



UMASS DONAHUE INSTITUTE



Economic Contributions of Housing Permitted through Chapter 40B:

**Economic and Employment Linkages in the Massachusetts
Economy from 2000-2010**

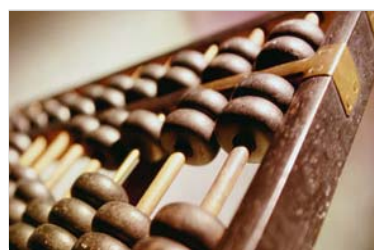
Prepared for Citizens' Housing and Planning Association


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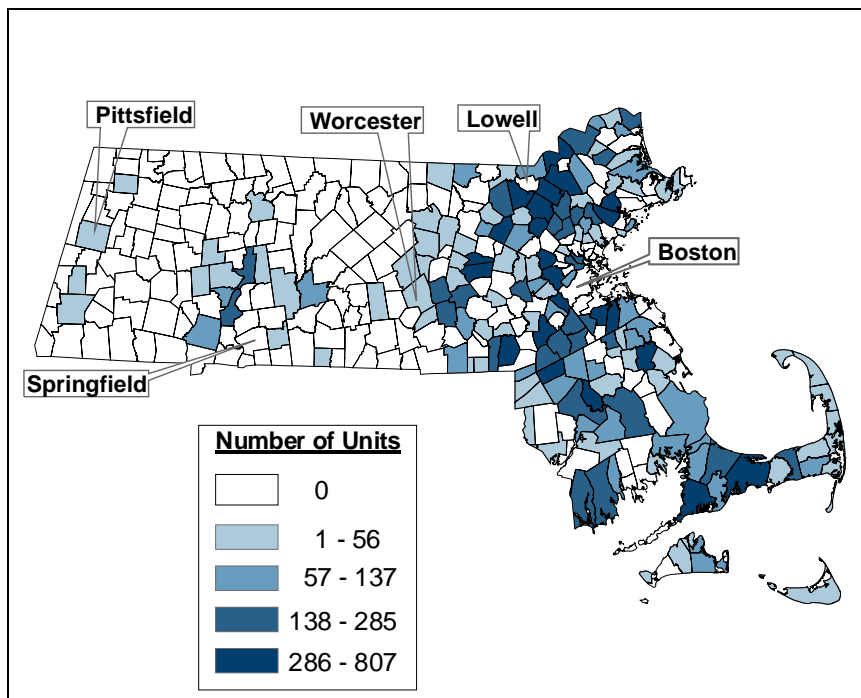
Overview

Introduction

Enacted in 1969, Sections 20-23 of Chapter 40B of the Massachusetts General Laws provide an alternate zoning approval process for select housing developments with at least 25 percent of housing units affordable to those earning less than 80 percent of area median income, or at least 20 percent of units affordable to those earning less than 50 percent of area median income. Also known as the Comprehensive Permit Law, it has engendered controversy due to the ability of the Zoning Board of Appeals to apply more flexible zoning standards than stricter local zoning bylaws in communities where less than 10 percent of housing is considered affordable.

Since 2000, 21,861 new housing units have been built as a result of Chapter 40B permitting, including 8,140 affordable housing units. These include both homeownership and rental developments serving seniors, families, and people with disabilities who have a range of incomes. These units have mostly been built in the eastern part of the state, with a substantial majority in the Metro Boston region, the north shore/northeast and the south coast. In western Massachusetts, the Springfield-Holyoke metropolitan area is also home to a significant number of Chapter 40B units though much less than around Metro Boston. Figure 1 shows the distribution of Chapter 40B housing units constructed from 2000 to April 2010 across cities and towns in the Commonwealth. These units serve as the basis for this analysis.

Figure 1. Location of Chapter 40B Housing Units Constructed from 2000 to April 2010, by City/ Town



Sources: US Census Bureau, CHAPA Chapter 40B project database

An additional 21,078 housing units, including 6,119 affordable units, are currently planned and are at various stages of the permitting or construction process. All of these proposed projects considered in this analysis have received comprehensive permits. Some of them have begun construction, while others are still in the pre-construction stage and may or may not be built, or may not be built as originally planned. This analysis excludes those projects facing active legal or procedural challenges due to the difficulty of establishing basic characteristics, such as number of units, for many of these projects. Expected economic expenditures and linkages presented in this report assume that all proposed projects will be built as currently planned.

