. 30,000 sq. ft.	$323,000

5-2107/29 meeting