

TOWN OF BROOKLINE  
OVERRIDE STUDY COMMITTEE

**THE ECONOMIC IMPACT  
OF ENROLLMENT GROWTH  
ON THE BROOKLINE PUBLIC SCHOOLS**



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Population and Special Education Subcommittee

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# THE ECONOMIC IMPACT OF ENROLLMENT GROWTH ON THE BROOKLINE PUBLIC SCHOOLS

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# THE ECONOMIC IMPACT OF ENROLLMENT GROWTH ON THE BROOKLINE PUBLIC SCHOOLS

## EXECUTIVE SUMMARY

Over the nine school years, from 2005-06 through 2013-14 (FY06 through FY14), the total K-12 enrollment in the Public Schools of Brookline (PSB) increased by 21.9%, from 5,766 to 7,030 – an additional 1,264 students. Over that same period, the total annual cost of the Brookline Public Schools experienced an increase that was roughly commensurate with the jump in enrollment – about 18.6% on an inflation-adjusted basis. Total PSB enrollment in FY14 (the 2013-14 school year) included approximately 475 non-resident students who attend Brookline schools under either the “Metropolitan Council for Educational Opportunity” (METCO) program or the so-called “Materials Fee” program under which children of non-resident School and non-School employees of the Town of Brookline are offered enrollment in the Brookline Public Schools for a nominal fee.

The School Department’s and METCO policy guidelines expressly condition non-resident student enrollment in the Brookline Public Schools on the following: (a) that space (i.e., “seats”) is available; (b) in the case of Materials Fee students, that staffing levels be set “on the basis of tuition paying or resident students,” (c) again in the case of Materials Fee students, that “[t]he cost of special education services ... will have to be borne by the employee’s town or city of residence, or by the individual,” and (d) upon the availability of funds for the METCO program from the Massachusetts Department of Education. The METCO program guidelines provide that placement decisions are to be based upon “district grade and seat availability” in school districts “with openings for the particular grade level needed.” The existence of these stated policies fosters the impression that the economic impact of these non-resident programs upon the total cost of the Brookline school system is minimal and can be thought of as being limited to short-run out-of-pocket costs (as implied by the term “materials fee” that is used to describe the non-resident admissions being offered to the children of Town employees); offering a non-resident student a seat that might otherwise go unused in a classroom imposes no significant amount of long-run economic costs on the school system other than ancillary services the student might require – because at such time as the seat assigned to the non-resident student is required by a Brookline resident, the “space available” policy would require that the non-resident student's continued enrollment be discontinued and the seat be reassigned to a resident. But if the non-resident student is allowed to remain in the Brookline schools while at the same time the additional resident will also be accommodated, *the economic cost to the Town as between the additional resident and the previously-admitted non-resident student is exactly the same*, subject only to differences in the nature of specific services that may be provided to each.

In practice, the Brookline School Department and the School Committee have not been, and are certainly not now, adhering to these policy prescriptions. Yet it is precisely because these policies are being ignored that it is fundamentally incorrect, as an economic matter, to view the cost impact of enrolling non-resident students as differing in any material way from the cost impact of enrolling Brookline residents. The appropriate standard for evaluating the economic impact of all PSB students – resident and non-resident – is *long run incremental cost* – the average per-student cost arising from adding the increment of students that the PSB has been experiencing annually for much of the past

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decade. The “long run” in this context refers to a time period over which most costs can be varied – i.e., are affected by the change in total enrollment. Physical classroom and other space needs increase with increased enrollment, and given the time required to plan and implement school building construction and expansion projects, building capacity will need to be adjusted to meet the additional space requirements. While building capacity is often thought of as being fixed, at least in the near term, the ongoing and persistent enrollment growth being experienced in the Brookline schools requires a corresponding ongoing planning, funding and construction horizon to assure that additional capacity will be available when needed. In the context of persistent and ongoing growth, the “long run,” which embraces the time frame in which capital and other capacity-related costs will be either incurred or avoided, is thus relatively short. Because the OSC is looking at projects that will commence within the next one, two, or three years, the “long run” here necessarily refers to that length of time over which, but for the additional capacity that would be required, these additional (incremental) costs would not need to be incurred.

Using a “top-down” approach and employing widely used multiple linear regression analysis, the Override Study Committee developed an estimate of the long run incremental cost per additional student at \$15,748 in FY14 dollars. Going forward, therefore, the Town can expect to spend, on average, an additional \$15,748 (in FY14 dollars before adjusting for future inflation) per student per year for each additional student beyond the current (FY14) level. The decision of the School Department not to adhere to or enforce its own “space available” policy has contributed directly and inextricably to the nearly 1100-student jump in total PSB enrollment that has occurred since 2006. *There is no “space available” in the current context.* Several OSC subcommittees have undertaken analyses indicating that the suspension of further admissions to the METCO and Materials Fee programs starting in the fall of 2014 would significantly reduce, and perhaps even eliminate altogether, the need for as many as 10 additional classrooms by 2019 relative to the level that had been projected by the School Department – and relied upon by the B-SPACE Committee – absent any modifications to existing non-resident student enrollment practices. A modest increase in the average class size would have a similar effect. The suspension of new non-resident student enrollments and/or the acceptance of a modest (one or two student) increase in average class size would thus substantially reduce, if not entirely eliminate, the need for additional classroom capacity and the consequent requirement for a tax override of the magnitude being sought by the School Department. If practices do not change, Brookline will in essence be building its new classrooms to serve non-resident students and will, contrary to its explicit policies, be staffing its schools at levels needed to serve non-resident and resident, rather than only resident, students.

Using the base long run incremental cost estimate as a starting point, and adjusting for differences in the relative use of special education services, we have developed estimates of the long run economic cost to the Town of Brookline arising from its involvement in the non-resident student enrollment programs. Currently, by accommodating roughly 300 Boston METCO students in the Brookline schools, *Brookline taxpayers are effectively providing a cash subsidy to the City of Boston of more than \$4.4-million annually.* It has been the School Department’s commitment that all non-resident children entering kindergarten in Brookline are to be assured continued enrollment in the Brookline schools through graduation from High School. As a result, for each new non-resident student enrolling in kindergarten in the fall of 2014, over the next thirteen years the Town will spend roughly \$202,000 for each entering METCO student and roughly \$182,000 for each entering Materials Fee student, net of offsetting revenue. For the full cohort of non-resident students projected to enter the PSB in September 2014, the Town’s financial commitment over the next thirteen years would be roughly \$8.1-million. To the extent that this is not a legal obligation of the Town, it may not carry the same unfunded liability status as, for example, post-

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retirement medical benefits that the Town is legally obligated to provide. However, if the practice of assuring enrollment through graduation is viewed as a *de facto* commitment, there are major and serious financial consequences. We have calculated the long term financial commitment confronting Brookline under two non-resident student enrollment scenarios:

Scenario 1: Brookline suspends all further admission of new non-resident students on and after September 2014, but continues to honor the commitment to educate all existing non-resident students through 12<sup>th</sup> grade graduation.

Scenario 2: The current situation – Brookline maintains its existing level of participation in both programs indefinitely, and continues to admit new kindergarten cohorts each year.

|   | Base Estimate        | Lower Bound         | Upper Bound          |
|---|----------------------|---------------------|----------------------|
| <b>Scenario 1: Suspend new admissions, maintain existing students through 12<sup>th</sup> grade</b>                 |                      |                     |                      |
| METCO   | \$32,490,306         | \$30,399,500        | \$34,581,112         |
| Materials Fee   | \$20,725,903         | \$19,247,790        | \$22,204,016         |
| <b>TOTAL NPV</b>  | <b>\$53,216,209</b>  | <b>\$49,647,290</b> | <b>\$56,785,128</b>  |
| <b>Scenario 2: Maintain full participation in both programs indefinitely (13-year time frame for cost estimate)</b> |                      |                     |                      |
| METCO   | \$59,454,355         | \$55,628,367        | \$63,280,342         |
| Materials Fee   | \$46,808,491         | \$43,470,241        | \$50,146,741         |
| <b>TOTAL NPV</b>  | <b>\$106,262,846</b> | <b>\$99,098,608</b> | <b>\$113,427,084</b> |

In essence, adhering to “space available” policies and thus suspending the METCO and Materials Fee programs to new entrants as of September 2014 would reduce the Town’s financial exposure over the next 13 years by one-half, or over \$53-million, although the Town would still face some \$53-million of costs for non-resident students currently enrolled. As of the issuance of this report, the PSB has made the determination not to suspend new admissions to the METCO or Materials Fee programs for September 2014, although the programs may be slightly reduced in size. Scaling down these programs will somewhat reduce the \$106-million in future costs, but not nearly to the extent that would result from full adherence to the PSB and METCO “space available” guidelines. Note that the \$106-million estimate was limited to a 13-year time frame; if participation in both non-resident programs is to be maintained indefinitely, the potential financial impact upon the Town would be multiples of that amount.