Purpose and Scope of Report

At the request of the Citizens' Housing and Planning Association (CHAPA), the researchers conducted an analysis of the economic linkages that arise from economic activities associated with Chapter 40B housing in Massachusetts. Specifically, this report considers economic, tax and employment contributions that arise from the construction of Chapter 40B housing, as well as from the occupancy of such housing.

Based on a database of all Chapter 40B projects, both complete and proposed, and a sample of certified construction costs for Chapter 40B projects, this analysis estimates the direct costs and economic linkages associated with the construction and occupancy of a Chapter 40B housing unit, as well as tax revenues generated by occupancy of these units. All economic linkages were calculated using custom economic models developed using IMPLAN input-output data and software.

Similar recent work by the National Association of Home Builders and the National Association of Realtors examined the economic contributions of building or purchasing a home in Massachusetts.¹ The NAR report also included an estimation of average home purchasing effects due to construction of new housing. Neither of these reports was specific to the mix of market-rate and affordable housing or the geographic distribution that are the defining characteristics of Chapter 40B housing. Relying on detailed audits of Chapter 40B construction budgets and income estimates based on Chapter 40B unit characteristics and the American Community Survey, this report provides an estimate that is specific to Chapter 40B housing in Massachusetts built from 2000 to April 2010, using the most recent data available.

This report does not attempt to analyze the costs and benefits to communities or the Commonwealth resulting from the construction and occupancy of Chapter 40B housing to local communities. Previous work by the University of Massachusetts Donahue Institute (UMDI) and others have addressed these questions, both for Chapter 40B housing specifically, and for all housing in Massachusetts. Specifically, a 2007 UMDI study of mixed-income ownership developments, including those permitted through Chapter 40B, found that these developments "did not have any measurable negative impact on public services in their municipalities" and had "the same fiscal impact as the vast majority of their neighbors."²

¹ National Association of Home Builders. "The Economic Benefits of Home Building In Massachusetts: Jobs, Income and Public Revenue Generated." May 2010. Available at <http://hbama.com/wp/wp-content/uploads/2010/06/HBAM-REPORTMay-19-dp.pdf>. National Association of Realtors. "Economic Impact of Home Purchases 2009." The NAHB report found contributions that were lower on a per unit basis than those presented in this analysis; this is likely due to the geographically dispersed units used for that analysis as compared to Chapter 40B units, which are concentrated heavily in the more expensive Metro Boston region.

² Professor Robert Nakosteen, UMass Amherst and James Palma, with Michael Goodman and Rebecca Loveland. "The Fiscal Impact of New Housing in Massachusetts: A Critical Analysis." October, 2003. Eric Nakajima, Kathleen Modzelewski, Allison

Summary of Findings

Expenditures, linkages, and employment associated with the construction and occupancy of Chapter 40B housing constructed from 2000 to April 2010 are estimated as follows (dollar figures are in 2009 dollars except where noted):

- Construction of Chapter 40B housing units from 2000 to April 2010 resulted in total expenditures of over \$5.39 billion and 20,208 jobs. Resulting economic linkages in Massachusetts totaled \$3.86 billion and 27,475 jobs **for a total of \$9.25 billion in economic activity and 47, 683 jobs.**
- Proposed construction of Chapter 40B units is projected to result in total expenditures of over \$6.06 billion and 23,113 jobs if all proposed projects were to be completed as planned. Resulting economic linkages in Massachusetts are estimated at more than \$4.35 billion and 31,194 jobs **for a total of \$10.42 billion in economic linkages and 54,307 jobs.** It is beyond the scope of this study to determine which proposed projects may proceed as planned in the near future and which ones may not. Economic and employment estimates for proposed projects are therefore likely higher than what will actually occur.
- The expenditure of household incomes by residents of Chapter 40B units built from 2000 to April 2010 was an estimated \$1.86 billion annually as of April 2010, with additional economic linkages of \$636.4 million and 11,088 jobs.³
- Household spending by residents of Chapter 40B units built from 2000 to April 2010 is estimated to result in \$61.8 million annually in property taxes, \$93.7 million in state income taxes, and \$22.8 million in sales taxes (all taxes in 2008 dollars).
- The expenditure of household incomes from residents of proposed Chapter 40B projects is estimated to be \$1.94 billion annually if all proposed projects were to be completed as planned, with additional economic linkages of \$665.1 million and 11,587 jobs.
- Household spending by residents of proposed Chapter 40B housing units is estimated to result in \$65.8 million annually in property taxes, \$97.5 million in state income taxes, and \$25.2 million in sales taxes if all proposed projects were completed as planned (all taxes in 2008 dollars).