It is not the purpose of the analyses presented here to offer or to reach any conclusions as to the appropriateness and public benefit of continued participation at current levels by the Town of Brookline in one or both of the non-resident student programs. It is, however, entirely appropriate for the benefits being ascribed to these programs to be evaluated relative to their actual individual, i.e., per-student, and combined, i.e., program-wide, costs to the Town. It is hoped that the analysis provided here will make a positive contribution to that effort.

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Lee L. Selwyn  
Override Study Committee

## Introduction

Over the nine school years, from 2005-06 through 2013-14 (fiscal year (FY) 06 through FY14), the total K-12 enrollment in the Brookline Public Schools increased by 21.9% from 5,766 to 7,030 – an increase of 1,264 students. Over that same period, the total annual cost of the Brookline Public Schools experienced an increase that was roughly commensurate with the jump in enrollment – about 18.6% on an inflation adjusted basis. The total PSB enrollment in FY14 included approximately 475 non-resident students<sup>1</sup> who attended Brookline schools under the “Metropolitan Council for Educational Opportunity” (METCO) program or the so-called “Materials Fee” program under which children of non-resident School and non-School employees of the Town of Brookline are offered enrollment in the Brookline public schools for a nominal “materials fee” (\$2,490 in FY14 with a 5.0% discount for each additional child in the same family).<sup>2</sup> METCO enrollment has been relatively constant at about 300 students for many years, but Materials Fee enrollment has been increasing over the past several years.<sup>3</sup> While the total growth in PSB enrollment cannot be attributed to either of these non-resident student programs, METCO and Materials Fee students do occupy capacity and make use of resources that could otherwise be used to support the growth in *resident* student enrollment. Thus, Brookline’s continued participation in these two non-resident student programs does have significant economic consequences for the Brookline Schools and for the Town as a whole. In this report, we undertake to quantify the extent of that economic impact over the long run.

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1. “The Public Schools of Brookline Override Study Committee Presentation – FY14 and Beyond,” School Department presentation to the Override Study Committee, October 3, 2013 (“October 3 presentation”), at 53, 56 (297 METCO and 178 Materials Fee).

2. *Policy Manual of the Public Schools of Brookline (“Policy Manual”)*, at J-14. No specific explanation is provided as to the basis for the Materials Fee amount. In FY15, the charge will increase to \$2,565 with a 7.5% (\$192) discount for each additional child in the same family.

3. October 3 presentation, at 56 (increase from 136 in FY10 to 178 in FY14).

## **The Public Schools of Brookline Policy for Enrollment of Non-resident Students**

The *Policy Manual of the Public Schools of Brookline* (“*Policy Manual*”) sets out a number of specific conditions governing the admission of non-resident students under the METCO and Materials Fee programs and several other categories of non-resident student admissions:

All new non-resident students will be admitted, with the permission of the Superintendent of Schools, *on a space available basis* and will be charged full tuition as has been established by the School Committee, except under the following circumstances when part or all of the tuition may be waived:

- a. Students enrolled in the METCO program.
- ...
- f. Children of non-resident employees (including teachers) of the Town, with the following conditions and qualifications
  - 1.) Payment of \$300 processing fee.
  - 2.) First priority to tuition paying students in instances of limited space.
  - 3.) Second priority shall be given to non-resident teachers in cases of limited space.
  - 4.) *All staffing shall be done on the basis of tuition paying or resident students.*
  - 5.) At Brookline High School, the decision as to whether space is available or not is at the discretion of the Superintendent of Schools, rather than on a class-by-class basis.
  - 6.) The cost of special education services connected to Chapter 766 and any other Massachusetts or federal statute will have to be borne by the employee’s town or city of residence, or by the individual.
  - 7.) Children will be allowed to attend those schools where space is available. However, the Superintendent of Schools reserves the right to make the necessary changes in any school or individual grade.<sup>4</sup>

And specifically with respect to METCO admissions, the *Policy Manual* provides that:

The Superintendent of Schools is authorized to admit new students from the METCO (Metropolitan Council for Educational Opportunity) program from Pre-K through Grade 4, subject to the School Committee’s guidelines for class size

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4. *Policy Manual*, at J-11, emphasis supplied. The quoted language is included in a section the title of which refers to the children of non-resident employees, but the text itself refers to “all new non-resident students” and to METCO students (providing for waiver of tuition). In any event, METCO’s policies make clear that placements are to be made only when seats are available.



*and subject to the availability of funds for the METCO program from the Massachusetts Department of Education.*<sup>5</sup>

In addition, the Massachusetts Department of Elementary and Secondary Education states that METCO placement decisions are based on, among other factors, “district grade and seat availability” in “school districts with openings for the particular grade level needed.”<sup>6</sup> Conceptually, the policy of conditioning non-resident student attendance in the Brookline Public Schools (a) to a “space available” or “seat available” basis, with the further conditions (b) that, in the case of Materials Fee students, “staffing levels be set “on the basis of tuition paying or resident students,” (c) in the case of Materials Fee students, that “[t]he cost of special education services ... will have to be borne by the employee’s town or city of residence, or by the individual, and (d) that funds are available for the METCO program from the Massachusetts Department of Education, would all suggest that the potential economic impact of such admissions upon the total cost of the Brookline school system would be significantly different – and much smaller – than for resident students whom the Town and the School Department have a legal obligation to serve. Offering a non-resident student a seat that might otherwise go unused in a classroom imposes no significant amount of long-run economic costs on the school system other than ancillary services the student might require – because at such time as the seat assigned to the non-resident student is required by a Brookline resident, the “space available” policy would require that the non-resident student’s continued enrollment be discontinued and the seat be reassigned to a resident. But if that does not happen, if the non-resident student is allowed to remain in the Brookline schools while at the same time the additional resident will also be accommodated, *the economic cost to the Town as between the additional resident and the previously-admitted non-resident student is exactly the same*, subject only to specific differences in the nature of specific services that may be provided to each. In the specific case of non-resident METCO students, moreover, the *Policy Manual* expressly conditions enrollment on “the availability of funds for the METCO program from the Massachusetts Department of Education.”

The Brookline School Department, however, neither adheres to nor enforces *any* of these policy prescriptions:

- (a) *There is no “space available” for the nearly 500 non-resident students in the Brookline Public Schools and there is no evidence that this condition for admission has ever been enforced.* Indeed, asserted urgency of the need to expand the capacity of existing school buildings – or to construct new ones – serves to underscore this fact.

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5. *Id.*, at J-10, emphasis supplied.

6. See <http://www.doe.mass.edu/metco/faq.html?section=c>

- (b) Staffing levels are clearly not based upon the needs of resident students only, but on the total enrollment in the PSB.
- (c) Special education services that are provided to non-resident students are paid for by Brookline taxpayers. The School Department receives no reimbursement from METCO or from the Materials Fee student's town or city of residence, or from the individual non-resident Town employee.
- (d) The "availability of funds for the METCO program from the Massachusetts Department of Education" is woefully insufficient to cover the cost of the Town's participation in METCO.
- (e) Non-resident students – both METCO and Materials Fee – are accepted into the Brookline Public Schools well before the number of entering resident students is known, further contravening the "space available" policy.

It is this lack of adherence to or enforcement of the School Department's own stated and adopted policies that fundamentally alters the economic impact of these programs from one that involves only short-run out-of-pocket costs to one that imposes the same type of long run costs as those associated with serving Brookline residents.

When the METCO program was initiated in the mid-1960s, the Massachusetts Department of Education ("MDOE") compensated participating districts at a level that represented a far greater proportion of the district's per-student cost than it does today. Indeed, the MDOE is seemingly required to maintain this policy – i.e., compensating participating districts at something close to the full cost of educating METCO students – under applicable state law.<sup>7</sup> However, while the

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7. M.G.L. c. 76, Section 12A provides that "[t]he school committee of any city or town ... may adopt a plan for attendance at its schools by any child who resides in another city, town, or regional school district in which racial imbalance, as defined in section thirty-seven D of chapter seventy-one, exists in a public school. Such plan shall ... include an estimate of the expenses necessary to implement such plan. Such school committee or regional district school committee shall file a copy of such plan and the vote by which it was adopted with the [state] board of education .... If it approves such plan, the board, acting through the commissioner of education and on behalf of the commonwealth, shall enter into an agreement with such school committee ... providing that such school committee ... shall accept for attendance at its schools non-resident children as provided by such plan and that the commonwealth shall provide financial assistance to such city, town, or regional district school committee as provided by this section; provided, however, that such agreement may provide that such school committee or regional district school committee waives all or any part of such financial assistance. No such school committee or regional district school committee shall be required to implement any such plan unless and until it and the board have entered into such an agreement providing for the amount of financial assistance and the terms on which such assistance shall be provided." ... "The commonwealth shall, subject to appropriation and upon certification by the board, provide financial assistance in accordance with such agreement. *Such financial assistance shall include payments for: (i) the cost per pupil of educating each non-resident child, as approved by the board; (ii) the cost of transportation of each such child, as approved by the board; and (iii) the cost, as approved by the board, of special education services provided to each such child determined to be in need of such services pursuant to chapter seventy-one B.* The board shall, by regulation, define the special education costs eligible for such financial assistance." See,

(continued...)

average cost per student in Brookline has increased to approximately \$17,000 over the more than four decades since METCO began, the MDOE’s reimbursement has actually *decreased* (on an inflation-adjusted basis) since that time. For FY14, for example, the Town of Brookline received a total of \$1,336,196 in METCO funding, out of which the Town spent \$327,884 on transportation of METCO students and \$492,487 for certain METCO program-specific staff costs, providing a net contribution to the overall costs of the Brookline Public Schools of only \$515,825,<sup>8</sup> or about \$1,737 per METCO student – i.e., *slightly more than one-tenth of the \$17,000 fully-loaded (i.e., Schools + Town) average cost.*

The PSB’s stated policy guidelines – and the assumption that they are being adhered to – serve to create the (false) impression that the economic impact of these non-resident programs on the total cost of the Brookline school system is minimal, and can be thought of as being limited to short-run out-of-pocket costs, as implied by the term “materials fee” that is used to describe the non-resident admissions being offered to Town employees. These policy prescriptions are being ignored, however, and it is precisely because these policies are being ignored that it is fundamentally incorrect, as an economic matter, to view the cost impact of enrolling non-resident students as differing in any material way from the cost impact of enrolling Brookline residents. And the appropriate standard for evaluating the economic impact of all PSB students – resident and non-resident – is *long run incremental cost.*

### **Enrollment growth, from whatever source, engenders the same types of long run costs**

In the context of a persistently expanding student population, the long run incremental cost per additional student, when multiplied by the growth in the total number of students, provides an indication of the total additional cost that the Town of Brookline will incur annually to accommodate the higher level of enrollment. Were we dealing with stable enrollment and a steady-state condition, “long run” would instead refer to the time frame in which, for example, school renovation projects (as distinct from school expansion projects) would be planned and pursued, because were a *decrease* in school population to occur within that time frame, some renovation could be postponed or cancelled if space became surplus. In the current context, of course, we are dealing with ongoing and persistent expansion in capacity needs and capacity expansion programs that are slated to take place over the next several years. Thus, for our purposes, “long run” refers to precisely the time frame that the Override Study Committee (OSC) is dealing with – i.e., FY15 through FY19 and beyond.

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7. (...continued)

<https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXII/Chapter76/Section12A> . Emphasis supplied.

8. October 3 presentation, at 55. The School Department uses the \$515,825 net contribution to pay the salaries of six classroom teachers.

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Of particular relevance to the task of the Override Study Committee, long run incremental cost can also be used as a basis for estimating the additional costs that can be *avoided* if, as a result of a change in PSB policy, the rate of growth can be attenuated. By examining cost changes over an extended period of time – nine years in this case – we can identify and quantify long run cost effects of enrollment growth and in so doing assess the consequences to long run costs of deviations from the current long run enrollment growth trajectory.

While many factors likely influence the total cost of operating the Brookline Public Schools, total enrollment appears to be a major, if not the principal, cost driver, when examined over an extended period of time. And it is the long run that represents the relevant and appropriate time frame for assessment of enrollment-driven cost impacts. This approach is referred to as a “top-down” type of cost analysis. In a “top-down” analysis, we focus upon the aggregate cost of operating the school system without separately and subjectively examining the individual line-item components of such costs as would be done in a “bottom-up” type of study. In addition, we look at conditions affecting aggregate costs over an extended “long run” time frame. The “long run” in this context refers to a time period over which most costs can be varied – i.e., are affected by the change in total enrollment. Physical classroom and other space needs increase with increased enrollment, and given the time required to plan and implement school building construction and expansion programs, building capacity will need to be adjusted to meet the additional space requirements. While building capacity is often thought of as being fixed, at least in the near term, the ongoing and persistent enrollment growth being experienced in the Brookline schools requires a corresponding ongoing planning, funding and construction horizon to assure that additional capacity will be available when needed. In the context of persistent and ongoing growth, the “long run,” which embraces the time frame in which capital and other capacity-related costs will be either incurred or avoided, is thus relatively short. Thus, if we are looking at projects that will commence within the next one, two, or three years, then “long run” refers to that length of time in that, but for the additional capacity that would be required, these additional (incremental) costs would not need to be incurred.

The specific extent to which individual elements of cost vary with total enrollment depends both on the nature of the element itself and the time frame over which it is being examined. For example, personnel costs (such as teachers, aides, special education teachers, and other professional and non-professional staff) tend to increase (or decrease) as enrollment increases (or decreases) even from one year to the next. Additional teachers are being recruited and hired in each school year both to replace those that are retiring or otherwise leaving the Brookline system, or where additional personnel are needed to accommodate growth in total enrollment. If enrollment is growing, additional personnel can be hired; if enrollment is decreasing, some of those retiring or leaving may not need to be replaced. Other costs vary less directly, at least from one year to the next, but will still vary with enrollment over time. For example, as the growth in student enrollment drives the recruitment and hiring of additional teachers, those additional teachers will in turn require additional classrooms and associated common facilities in each school building and, as the number of classroom teachers increases, so too will the need for support staff both within each individual building as well as district-wide. While classroom

capacity may be relatively fixed in the short run because it would be difficult or impossible to augment existing buildings from one year to the next unless plans to do so had been initiated several years earlier,<sup>9</sup> the ultimate need to increase building capacity constitutes a long run enrollment-driven cost that must be fully recognized in any economic analysis.<sup>10</sup>

The alternative to a “top-down” approach is a “bottom-up” analysis. In a bottom-up analysis, one would carefully – and often subjectively – examine the nature and timing of cost variation on a line-item basis. This would be done with respect to each individual cost element – e.g., classroom teachers, guidance counselors, nurses, specialty teachers, administrators, other professional staff (librarians, IT support staff), special education teachers and other staff, and non-professional staff, classroom and common space capacity, heat and utilities, etc. A “bottom-up” type of analyses does have certain utility in examining year-over-year budgetary requirements where long-run cost impacts are rarely addressed. However, a bottom-up approach is not useful for assessing or understanding long run cost effects that are driven by processes that occur over extended – and different – periods of time. And when examining such long-run effects, the highly detailed bottom-up type of analysis is both a difficult undertaking and is one that may be susceptible to considerable subjective judgment and error.

### **Enrollment-driven long run incremental costs of the Brookline Public Schools**

Through its Schools Subcommittee, the Override Study Committee (OSC) undertook to examine the long run relationship between total enrollment and total cost. This involved the development of a “long run incremental cost” (LRIC) analysis using econometric modeling techniques that are widely used in the economics profession. The approach develops a long run incremental cost per student per year. “Incremental cost” as used here, is distinguished from “marginal cost” in that the latter is normally thought of in terms of the additional cost of supplying one additional unit of output (e.g., the additional cost of serving one additional student), whereas the former concept, while still expressed on a per-unit (e.g., per student per year) basis, is calculated over an *increment* of output, such as the total growth in PSB student enrollment from one year to the next.

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9. Even here, some year-over-year capacity adjustment may still be possible. For example, in response to classroom capacity exhaust in existing PSB buildings, the School Department is leasing classroom space in several synagogues for the Brookline Early Education Program (BEEP) that will free up space in K-8 buildings for use by K-8 classes. The costs associated with such space leases creates a short-run capacity cost that will vary from one year to the next in response to enrollment growth. Similarly, spaces within existing buildings can be and have been converted to classroom use more quickly than a new school or addition can be constructed.

10. If some portion of total enrollment was actually being offered only on a strictly space-available basis, such capacity-related costs – even including costs associated with personnel – would not arise with respect to such students since they would no longer continue to be served once space was no longer available. However, if the “space available” policy is not being adhered to or enforced, then *all* students contribute to capacity exhaustion and are equally responsible for driving capacity and other enrollment-driven long run costs.

*The Economic Impact of Enrollment Growth on the Brookline Public Schools*

The total cost of the Brookline School system for grades K through 12 is comprised of four principal components:

- (1) The specific allocation to the School Department in the Town’s annual budget, including amounts allocated under the Town/School Partnership.<sup>11</sup> The use of funds allocated to the Schools is within the discretion and control of the Brookline School Committee;
- (2) Certain teacher costs not specifically associated with the METCO program and not included in the School Department allocation that are funded by the METCO grant;
- (3) Other costs incurred by the Town in addition to those directly allocated to the School Department, including School and retired employee medical insurance, pension benefits, building maintenance, debt service and amortization of principal for major School Department capital projects, and various other support functions; and
- (4) Certain “pay-as-you-go” Capital Improvement Program (CIP) costs incurred by the Town for relatively small School projects that are funded as part of the annual CIP budget.