Dale. "The Fiscal Impact of Mixed-Income Housing Developments on Massachusetts Municipalities: A report for Citizens' Housing and Planning Association." May 2007.

³ Employment figures are actual jobs, not full-time equivalent employment. This model does not account for direct household employees such as babysitters, caretakers or others. Thus, all employment associated with household spending is assumed to result as indirect linkages from the expenditure of household incomes in recognized industries.

Economic Contributions of Construction

Introduction

Construction gives rise to a host of economic linkages in the form of employment, transactions with materials suppliers, and payments for related services like architecture and landscaping. Economic contributions of construction include all funds raised by developers, including those that are expended for construction and related costs as well as those that contribute to the developers' profit. These total construction expenditures are referred to in tables below as the direct value of construction. The economic contribution also includes the linkages that result from the developers' expenditures; that is, the re-spending of those dollars in the Massachusetts economy by suppliers, subcontractors, and employees. The IMPLAN modeling system used for this study combines the U.S. Bureau of Economic Analysis' Input-Output Benchmarks with other data following a balanced account format recommended by the United Nations to construct quantitative models of trade flow relationships among businesses that purchase materials and services from one another, and from employees who use their earnings to purchase additional goods and services from local businesses.⁴ Based on a detailed analysis of expenditures resulting from the construction of Chapter 40B housing since 2000, a custom IMPLAN input-output model was developed to estimate a total economic contribution due to Chapter 40B construction from 2000 to April 2010 in Massachusetts.

Cost Certification Documentation

One provision of the Chapter 40B regulations is that developers are limited in the amount of profit or developers' fees they may earn from a Chapter 40B construction project. To enforce these limits, DHCD regulations require compliance with cost certification procedures issued by MassHousing in 2007 and subsequently adopted by all state housing agencies. In short, to comply with current regulations, a developer must secure a construction cost examination by a Certified Public Accountant (CPA) in compliance with standards of the American Institute of Certified Public Accountants (AICPA) and secure approval of the examination from the relevant funding agency or project administrator. The draft of the cost-certification must also be submitted for review by the municipality in which the project is located.

This analysis relies on itemized construction expenditures from cost certification documentation provided by the major funding agencies for Chapter 40B housing: the Department of Housing and Community Development, MassHousing, and the Massachusetts Housing Partnership. In rare cases, certification documents provided by the developer did not provide adequate detail for expenditures or were not approved by the CPA or relevant funding agency. Those certifications were excluded from this analysis.

The cost certifications used for this analysis were conducted by CPAs and approved, where applicable, by the relevant funding agency. Where a developer's submitted costs were questioned by the CPA or

⁴ Minnesota IMPLAN Group, Inc., IMPLAN System (2000/2008 data and software). 1725 Tower Drive West, Suite 140, Stillwater, MN 55082. www.implan.com. 1997

funding agency, this analysis relies on the CPA or agency-adjusted (lower) dollar figure provided in the cost certification documentation. Thus, the analysis presented here is conservative and is based on the most credible information available.

In all, cost certifications for 68 projects were provided and met the criteria for use in this analysis. These projects represent a wide range of project types, including renter and owner-occupied, single family and multi-family projects, and differing localities within the state.

Construction Analysis Methodology

Using the cost certification documentation, a database of construction expenditures and revenues for Chapter 40B projects was developed. Expenditures were then coded to match the most appropriate of 440 proprietary IMPLAN industry codes. Certain categories of expenditures appeared in the cost certification documentation but do not typically result in economic linkages: these included site acquisition, reserves and contingency funds, and litigation settlements. Developer fees and profits, similarly, do not result in significant linkages. Though these items do not contribute to a project's economic linkages, they nevertheless represent legitimate entries in a project's budget, and are therefore included in the direct value reported in the following analysis.

Once expenditures were properly assigned to IMPLAN industry codes, a model was developed that stratified construction projects by region. For this purpose, the regions used were:

1. Metro Boston– Suffolk, Norfolk, Middlesex, and Essex Counties
2. Southeast Massachusetts– Bristol and Plymouth Counties
3. Cape and Islands– Barnstable, Dukes and Nantucket Counties
4. Central Massachusetts– Worcester County
5. Western Massachusetts– Berkshire, Franklin, Hampshire and Hampden Counties.⁵

These regional assignments and the sample of projects supplied by the 68 cost certifications allowed the calculation of average construction costs per unit by region. These costs were then applied to estimate the economic linkages of the projects constructed since 2000 for which no data were available, as well as for proposed projects for which basic information (number of units and location) was available.