For FY14, these cost components may be summarized as shown on Table 1:

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11. Under the so-called Town/School Partnership, approximately 50% of the Town’s operating expense budget is allocated to, and under the control of, the School Department and its use is solely within the discretion and approval of the Brookline School Committee. Costs in this category include direct personnel and other payments but do not include various overhead and other costs, such as health insurance, non-teacher pension contributions, debt service on school capital projects, and current revenue-funded capital spending on school-related projects, all of which are nevertheless driven by the spending decisions made by the School Committee and School Department.

| <b>Table 1</b>  |                      |
|---|----------------------|
| <b>BROOKLINE PUBLIC SCHOOLS</b>   |                      |
| <b>Grades K-12</b>  |                      |
| <b>FY14 COSTS</b>   |                      |
| Category  | Amount               |
| Costs allocated to the School Department under the Town/School Partnership                            | \$78,798,174         |
| Cash payments made for out-of-district special education programs                                     | \$5,255,584          |
| Additional teacher salaries funded by the METCO after payment of certain METCO-specific program costs | \$515,825            |
| Expenses incurred by the Town for Schools-related purposes  | \$27,404,461         |
| Debt service, including interest costs and amortization of principal, for major Schools projects      | \$5,758,139          |
| Annual Capital Improvement Program (CIP) costs associated with Schools projects                       | \$1,830,240          |
| <b>Total FY14 PSB costs</b>   | <b>\$119,046,598</b> |

Adjusted for inflation and expressed in FY14 dollars,<sup>12</sup> total K-12 PSB costs jumped from \$100.4-million in FY06 to \$119.0-million in FY14, or by roughly \$18.6-million. The proportionate increase in inflation-adjusted costs and the increase in total enrollment over this period have been roughly the same, as shown on Table 2:

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12. United States Bureau of Labor Statistics, *CPI Detailed Report Data for December 2013*, available at <http://www.bls.gov/cpi/>

| Table 2  |            |                         |               |                         |                        |
|--|------------|-------------------------|---------------|-------------------------|------------------------|
| BROOKLINE PUBLIC SCHOOLS<br>CHANGE IN K-12 ENROLLMENT AND TOTAL COST<br>FY06-FY14 – Adjusted for Inflation to FY14 dollars |            |                         |               |                         |                        |
| Fiscal Year  | Enrollment | Pct increase since FY06 | Total Expense | Pct increase since FY06 | Average Cost per pupil |
| FY06   | 5,766      |                         | \$100,400,407 |                         | \$17,412               |
| FY07   | 5,883      | 2.03%                   | \$101,208,497 | 0.80%                   | \$17,204               |
| FY08   | 5,906      | 2.43%                   | \$103,673,270 | 3.26%                   | \$17,554               |
| FY09   | 6,072      | 5.31%                   | \$108,726,603 | 8.29%                   | \$17,906               |
| FY10   | 6,217      | 7.82%                   | \$111,504,106 | 11.06%                  | \$17,935               |
| FY11   | 6,335      | 9.87%                   | \$109,651,696 | 9.21%                   | \$17,309               |
| FY12   | 6,598      | 14.43%                  | \$111,296,082 | 10.85%                  | \$16,868               |
| FY13   | 6,836      | 18.56%                  | \$115,007,828 | 14.55%                  | \$16,824               |
| FY14   | 7,030      | 21.92%                  | \$119,046,598 | 18.57%                  | \$16,934               |

Using a “top-down” approach and employing multiple linear regression analysis, the Committee developed an estimate of the long run incremental cost per additional student at approximately \$15,748 in FY14 dollars.<sup>13</sup> Going forward, the Town can expect to spend, on average, an additional \$15,748 (in FY14 dollars) per student per year for each additional student beyond the current (FY14) level (before adjusting for future inflation).

The approach that has been employed, and the incremental cost estimate that has been developed, is appropriate specifically in the context of a persistently growing Brookline public schools enrollment. Since the Town will be required to increase total PSB capacity to accommodate additional student population, the additional (incremental) cost associated with such capacity expansion is also the incremental cost that can be avoided if the extent of the required capacity expansion is reduced. This approach would not be appropriate in the absence of the type of ongoing and persistent growth that Brookline has been experiencing and that is projected to continue over at least the next five or more years. That is, if instead the student population

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13. The estimated coefficient from the regression model was \$15,159. It was the judgment of the Override Study Committee that due to a small degree of imprecision in the available input data, it would be appropriate to limit the precision of the estimate to two significant digits, i.e., rounded to the nearest \$1,000. The Committee also believed that calculations should be subject to a sensitivity analysis covering a range of \$1,000 below and \$1,000 above the base estimate – i.e., \$14,000 to \$16,000. The \$15,748 is based upon the regression analysis estimate of \$15,159 rounded to \$15,000, plus an additional \$748 representing the total cost of out-of-district programs spread over all *resident* students. The rounding and the sensitivity range are reflected in the analyses that follow.



was expected to remain relatively stable over the same time frame (FY15 through FY20), the Town would not avoid the entire \$15,748 per student if the enrollment level were to decrease below the current steady-state baseline. But that is not the situation we presently confront.

### **The “top-down” regression analysis methodology**

In a “top-down” type of analysis, we focus upon the total cost of operating the school system without separately and subjectively examining the individual line-item components of such costs as would be done in a “bottom-up” type of study. Regression analysis is a statistical process for quantitatively estimating the relationships among variables. More specifically, regression analysis helps one understand how the value of the dependent variable changes when any one of the independent or explanatory variables changes while the other independent variables are held constant. It is a widely used and widely accepted economic analysis technique for prediction and forecasting.

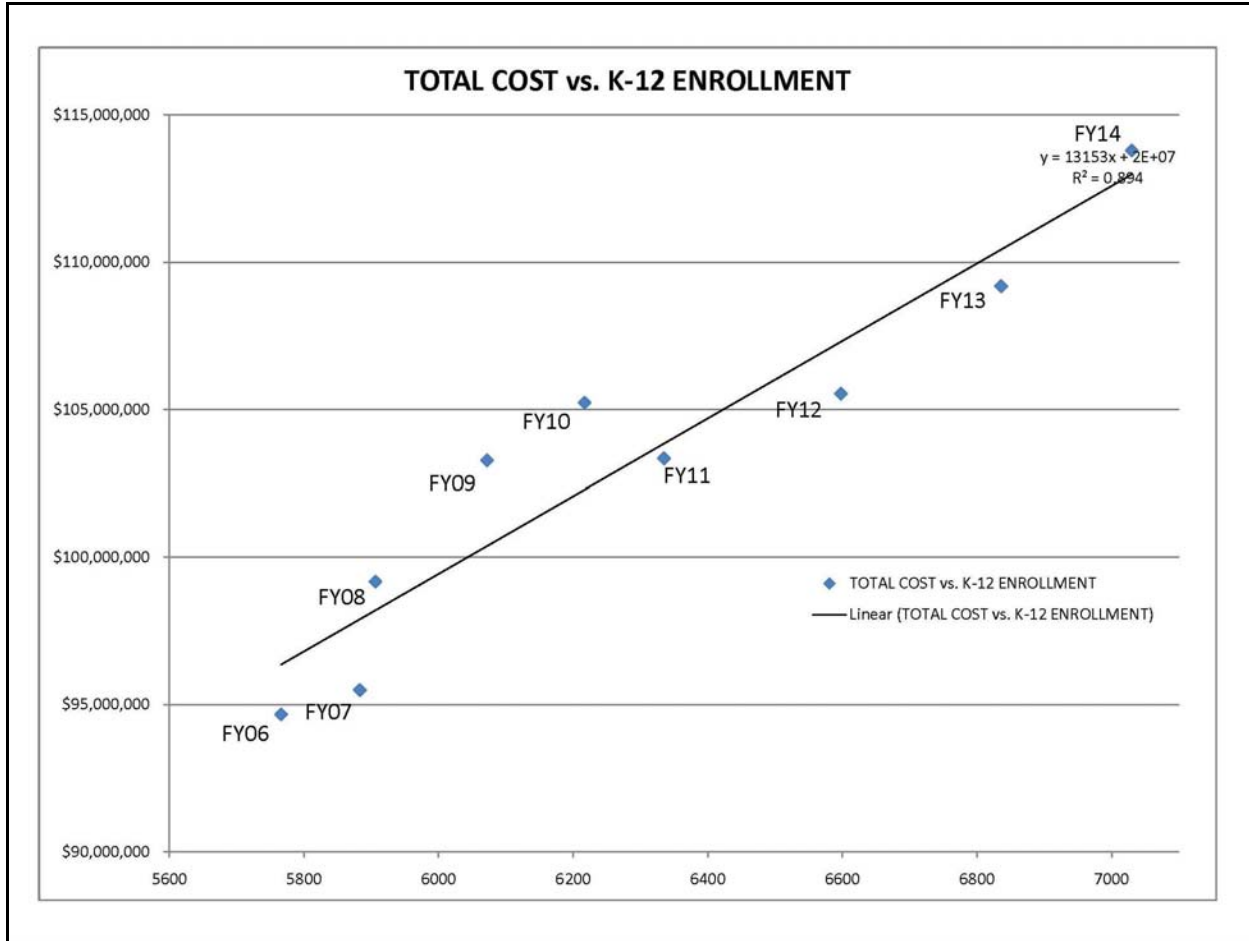
In undertaking a regression analysis, one begins by hypothesizing intuitive relationships as between a “dependent” variable and one or more “independent” or “explanatory” variables. Regression analysis then provides a mathematical process for testing the statistical validity of the hypothesized relationship or “model.” A key element of any such hypothesis is an assumption of *causality*. In this instance, we are seeking to identify the factor(s) that most directly affect the total cost of operating the PSB system.<sup>14</sup> We can reasonably infer a causal relationship of some sort flowing from the total number of students in the system to the total cost of operating the system.<sup>15</sup> Note that under this approach, we do not distinguish between resident and non-resident student populations because the per-student impact, other than adjusting for certain significantly expensive services differentially used by each group (which we discuss below), is the same. Regression analysis provides a mathematical process for quantitatively assessing the extent to which this one factor, together with other potential explanatory variables, affects the total annual cost of the PSB.

The regression is calculated based upon total Schools+Town K-12 costs, exclusive of Out-of-District special education tuition payments, which are added to the regression results to obtain the total long run cost estimate. The first step in this process is to plot the data as a series of points on a “scatter diagram” and visually examine whether or not there appears to be some

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14. Regression analysis cannot test for causality as such and, in fact, a good mathematical result may sometimes be found between entirely unrelated variables. For example, comparing two variables both of which are experiencing steady growth (e.g., the average height of students in a given class in each year starting with kindergarten and running through the 12th grade vs. the total cost of operating the school system over the same period) would likely yield a good statistical result, but would be meaningless since there is no intuitive basis to expect a causal relationship between these two series.

15. The alternate assumptions are (1) causality flowing from the total cost to the number of students, or (2) no causal relationship at all. Neither of these make intuitive sense in this case, and thus can be discarded.



**Figure 2.** Scatter diagram showing relationship between number of PSB K-12 students (horizontal axis) and total inflation-adjusted annual K-12 operating costs of the Brookline Public Schools (vertical axis).

relationship, i.e., whether the dots exhibit some pattern, such as a straight line, or are spread all over the graph. Figure 1 plots points for each of the fiscal years 2006 through 2014, with the total inflation-adjusted cost of the Brookline school system on the “Y” or vertical axis and the number of enrolled K-12 students on the “X” or horizontal axis. The “trend line” that is drawn through the plotted points is calculated mathematically, and has the property of minimizing the sum of the squares of the distance between each of the various points and the line. Put simply, the line is located such that it is closest to most of the points.

An examination of the points on the graph and the trend line suggests a very close and linear relationship between the number of students and total cost. There are, however, two points that appear well above the trend line – i.e., that appear to deviate most from the plotted relationship. These are the points for FY09 and FY10. In such a situation, it is important to attempt to identify and if possible to explain the source(s) of the departure(s) from what is otherwise a very

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close linear relationship and to reflect such source(s) in the regression model. As it turns out, there were events in FY09 and FY11 that appeared to be responsible for the deviations:

- FY09 – the Town implemented a \$6.2-million tax override that was adopted by the voters in May 2008. \$4.1-million of this amount was specifically earmarked for the Brookline Public Schools, with an additional \$1.5-million to be used for improvements to School and Town buildings, streets and sidewalks.
- FY11 – the Town joined the state Group Insurance Commission (GIC) employee health insurance plan, providing a reported savings of roughly \$5.6-million in annual health insurance costs.

The regression modeled the total inflation-adjusted annual cost (dependent variable) against three potential independent (explanatory) variables:

- Total K-12 enrollment
- A “dummy variable” representing the onset of the FY09 tax override, which was set at 0 for FY06 through FY08, and 1 for FY09 through FY14
- A “dummy variable” representing the adoption for FY11 of the GIC employee health insurance in FY11, which was set at 0 for FY06 through FY10, and 1 for FY11 through FY14

When included in a regression model, the use of one or more “dummy” variables permits the modeler to test whether the factor represented by the dummy variable has a statistically significant effect upon the dependent variable and, if it does, to quantify its specific impact. Both the “Override” and “GIC” dummy variables were found to be highly statistically significant, and are thus properly included among the explanatory variables in the model.<sup>16</sup> The regression statistics are provided on Table 3 below.

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16. In an alternate specification of the model, both the total student population and the special education population were included as explanatory variables. However, this turned out to be problematic because these two series are highly correlated – the “correlation coefficient” associated with these two series was calculated at 0.967995. Inclusion of two highly correlated independent variables results in a property of the model known as “multicollinearity,” such that the regression calculation cannot separate the individual effect of each of the highly correlated variables on an “all else equal” basis. In the model run that included both variables, the special education variable was found to not be statistically significant. In addition, its coefficient had a negative value, which would suggest (had the variable been statistically significant) the anomalous result that an increase in the number of special education students would have resulted in a reduction in the total cost of the system. These types of outcomes are not atypical for a model specification where multicollinearity is present. Thus, the model that included both total and special education enrollment must be rejected.

SUMMARY OUTPUT

| <i>Regression Statistics</i> |             |
|------------------------------|-------------|
| Multiple R                   | 0.985297979 |
| R Square                     | 0.970812107 |
| Adjusted R                   | 0.953299372 |
| Standard E                   | 1336624.451 |
| Observatic                   | 9           |

ANOVA

|           | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>ignificance F</i> |
|-----------|-----------|-----------|-----------|----------|----------------------|
| Regressor | 3         | 2.97E+14  | 9.9E+13   | 55.43463 | 0.000293             |
| Residual  | 5         | 8.93E+12  | 1.79E+12  |          |                      |
| Total     | 8         | 3.06E+14  |           |          |                      |

|           | <i>Coefficients</i> | <i>andard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> |
|-----------|---------------------|---------------------|---------------|----------------|------------------|------------------|
| Intercept | 7,735,487           | 14474853            | 0.534409      | 0.615957       | -2.9E+07         | 44944281         |
| PUPILS    | 15,159              | 2470.111            | 6.137056      | 0.001668       | 8809.588         | 21508.83         |
| 2009 OVEF | 3,367,773           | 1418454             | 2.374256      | 0.063616       | -278479          | 7014025          |
| 2011 GIC  | (4,704,306)         | 1794719             | -2.62119      | 0.04703        | -9317778         | -90834.3         |

DUE TO A MINOR LEVEL OF IMPRECISION IN THE SOURCE DATA, THE OVERRIDE STUDY COMMITTEE HAS DETERMINED THAT THE ESTIMATE OF THE LONG RUN INCREMENTAL COST PER PUPIL SHOULD BE ROUNDED TO THE NEAREST \$1000, TOGETHER WITH A CONFIDENCE RANGE OF +/- \$1000

|               |                     |
|---------------|---------------------|
| BASE ESTIMATE | LOWER BOUNDER BOUND |
| \$ 15,000     | \$ 14,000 \$ 16,000 |

**Table 3.** Regression Model Statistical Output

When the model is evaluated based upon the three explanatory variables – total K-12 enrollment (“PUPILS”), the FY09 override dummy variable (“OVERRIDE”) and the FY11 GIC dummy variable (“GIC”), the results are highly statistically significant:

- The  $r^2$  of the model, the so-called “coefficient of determination,” is 0.9708, indicating that the model explains or accounts for 97.08% of the variation in the total cost of operating the PSB.
- The  $t$ -statistic, which provides an indication of the statistical significance (confidence) of each of the three explanatory variables, is highly significant; with respect to the PUPILS variable (6.1370), it is in excess of the 99.9% confidence level, and is approximately at the 97.5% confidence level with respect to each the two “dummy” variables.
- The  $t$ -statistic for the “intercept” term (0.5344)– where the regression line intersects the Y-axis at the theoretical level of zero students – is *not* statistically significantly different from zero at the 95% confidence level, suggesting that the overall cost of operating the school system varies in direct proportion to its overall size.

Given the strong statistical confidence that the model exhibits, it provides a reliable basis to assess the long run incremental cost impacts of the various policy alternatives that the OSC may consider as these affect total PSB enrollment, and can confidently be utilized for that purpose.<sup>17</sup>

### **The effect of different Special Education obligations on the long run costs of resident and non-resident students**

M.G.L. c. 766 requires all local school districts in the Commonwealth to provide programs and educational opportunities for students with “special needs” that are intended to assure that all such students receive “a free and appropriate public education in the least restrictive environment.”<sup>18</sup> In FY14, the Brookline School Department expended approximately \$21.8-million for special education programs serving students in the K-12 grades. When adjusted for the various additional costs (benefits, building maintenance, capital improvements, etc.) that are borne by the Town, the total Town spending on special education for FY14 was approximately \$29.3-million. Note that these are the costs specific to special education programs, and do not include the normal costs associated with the special needs students’ “mainstream” participation in regular elementary and high school classes. In FY14, roughly 24.65% of the total (Schools plus Town) K-12 costs of the Public Schools of Brookline were devoted to costs specific to special education programs.

The School Department’s *Policy Manual* provides that, with respect to Materials Fee students, “[t]he cost of special education services connected to Chapter 766 and any other

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17. Because the source data used to develop the regression model was compiled from several different sources, the Override Study Committee felt that the precision of the regression coefficient should be limited to two significant figures. Hence, the calculated coefficient of the dependent variable, PUPILS, \$15,159, was rounded to \$15,000.