These estimated costs were entered into a custom IMPLAN model to estimate total economic linkages for Chapter 40B construction projects, accounting for the region and year of construction.

Construction Analysis Results

From 2000 to April 2010, 21,861 Chapter 40B housing units were built. As of April 2010, there were an additional 21,078 proposed units in varying stages of preparation for construction.⁶

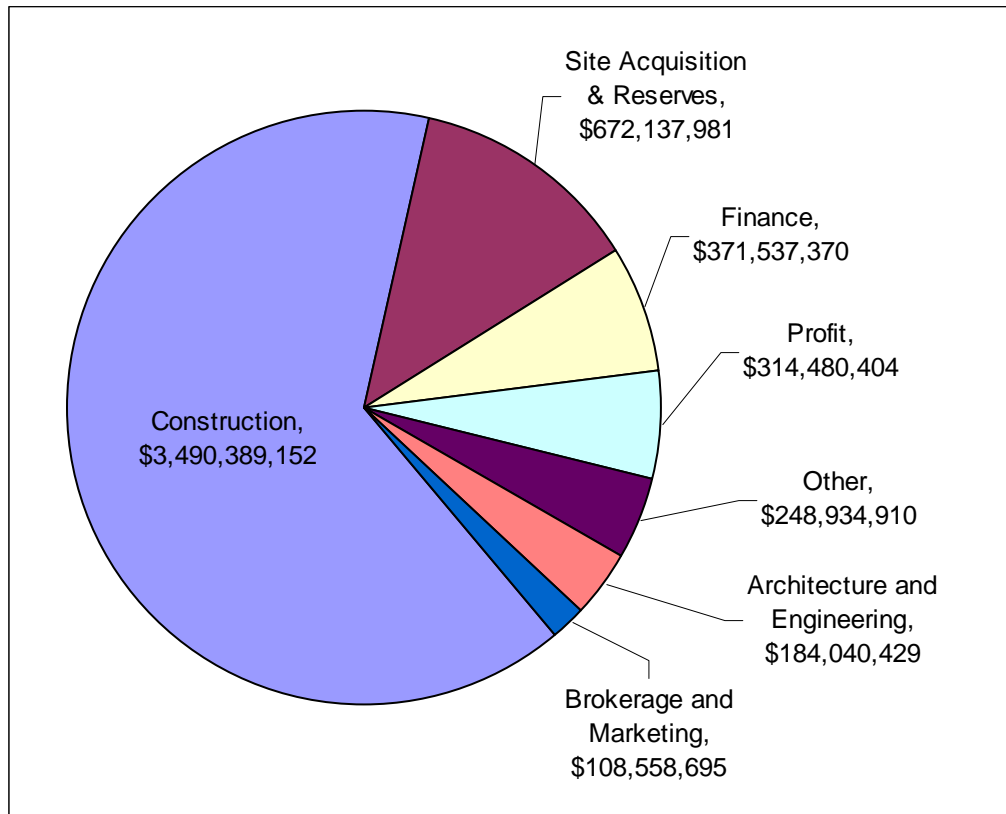
Total estimated project costs by expense type for Chapter 40B projects constructed from 2000 to April 2010 are shown in Figure 2. The majority, or 64.8 percent, of project costs were for physical construction for sites and buildings, including equipment, subcontractors, and construction payroll,

⁵ These regions correspond roughly to the *MassBenchmarks* regions typically used in many UMDI analyses and publications, which group counties and towns that are economically similar.

⁶ While all of these units have received a Comprehensive Permit, they may or may not have building permits, and may or may not ultimately be constructed.

followed by finance (6.9 percent), profit (5.8 percent), and architecture and engineering (3.4 percent). Other expenditures (4.6 percent) include legal services, building materials, infrastructure expenses, maintenance, and insurance, among other expenses.

Figure 2. Estimated Project Costs by Expense Type, Chapter 40B Units Constructed 2000 to April 2010 (2009 Dollars)



Sources: Cost certification documents from DHCD, MassHousing, and Massachusetts Housing Partnership; CHAPA Chapter 40B database.

These direct expenditures give rise to economic linkages. As shown in Table 1, over the period from 2000 through April 2010, the direct value of completed construction for Chapter 40B projects was estimated at over \$5.39 billion, with resulting economic linkages of over \$3.85 billion. Annualized average direct values were over \$521.6 million with over \$373.1 million in linkages, for annualized total contributions of \$894.8 million. The average per-unit development cost of a Chapter 40B housing unit during this period was \$246,561 (including both market rate and affordable units), with average linkages of \$176,372.