18. M. G. L. Ch. 71B, §2.

Massachusetts or federal statute will have to be borne by the employee’s town or city of residence, or by the individual.” The *Policy Manual* expressly conditions Brookline’s participation in the METCO program upon “the availability of funds for the METCO program from the Massachusetts Department of Education.”<sup>19</sup> Because the School Department has not been following either one of these policy prescriptions with respect to those special education services being provided to METCO and Materials Fee students, the entirety of the costs of such services are being borne by the Brookline school district. The cost analysis presented here necessarily reflects this reality and the differential usage of various types of special education services, items with significant budgetary impacts, by different categories of students.

When a special needs student requires an out-of-district placement, the Town is required to pay the full tuition for the out-of-district program. In the case of a METCO or Materials Fee special needs student requiring an out-of-district placement, the non-resident student is transferred back to his or her home district, which will then bear these costs. Most other special needs services are provided in the student’s elementary school building or in the High School, and METCO and Materials Fee students with special needs participate in such programs with only limited “circuit-breaker” reimbursement of costs coming from the MDOE, and none at all from the students’ home districts. The School Department also maintains several “district-wide” special needs programs that offer an alternative to out-of-district placements, participation in which is limited mainly to resident students. The proportion of METCO and Materials Fee special needs students who do receive special education services in their respective schools is substantially greater than for resident students, as summarized in Table 4 below for FY14:

| <b>Table 4</b>  |                         |                          |                         |
|---|-------------------------|--------------------------|-------------------------|
| <b>PLACEMENTS IN IN-BUILDING SPECIAL EDUCATION PROGRAMS</b> |                         |                          |                         |
| <b>Category</b>   | <b>Total enrollment</b> | <b>Special Education</b> | <b>Percent of Total</b> |
| Brookline resident  | 6,555                   | 893                      | 13.62%                  |
| METCO   | 297                     | 79                       | 26.60%                  |
| Materials Fee   | 178                     | 41                       | 23.03%                  |
| <b>Total K-12 PSB</b>                                       | <b>7,030</b>            | <b>1,013</b>             | <b>14.41%</b>           |

The magnitude of special education costs, coupled with the disproportionate participation as between resident and non-resident students, suggests that the system-wide long run incremental cost per student (\$15,748) may differ as between resident and non-resident students due specifically to their differential need for special education services.

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19. *Policy Manual*, at J-11.

Table 5 below demonstrates this condition. There are three categories of special education services – out-of-district, district-wide, and in-building. The first two of these are limited to Brookline residents and thus their costs are properly assigned entirely to the resident student population. The in-building category serves all three groups, and so the costs of these services should be allocated in proportion to each group’s relative participation.

| <b>Table 5</b>  |                      |                    |                    |
|---|----------------------|--------------------|--------------------|
| <b>LONG RUN INCREMENTAL COST PER STUDENT<br/>ADJUSTED TO REFLECT RELATIVE USE OF<br/>SPECIAL EDUCATION SERVICES</b> |                      |                    |                    |
| <b>LRIC per student</b>   |                      |                    |                    |
| <b>Category</b>   | <b>Base estimate</b> | <b>Lower bound</b> | <b>Upper bound</b> |
| Brookline resident  | \$15,658             | \$14,658           | \$16,658           |
| METCO   | \$17,276             | \$16,276           | \$18,276           |
| Materials Fee   | \$16,512             | \$15,512           | \$17,512           |
| Overall average   | \$15,748             | \$14,748           | \$16,748           |

These costs are offset, to a limited extent, by a nominal amount of revenue that Brookline receives from the MDOE (in the case of METCO) and from Town employees whose children attend Brookline schools under the Materials Fee program. A large portion of the MDOE METCO payment is, however, used to fund certain METCO-specific costs – transportation and METCO staff – and is thus not available to defray general PSB costs. Table 6 below provides the long run incremental cost per student (in FY14 dollars) net of payments to the Town:

| <b>Table 6</b>   |                      |                    |                    |
|--|----------------------|--------------------|--------------------|
| <b>LONG RUN INCREMENTAL COST PER<br/>NON-RESIDENT STUDENT<br/>NET OF REVENUES RECEIVED</b> |                      |                    |                    |
| <b>Net LRIC per student</b>  |                      |                    |                    |
| <b>Category</b>  | <b>Base estimate</b> | <b>Lower bound</b> | <b>Upper bound</b> |
| <b>METCO</b>   |                      |                    |                    |
| LRIC   | \$17,276             | \$16,276           | \$18,276           |
| Revenue  | \$1,737              | \$1,737            | \$1,737            |
| Net long run cost  | \$15,540             | \$14,540           | \$16,540           |
| <b>Materials Fee</b>   |                      |                    |                    |
| LRIC   | \$16,512             | \$15,512           | \$17,512           |
| Revenue  | \$2,490              | \$2,490            | \$2,490            |
| Net long run cost  | \$14,022             | \$13,022           | \$15,022           |

Multiplying these per-student net long run costs by the number of students in each program, we can estimate the annual net cost being absorbed by the Brookline Public Schools in connection with serving these non-resident students:

| <b>Table 7</b>   |                      |                    |                    |
|--|----------------------|--------------------|--------------------|
| <b>FY14 NET LONG RUN INCREMENTAL COST OF BROOKLINE'S PARTICIPATION IN THE METCO AND MATERIALS FEE PROGRAMS</b> |                      |                    |                    |
| <b>Category</b>  | <b>Base estimate</b> | <b>Lower bound</b> | <b>Upper bound</b> |
| <b>METCO</b>   |                      |                    |                    |
| Net LRIC per student   | \$15,540             | \$14,540           | \$16,540           |
| FY14 students  | 297                  |                    |                    |
| Total net long run cost  | \$4,615,264          | \$4,318,264        | \$4,912,264        |
| <b>Materials Fee</b>   |                      |                    |                    |
| Net LRIC per student   | \$14,022             | \$13,022           | \$15,022           |
| FY14 students  | 178                  |                    |                    |
| Total net long run cost  | \$2,495,892          | \$2,317,892        | \$2,673,892        |
| <b>Total FY14 Cost for Non-Resident Student Programs</b>   |                      |                    |                    |
| Total net long run cost  | \$7,111,156          | \$6,636,156        | \$7,586,156        |

**The long term financial impact of the METCO and Materials Fee programs**

Table 7 provides estimates of the annual long run cost (based upon FY14 data) of the Town’s participation in METCO and its support for the Materials Fee program, and puts the combined cost of these two programs *in the range of about \$6.6-million to \$7.6-million annually*. The Override Study Committee has been advised that it is the School Department’s practice (although apparently not specifically expressed in any formal written polity) that once a METCO or Materials Fee student is admitted to the Brookline Public Schools, the School Department will commit to continued enrollment for that student through the 12<sup>th</sup> grade and graduation from Brookline High School.<sup>20</sup> Moreover, the Committee has been advised that in the case of METCO, the Department’s objective is to maintain METCO enrollment at approximately 300, such that if and when any METCO student withdraws from the program in Brookline, the slot so vacated will be made available to another METCO student, although not necessarily in the same grade or in the same building. The Override Study Committee has also been advised that it is the policy of the School Department to offer enrollment on a priority basis to entering non-resident

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20. In the case of children of non-resident Town and School employees, the commitment is maintained only so long as the parent remains employed by the Town.



kindergarten children who have older siblings already enrolled in the Brookline Schools and, moreover, in such cases the entering kindergarten student will be placed in the same building as his or her older sibling.<sup>21</sup>

It is not our purpose here to address the efficacy or merit of the current School Department practice of assuring continued enrollment of non-resident students through 12<sup>th</sup> grade graduation irrespective of space availability or funding. The merits of this practice aside, it does create a substantial financial commitment for the Brookline Public Schools and the Town over an extended period of time. Consider the following. If each non-resident child entering kindergarten in the fall of 2014 is assured continued enrollment in the Public Schools of Brookline through graduation from High School, that represents a commitment of the per-student long run incremental cost per year, less any offsetting revenue, adjusted for inflation and discounted for the time value of money, over the entire 13-year period over which those costs will continue to be incurred. Because this is not a *legal* obligation of the Town, it does not carry the same unfunded liability status as, for example, post-retirement medical benefits that the Town is legally obligated to provide.<sup>22</sup> However, if the practice of assuring enrollment through graduation is viewed as a given, such a “commitment” has major and serious financial consequences. This is illustrated in Table 8 below. Starting with the estimated LRIC per METCO and per Materials Fee student, respectively, and offsetting these by the net per-student

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21. It has frequently been suggested by the School Department that it has greater flexibility in the assignment of nonresident students to specific buildings than is the case for Brookline residents, for whom a specific effort is made to assign them to a building in their neighborhood, and that this additional flexibility enables the non-resident students to be served at lower cost than for Brookline residents. The commitments described here undermine that contention. Once initially assigned to a specific building, the non-resident student – and any subsequently arriving siblings – will be assigned to the same building. Thus, the only “flexibility” in school assignment that may (arguably) be available in the case of non-resident students is limited to those entering kindergarten who do not already have any older siblings in the system. The Superintendent has advised the OSC that between 40% and 50% of entering kindergarten students in any given year will have older siblings in the Brookline schools. Thus, out of the roughly 480 METCO and Materials Fee students that are expected to be enrolled in the Brookline Public Schools in the 2014-15 (FY15) year, only about 20 will potentially be eligible for this type of “flexible” assignment. Moreover, the Superintendent has also indicated that school building assignments for entering METCO and Materials Fee kindergarten students are typically made by the end of April, which has the operative effect of placing any Brookline residents who register for September enrollment after April of any given year *behind* the non-residents in the school building assignment priority. Information provided by the School Department indicates that new METCO and Materials Fee students have over the last three school years been advised of their admission in February, well before the total resident class size is known. The practice of admitting and assigning non-resident ahead of many resident students has been followed despite the fact that School Department policies provide that admissions decisions regarding non-resident students are to be on a “space available” basis and further provide that admissions decisions regarding Materials Fee students are not have to be made until June. *Policy Manual*, at J-12 to J-13.

22. At the May 12, 2014 meeting of the OSC’s Population and Special Education Subcommittee, the Executive Director of METCO, Inc. suggested that the Town had a *legal* obligation to provide enrollment in the PSB to existing METCO students through High School graduation. However, when asked for a citation to the law being referred to, she was unable to do so at that time. Town Counsel should be requested to determine whether any such legal obligation exists. If it does, the Town may be required to reflect the potential cost of fulfilling this obligation as an unfunded liability on its financial reports.

contribution in excess of METCO-specific costs that is provided by the MDOE or the per-student Materials Fee revenue, we calculate the net present value of the inflation-adjusted net annual long run incremental costs of these two programs over the full 13-year period.

| <b>Table 8</b>   |                      |             |             |
|--|----------------------|-------------|-------------|
| <b>LONG RUN INCREMENTAL COST<br/>CONFRONTING BROOKLINE FOR NON-RESIDENT STUDENTS<br/>ENTERING KINDERGARTEN IN SEPTEMBER 2014</b> |                      |             |             |
| Category   | Net LRIC per student |             |             |
|  | Base estimate        | Lower bound | Upper bound |
| 13-Year cost per METCO student net of revenues   | \$202,015            | \$189,015   | \$215,015   |
| 13-Year cost per Materials Fee student net of revenues   | \$182,284            | \$169,284   | \$195,284   |
| METCO Kindergarten enrollment, Sept 2014   | 22                   |             |             |
| Mat. Fee Kindergarten enrollment, Sept 2014  | 20                   |             |             |
| 13-year net cost to the Town for the Sept 2014 METCO cohort  | \$4,444,328          | \$4,158,328 | \$4,730,328 |
| 13-year net cost to the Town for the Sept 2014 Materials Fee cohort  | \$3,645,685          | \$3,385,685 | \$3,905,685 |
| Total 13-year net cost to the Town for the Sept 2014 non-resident cohort   | \$8,090,013          | \$7,544,013 | \$8,636,013 |

Put simply, once the September 2014 non-resident kindergarten cohort is enrolled in the Brookline schools, the Town of Brookline will acquire a *de facto*, if not a legally enforceable, obligation to spend some \$8.1-million (in net present value terms) over the next 13-years until these students graduate from high school. A corresponding financial commitment will arise in each subsequent year for each new non-resident cohort.

Using this same approach, the aggregate financial commitment confronting Brookline can be calculated for the METCO and Materials Fee programs. We have performed this calculation under two alternate scenarios:

- Scenario 1: Brookline suspends all further admission of new non-resident students on and after September 2014, but continues to honor the School Department’s commitment to educate all existing non-resident students through 12<sup>th</sup> grade graduation. This represents the financial commitment associated with those non-resident K-12 cohorts that are currently enrolled in the Brookline schools.

Scenario 2: Brookline maintains its existing level of participation in both programs indefinitely, and continues to admit new kindergarten cohorts each year.

Table 9 below summarizes the results of these cost impact calculations under both scenarios. In the case of Scenario 2, the calculation is based upon the same 13 year time frame that was used for Scenario 1, although since the Town’s participation in both programs is assumed here to continue indefinitely, the actual long term financial commitment is far greater. Note also that Scenario 1 is based upon two simplifying assumptions whose effects are opposite. First, it assumes that all new admissions are suspended, including siblings of existing program participants. If siblings were to continue to be admitted under this scenario, the cost impact would be greater. Second, Scenario 1 assumes that all students in each entering cohort remain in the Brookline schools through the 12<sup>th</sup> grade. To the extent that some attrition occurs, that some students drop out of these programs and are not replaced, the actual financial commitment would be somewhat lower. The figures shown in Table 9 retain the same +/- \$1,000 sensitivity on the base overall LRIC estimate as in the previous analysis.

| <b>Table 9</b>  |                      |                     |                      |
|---|----------------------|---------------------|----------------------|
| <b>LONG TERM FINANCIAL IMPACT OF CONTINUED PARTICIPATION<br/>BY THE TOWN OF BROOKLINE<br/>IN THE METCO AND MATERIALS FEE PROGRAMS</b> |                      |                     |                      |
|   | <b>Base Estimate</b> | <b>Lower Bound</b>  | <b>Upper Bound</b>   |
| <b>Scenario 1: Suspend new admissions, maintain existing students through 12<sup>th</sup> grade</b>                                   |                      |                     |                      |
| METCO   | \$32,490,306         | \$30,399,500        | \$34,581,112         |
| Materials Fee   | \$20,725,903         | \$19,247,790        | \$22,204,016         |
| <b>TOTAL NPV</b>  | <b>\$53,216,209</b>  | <b>\$49,647,290</b> | <b>\$56,785,128</b>  |
| <b>Scenario 2: Maintain full participation in both programs indefinitely (13-year time frame for cost estimate)</b>                   |                      |                     |                      |
| METCO   | \$59,454,355         | \$55,628,367        | \$63,280,342         |
| Materials Fee   | \$46,808,491         | \$43,470,241        | \$50,146,741         |
| <b>TOTAL NPV</b>  | <b>\$106,262,846</b> | <b>\$99,098,608</b> | <b>\$113,427,084</b> |

Thus, even if Brookline were to suspend all new admissions of non-resident beginning with the 2014-15 School Year, there would still be a long run financial commitment over 13 years of \$53.2-million for the students already enrolled in these programs. But if Brookline continues along the path it has been following and continues to admit new non-resident students year after year, the financial commitment to non-resident students over the same 13-year period more than doubles, to roughly \$106.2-million unfunded by outside sources and with ongoing and increasing unfunded commitments in future years. Importantly, this latter calculation was limited to a 13-year time frame. However, if continued participation in both non-resident programs is to be continued indefinitely, and if participation in the Materials Fee program continues to increase as

it has in recent years, the potential financial impact upon the Town would be multiples of the \$106.2-million estimate presented here.

**Changes in long run incremental cost attributable to the potential for large-scale capital spending on added K-8 and High School capacity**

The foregoing analysis and regression model are premised upon the assumption that the same trends in PSB enrollment growth and capital expenditures that have been experienced over the FY06 through FY14 period will persist into the future. The OSC has been examining the impact upon capacity needs that would result from any of several specific modification to existing School Department policies regarding non-resident student enrollment, class size, improved school assignment efficiency, and other capacity-reducing measures. If additional K-8 capacity must be provided, that would modify – and increase – the trajectory of long run incremental costs going forward. These could include the proposed Driscoll expansion, and the construction of additional space at Brookline High School – or even the creation of a second high school building – in addition to the massive expansion of Devotion and the planned 4-classroom addition at Lawrence. The core assumption of the regression model and its use in extrapolating future long run costs thus cannot be sustained. If these large-scale capital projects prove to be necessary, the regression model would seriously *understate* the per-student long run incremental cost that will be experienced by the Brookline Schools going forward.<sup>23</sup>

Some have suggested that the principal driver of growth in enrollment has come from resident, rather than from non-resident students, implying that reducing the number of non-resident students is not the solution to the PSB’s capacity needs. That view ignores the inescapable fact that *the economic cost to the Town as between each additional resident and each newly-admitted non-resident student is exactly the same*, subject only to specific differences in the extent of each group’s use of Special Education programs. Thus, if the School’s capacity requirements can be reduced by scaling back non-resident student enrollment, the effect is to offset resident growth and potentially to avoid, perhaps entirely, the capital expenditures that would be required to accommodate the growth in resident enrollment while maintaining all non-resident populations at their present levels.