Proposed Chapter 40B projects have a direct estimated value of an additional \$6.06 billion, with estimated economic linkages of over \$4.35 billion, if all projects were to be completed as planned. The average per-unit development cost of a proposed Chapter 40B unit is estimated at \$287,729 (including land costs, direct construction costs, and soft costs, such as architecture, legal, finance and marketing costs) with linkages of an additional \$206,493. Most of these developments include both affordable and market rate homes.

Table 1. Economic Linkages from Chapter 40B Construction in Massachusetts (2009 Dollars)

	Direct Value	Linkages	Total Contribution
Existing Units, 2000 to April 2010			
Total	\$5,390,078,865	\$3,855,668,355	\$9,245,747,220
Units	21,861		
Per unit	\$246,561	\$176,372	\$422,933
Proposed Units			
Total	\$6,064,751,620	\$4,352,459,363	\$10,417,210,983
Units	21,078		
Per unit	\$287,729	\$206,493	\$494,222

Sources: Cost certification documents from DHCD, MassHousing, and Massachusetts Housing Partnership; CHAPA Chapter 40B database; IMPLAN.

Direct employment for projects completed from 2000 to April 2010 was estimated at 20,208 jobs, with linkages to another 27,475 jobs.⁷ Direct employment for proposed projects is estimated to be 23,113 jobs, with additional linkages of 31,194 jobs, as shown in Table 2. Nearly one in five dollars of direct value go toward site acquisition, reserves, profit or other items that do not contribute to employment, resulting in a relatively high overall dollars to direct employment ratio. Also, because of the high prevalence of subcontractors, much of the employment that ultimately results from the direct expenditures appears as employment linkages.

Table 2. Employment Linkages from Chapter 40B Construction in Massachusetts (2009 Dollars)

	Direct Employment	Linkages	Total Employment
Existing Units, 2000 to April 2010			
Total	20,208	27,475	47,683
Units	21,861		
Per unit	0.9	1.3	2.2
Proposed Units			
Total	23,113	31,194	54,307
Units	21,078		
Per unit	1.1	1.5	2.6

Sources: Cost certification documents from DHCD, MassHousing, and Massachusetts Housing Partnership; CHAPA Chapter 40B database.

For both dollar and employment figures, the proposed Chapter 40B units have higher per-unit averages for direct value and linkages than existing units. This is a result of the mix of affordable and market-rate units as well as the geographical mix of proposed units compared to existing units.

⁷ Reported jobs are actual jobs, not full-time equivalent jobs, for construction and related industries only. Most jobs related to construction and marketing of Chapter 40B units are temporary. Permanent employment related to household spending for goods and services is discussed in the next section of this report.

Economic Contributions of Household Spending

Introduction

Household spending gives rise to economic linkages when residents spend money on local goods and services such as housing, health care, and education. While many Chapter 40B residents would no doubt live and be employed in Massachusetts, and even in the same regions of the state, without the construction of Chapter 40B units, many might not live in the communities they do without Chapter 40B. While it is outside the scope of this analysis to determine how many of these households are new to Massachusetts, Chapter 40B was designed to result in the construction of housing units that would otherwise not be built (because it eased zoning restrictions that would otherwise limit the supply of new housing), and its existence has undoubtedly led to a larger net in-migration of households and more new household formation than would otherwise have taken place, increasing population, jobs, and income in the Commonwealth.

Household incomes for Chapter 40B residents were estimated by matching records from the American Community Survey to Chapter 40B households on characteristics including market rate or affordable units, location, and tenure (rental or owner-occupied). Economic linkages were then estimated using an IMPLAN input-output analysis model.

Chapter 40B Project Database

Data for Chapter 40B projects either completed or in various stages of approval or project completion were provided by CHAPA, which makes use of information from the Subsidized Housing Inventory maintained by the Department of Housing and Community Development (DHCD) and other sources. Project data include: project status (complete or in various stages of approval or completion), number of market and affordable-rate units (actual or planned), percent of area median income for which affordable units are reserved, project location, developer, subsidizing program if applicable, tenure (owner or renter), and year of construction, among many other items. Data were extensively reviewed and coded to allow tabulation of the descriptive characteristics used in this analysis.

The analysis of household spending presented here began with a thorough analysis of the CHAPA-maintained database, up to date as of April 2010. Data were cleaned and the database was restricted to only those 40B projects with housing unit rentals or sales starting in or after 2000 (assumed to coincide with the completion of construction), and with complete information about the number of units completed or proposed.

There are 748 projects built and in-progress in the data set, for a total of 42,939 market-rate and affordable 40B residential housing units since 2000. Of these, 21,861 units have been built and 21,078 are proposed units at varying stages in the construction or pre-construction process.

Household Spending Analysis Methodology

In order to estimate incomes, spending, and taxes paid by residents of Chapter 40B housing units, an ideal but costly method would be to conduct a large and representative sample of 40B housing units, and then to survey the households in those units. This was not feasible for this study, so instead, the 2006-8 American Community Survey (ACS) was used as a surrogate sample for this purpose. The ACS is a large and representative sample of households with detailed information on housing characteristics, demographics, and incomes. Although sample households from the ACS cannot be matched to actual 40B residents, since households are not asked this on the survey, they can, with appropriate re-weighting, be used to represent 40B residents. This task is greatly aided by the detail available on housing characteristics, including geographic location, tenure by owner-occupied or renting, income for determining subsidized eligibility, and year in which the housing unit was built. Indeed, although it is not possible to know which of the ACS sample units were also Chapter 40B units, the factors on the weights indicate that many of the ACS sample households built since 2000 and used in this analysis actually did live in Chapter 40B units, including roughly one-third of households who either rented or whose incomes were less than 80 percent of the area mean income.

Incomes for affordable-rate and market-rate housing units were calculated by reweighting the three-year American Community Survey (ACS) 2006-2008 to meet specific targets. ACS provides data on housing types, household incomes and home values (among other things), by specialized geographic areas called Public Use Microdata Areas (PUMAs), of which there are 48 in Massachusetts. CHAPA's database was used to count the number of 40B housing units built in 2000 or later – existing and proposed, by PUMA and by each of four housing unit types: subsidized or market rate, by rented or owner-occupied. These counts served as targets for reweighting the ACS. Each sample household on the ACS who was living in a housing unit built in 2000 or later was assigned to one of the four types based on the sample household's housing tenure and income relative to the PUMA's median income by household size. The household weights were then adjusted to meet the target number of units by type and PUMA according to the procedure described in the following paragraphs. According to the reasonable assumptions outlined below, the reweighted ACS then provides estimates of total and average income of households by PUMA and Chapter 40B unit type. This re-weighted ACS was also used to estimate state and local taxes paid by 40B residents as explained in the tax revenue methodology section below.

For affordable renters and owner occupiers, ACS households living in units constructed in 2000 or later, with incomes at or below 80 percent of area median income, by PUMA and tenure type were used. Weights were factored proportionately to add to the targets for PUMA and tenure type provided by the CHAPA database of Chapter 40B projects. This assumes that households with less than 80 percent of area median income, by tenure, are similar to households living in subsidized Chapter 40B units.

For owner-occupied market-rate housing units, the key differences between Chapter 40B units and other privately-built houses constructed in 2000 or later are the quality, size, and neighborhood in which they are located – all characteristics that are reflected in market value. Although there is a wide variation in the market values of Chapter 40B units as there is in non-Chapter 40B units, the distribution of 40B market values tends to be centered around a lower mean value. Using a sample of 47 owner-occupied market-rate Chapter 40B units selected to be representative by geography and price, it was estimated that the market value of such 40B units averaged 65 percent of that of all owner-occupied housing units built in 2000 or later in the corresponding PUMAs, where the market values of all owner-

occupied housing units were taken from the ACS.⁸ Within each PUMA, weights for owner-occupied households (with incomes above 80 percent of area median income living in housing units built in 2000 or later) on the ACS were then factored so that the factored-weighted average value of homes was 65 percent of the (pre-factored weighted) average value of homes in the PUMA.⁹ The resulting weights were then factored proportionately to add to the target number of owner-occupied market rate 40B units in the PUMA.

For market-rate renters, all ACS renter households (living in units constructed in 2000 or later) with incomes above the 80 percent threshold were used. Weights were factored proportionately to add to the targets based on tenure type and PUMA from the CHAPA Chapter 40B database. The factors on the weights suggest that, in PUMAs with 40B developments, roughly half the for-market rental units built since 2000 were built under 40B.

Rewighted household incomes from the ACS were then aggregated into nine different income categories, and adjusted to estimate and exclude federal, state and local taxes paid as well as out-of-state spending as a basis for economic linkage calculations. IMPLAN provides default spending patterns for its nine different income categories, specifying dollars spent on housing, food, health care, and all other goods and services, which were used to determine the linkages from household spending.

Household Spending Analysis Results

As could be expected, annual average incomes are estimated to vary significantly between households in market-rate and affordable rate units. Table 3 shows that average annual household incomes by tenure, affordability and unit status (existing as of April 2010, or proposed). Households in existing affordable rental units have an estimated average income of \$27,428, compared to an average income for market-rate rental households of \$115,017. Likewise, affordable owner households have an average estimated income of \$47,007, compared to an average income of \$122,332 for market-rate owner households. By comparison, the average income for all households in the Massachusetts was \$85,098 in 2009 dollars.¹⁰

In three of the four income and tenure categories in Table 3, estimated incomes are higher for residents of existing units than for the expected residents of proposed units. This is a result of the larger number of existing than proposed units in higher income areas of the state.

⁸ The ACS gives households' estimates of the value of their homes in price categories. The midpoint of each price category was used as the estimate for each household's home value. For the top price category, \$1,000,000 was used. All house price estimates were adjusted to a common year using the Case-Shiller price index for metropolitan Boston in forming the 65 percent estimate.

⁹ This reweighting was accomplished in an iterative fashion by nudging each household's weight up or down by one percent depending on whether or not the new weight moved the average home value closer to its target.

¹⁰ Income estimates are from the American Community Survey, 2006-2008. It was assumed that market-rate unit occupants had incomes above 80 percent of area median income, while affordable unit occupants were assumed to have incomes below 80 percent of area median income. As a result, average income estimates for affordable and market-rate unit occupants are respectively lower and higher than the average for all state residents.

Table 3. Average Annual Household Income for Chapter 40B Residents (2009 Dollars)

	Existing Units, Constructed 2000 to April 2010	Proposed Units
Affordable Owned	\$47,007	\$45,360
Affordable Rental	\$27,428	\$29,982
Market Owned	\$122,332	\$119,873
Market Rental	\$115,017	\$105,629

Sources: American Community Survey 2006-2008; Case Schiller Price Index; CHAPA Chapter 40B database.

Economic linkages from the household spending of Chapter 40B residents can be interpreted as the annual linkages associated with Chapter 40B household spending from April 2010 forward. Household incomes and associated linkage estimates for Chapter 40B residents are shown in Table 4.¹¹

Total annual household income for Chapter 40B residents as of April 2010 was estimated to be over \$1.85 billion. This household spending was estimated to result in annual linkages of an additional \$636.4 million.

Total annual household income for residents of proposed Chapter 40B developments was estimated to be over \$1.94 billion, with additional linkages of \$655.1 million.

Table 4. Economic Linkages of Household Spending by Residents of Chapter 40B Housing (2009 Dollars)

	Income	Linkages	Total Contribution
Existing units, Constructed 2000 to April 2010			
Total Dollars	\$1,856,958,914	\$636,440,986	\$2,493,399,900
Per Unit Dollars	\$84,944	\$29,113	\$114,057
Total Employment		11,088	11,088
Per Unit Employment		0.5	0.5
Proposed Units			
Total Dollars	\$1,944,936,163	\$665,052,919	\$2,609,989,082
Per Unit Dollars	\$92,484	\$31,624	\$124,108
Total Employment		11,587	11,587
Per Unit Employment		0.6	0.6

Sources: American Community Survey 2006-2008; Case Schiller Price Index; CHAPA Chapter 40B database; IMPLAN.

¹¹ Employment linkages from household spending are the result of location production of goods and services, and are likely to be permanent jobs. Employment figures are actual jobs, not full-time equivalents.

Tax Linkages for Chapter 40B Housing

Introduction

Residents of Chapter 40B housing, like all households, contribute to state and local tax revenues through property, sales and income taxes. In addition to the above analysis of linkages arising from the expenditure of household income, the tax revenues generated by household income from Chapter 40B revenues were estimated.

Tax Revenue Methodology

All tax revenue calculations were derived from the re-weighted 2006-8 ACS sample described in the prior household spending analysis methodology. This re-weighted sample is representative of Chapter 40B households and their incomes and housing units on which state income, sales, and local property taxes are based.

State Income Tax

The Massachusetts state income tax was estimated from a micro tax simulator applied to the re-weighted 2006-8 American Community Survey (ACS), using tax law for 2005.¹² For purposes of counting tax filers, filing units who have no tax liability because they are eligible for “no-tax status” – which means that they are not required to file – are not counted. Income and tax liability amounts are in 2008 dollars.

State Sales Tax

The Massachusetts sales tax paid by consumers was estimated from a micro tax simulator applied to the 2006-8 ACS, using tax law for 2006, but the new sales tax rate of 6.25 percent. A significant portion of sales taxes are paid by businesses. The estimates provided only include the portion of sales taxes paid by households.

Each household's expenditures on taxable items are estimated for 16 categories of expenditures, as expected values of expenditures given by econometrically estimated consumption functions for Northeast consumer units from the 2006 Consumer Expenditure Survey.¹³ Estimated expenditures are conditioned on household income (including food stamps) and demographics of the household. Expenditures and taxes are in 2008 dollars.

¹² 2008 Statistics of Income data from the Massachusetts Department of Revenue are not yet publically available. 2005 tax law - on which the income tax simulator was based, was not appreciably different from 2008 or 2009 tax law.

¹³ U.S. Bureau of Labor Statistics, 2008. Available from <http://www.bls.gov/cex/>.

Local Property Taxes

Local property tax payments were estimated for each household from information available on the ACS.

Homeowners on the ACS are asked about the amount of property taxes they paid in a 68-category item. Each homeowner is assigned the midpoint of the category range they selected.

For rental units, property taxes were estimated from rental payments reported on the ACS. Property taxes were estimated to be 0.951 percent of the value of their unit, where the tax rate was the statewide average property tax on real estate in 2007 (Massachusetts Taxpayers Foundation, 2008). The value of the rental unit was estimated by applying a price to rent ratio of 221 for the Boston/Quincy Metro Division (HousingTracker.net, 2008). So property taxes were estimated by multiplying monthly net rents by a factor of 2.10171 (= 221 x .00951). Monthly rents are available on the ACS. When utilities were included in rents, the estimated monthly value of these utilities were subtracted from the reported rent. These estimates were obtained from a regression of the utility payments on the number of rooms, where the regressions were estimated on renters for whom the utility payments were not included in rent and, therefore, were reported separately.

Property tax payments are in 2008 dollars. The adjustment factors provided in the ACS for income and household dollar items were not applied to property taxes, as the Census Bureau does not provide adjustment factors for property tax payments.

Tax Revenue Results

State and local tax revenues from Chapter 40B units constructed from 2000 to April 2010 total \$178.3 million annually. Of that amount, \$93.7 million is from income taxes, \$61.8 million is from property taxes, and \$22.8 million is from sales taxes. If proposed Chapter 40B units were built as planned, annual property tax revenue could be expected to be \$65.8 million, sales tax revenue would be an estimated \$25.2 million, and income tax revenue would be an estimated \$97.5 million. Estimated tax revenue from household spending by Chapter 40B residents is shown in Table 5.

Table 5. Annual State and Local Tax Revenues from Household Spending by Chapter 40B Units (2008 Dollars)

	Property Tax	Sales Tax	Income Tax
Existing Units, Constructed 2000 to April 2010			
Total Taxes	\$61,753,654	\$22,793,872	\$93,729,349
Per Unit Average	\$2,825	\$1,043	\$4,313
Proposed Units			
Total Taxes	\$65,780,561	\$25,244,990	\$97,539,367
Per Unit Average	\$3,128	\$1,200	\$4,435

Sources: American Community Survey 2006-2008; Case Schiller Price Index; CHAPA Chapter 40B database; IMPLAN.

Conclusion

Chapter 40B housing represents a significant contribution to local economies, with direct construction expenditures totaling over \$5.39 billion for housing constructed from 2000 to April 2010 and household spending totaling \$1.86 billion annually for housing constructed from 2000 to April 2010. Residents of Chapter 40B units built during this time also made contributions to state and local tax revenues through state income taxes totaling \$93.7 million, state sales taxes totaling \$22.8 million, and local property taxes totaling \$61.8 million. Keeping in mind that these units represent roughly half of all existing Chapter 40B units constructed since the law was enacted, the actual expenditures over time and annually have no doubt been much higher. Likewise, if all currently proposed Chapter 40B units were built as planned, the cumulative and annual expenditures are estimated to be even greater than what has been built during the past 10 years. While some of these past and future expenditures could and would occur in Massachusetts without the procedural advantages for mixed-income construction provided by Chapter 40B, many of these projects would likely never be built without the provisions provided by that law.

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