A case in point can be seen with respect to the proposed Driscoll expansion that would accommodate an additional ten (10) sections, or about 210 K-8 students assuming no increase in average class size. The Capital Subcommittee has estimated the capital requirements associated with new classroom construction at \$2.3-million per additional classroom. At an average of 21

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23. Thus, during the FY06 to FY14 period, the Heath and Runkle School projects together were \$38-million, with a Town share of \$22.5-million. The proposed Devotion project is now estimated at \$110-million and the contemplated Driscoll project is estimated by the OSC Capital Subcommittee at \$54-million, with a Town share for the two projects of \$115-million, more than five times the amount of Heath and Runkle combined. The contemplated expansion of the High School would be in addition to these numbers.

students per classroom, this works out to an incremental capital investment per student of roughly \$110,000. The Capital Subcommittee has estimated the annual debt service cost to the Town per classroom at \$157,000, which translates into an annual debt service cost per student of about \$7,475. Debt service includes both interest and amortization of principal, based upon a 25-year amortization schedule at a 4.75% interest rate.<sup>24</sup>

| <b>Table 10</b>   |              |             |
|---|--------------|-------------|
| <b>LONG RUN INCREMENTAL COST PER STUDENT<br/>ASSOCIATED WITH PROPOSED DRISCOLL EXPANSION<br/>AND OTHER MAJOR CAPITAL PROJECTS<br/>BASED ON CAPITAL SUBCOMMITTEE ESTIMATES</b> |              |             |
| Category  | Capital \$   | Annual OpEx |
| Incremental annual capital-driven cost per additional classroom   | \$ 2,300,000 | \$157,000   |
| Incremental annual capital-driven cost per additional student   | \$ 110,000   | \$ 7,500    |
| Long Run Incremental Cost based on Regression Model   |              | \$ 15,748   |
| Total Long Run Incremental Cost per additional Driscoll student   |              | \$ 23,248   |

The working subcommittees of the Override Study Committee that have analyzed the question have estimated that the Driscoll expansion can be avoided entirely either by suspending additional non-resident enrollment and/or by a modest increase in average class size for all K-8 buildings. If changes in practices are delayed, the reduction in classroom needs will occur later, perhaps forcing a Driscoll expansion that might otherwise be avoided. If practices that would obviate the need for a Driscoll expansion are not pursued, the total long run incremental cost per student for the “last 210 students” in the Public Schools of Brookline would thus be in the range of \$23,000 annually.

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24. To the extent that the service life of any new construction exceeds 25 years, using a 25-year amortization would slightly overstate the annual debt service cost. For example, using a 40-year amortization schedule, the annual debt service cost per student would drop to about \$6,165. However, because the immediate out-of-pocket cost to the Town will reflect the actual (25-year) rather than a more theoretical (40-year) amortization and in any event would be incurred annually over the next 25 years, we use the \$7,475 cost in the analysis here.

## **Conclusion**

It is not the purpose of the analyses presented here to offer or to reach any conclusion as to the appropriateness and public benefit of continued participation by the Town of Brookline in one or both of the non-resident student programs. It is, however, entirely appropriate for the benefits being ascribed to these programs to be evaluated relative to their individual and combined cost to the Town. Since total enrollment in the METCO program has been relatively constant at about 300 students for many years, METCO cannot be held responsible for any portion of the substantial enrollment growth that has confronted the PSB over the past decade. Materials fee enrollment has increased somewhat over the same period, and has thus made a small contribution to the overall rate of growth.

That said, the decision of the School Department *not* to adhere to and to enforce its own “space available” policy has contributed directly and inextricably to the nearly 1100-student jump in total PSB enrollment that has occurred since 2006. *There is no “space available” in the current context.* Several OSC subcommittees have undertaken analyses indicating that the suspension of further admissions to the METCO and Materials Fee programs starting in the fall of 2014 would significantly reduce, and perhaps even eliminate altogether, the need for as many as 10 additional classrooms by 2019 relative to the level that had been projected by the and the School Department – and relied upon by the B-SPACE Committee – absent any modifications to existing non-resident student enrollment practices. A modest increase in the average class size would have a similar effect. The suspension of new non-resident student enrollments and/or the acceptance of a modest (one or two student) increase in average class size would thus substantially reduce, if not entirely eliminate, the need for additional classroom capacity and the consequent requirement for a tax override of the magnitude being sought by the School Department. If practices do not change, Brookline will in essence be building its new classrooms to serve non-resident students and will, contrary to its explicit policies, be staffing its schools at levels needed to serve non-resident, rather than resident, students.

Similarly, the School Department’s decision not to actually condition METCO participation upon the availability of funding from the state is directly and inextricably responsible for the current budgetary stresses that confront the Brookline schools. Under existing state law, when a Boston student attends a Charter School, the district (Boston) is required to make annual cash payments approximating the district’s average per-student cost to the Charter School for each such student. Yet there is no corresponding funding requirement for the 3,174 Boston students that currently participate in METCO across the 34 participating Boston area municipalities.<sup>25</sup> If all of the 3,174 of those students either attended the Boston public schools or attended charter schools that Boston was required to pay for, the City of Boston would confront somewhere on

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25. <http://www.doe.mass.edu/metco/funding.html>. There are 3,311 students in the METCO program; 3,174 of these are assigned to schools in 34 districts in metro Boston, 137 are assigned to schools in 4 districts in metro Springfield. Brookline, with 297 METCO students, has the second largest METCO contingent, exceeded only by Newton, with 404.

the order of \$50-million in annual education costs that the financial structure of METCO funding has enabled the City to shift to the suburbs. There can be no justification for this disparity in treatment as between Boston's avoidance of any financial responsibility for METCO versus its obligation to pay charter school costs for all Boston students. By accepting roughly 300 Boston students into the Brookline schools, *Brookline taxpayers are effectively providing a cash subsidy to the City of Boston of more than \$4.5-million annually.*<sup>26</sup> The structural deficits confronting the Brookline Public Schools can be directly – and perhaps entirely – ascribed to the persistence of this unfair subsidy burden. If continued participation in METCO is determined to be appropriate for Brookline, it is essential that the School Department adhere to its own stated policy and condition further involvement with METCO upon receipt of compensatory funding either from the state or the City of Boston.

Finally, it is noteworthy that at the January 22, 2014 Override Study Committee public hearing and in numerous e-mails and other communications sent to the OSC and to its members, many Brookline residents have expressed deep concerns and objections to the various proposals that have been discussed by the OSC to address both the budgetary deficit and classroom capacity expansion needs. There was considerable opposition to various program cutbacks and eliminations, to BEEP fee increases, to requiring that extended day program §501(c)(3) entities pay rent for the use of school facilities, to the impending major school building expansions, to increases in class size, to suspension or elimination of the METCO and/or Materials Fee programs, and to various other proposals that many in attendance felt would diminish the quality of the Brookline Public Schools. Unfortunately, in the face of the types of financial constraints and limitations on the Town's ability to increase revenues, not all of these concerns can be addressed, accommodated or satisfied. Choices will need to be made, and these choices must be guided by accurate estimates of the relative costs and benefits – and tradeoffs – among the conflicting demands. It is hoped that the analysis provided here will make a positive contribution to that effort.

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26. By offering enrollment to the roughly 178 Materials Fee students, Brookline is also enabling these students' home communities to avoid the cost of educating them. Approximately 125 of the Materials Fee students are residents of Boston, creating an additional \$2-million in annual savings to the City.

**THE ECONOMIC IMPACT OF ENROLLMENT GROWTH  
ON THE BROOKLINE PUBLIC SCHOOLS**

**DATA AND COMPUTATIONAL APPENDIX**



Table A1

**LONG RUN INCREMENTAL COSTS (LRIC) SPECIFIC TO METCO AND MATERIALS FEE PROGRAMS  
AND 13-YEAR COSTS TO BROOKLINE**

| <b>Enrollment</b>   | All Students | Residents | Metco  | Materials Fee |
|---|--------------|-----------|--------|---------------|
| Number of students (FY13)   | 7030         | 6555      | 297    | 178           |
| Number of students in Special Needs programs (excluding Out-of-District)  | 1013         | 893       | 79     | 41            |
| Percent of students in Special Needs Programs (excluding Out-of-District) | 14.41%       | 13.62%    | 26.60% | 23.03%        |

| <b>Annual Cost, revenue and financial commitment by Brookline</b>  | All Students        | Residents        | Metco               | Materials Fee       |
|--|---------------------|------------------|---------------------|---------------------|
| Total annual cost per category                                     | \$ 110,705,584      | \$ 102,635,383   | \$ 5,131,089        | \$ 2,939,112        |
| Net Annual Revenues received in support of non-Resident programs   | \$ 959,045          |                  | \$ 515,825          | \$ 443,220          |
| <b>Annual Net cost of non-Resident programs</b>                    | <b>\$ 7,111,156</b> |                  | <b>\$ 4,615,264</b> | <b>\$ 2,495,892</b> |
| <b>Per-student LRIC (including share of total Spec Educ costs)</b> | <b>\$ 15,748</b>    | <b>\$ 15,658</b> | <b>\$ 17,276</b>    | <b>\$ 16,512</b>    |
| <b>Per-student program revenue</b>                                 |                     |                  | <b>\$ 1,737</b>     | <b>\$ 2,490</b>     |
| <b>Per-student support provided by Brookline taxpayers</b>         |                     |                  | <b>\$ 15,540</b>    | <b>\$ 14,022</b>    |

**Brookline's 13-year Metco/Materials Fee Cost Commitment**

| <b>13-YEAR COST ARISING FROM FALL 2014 COHORT</b>                        | TOTAL               | Metco               | Materials Fee       |
|--|---------------------|---------------------|---------------------|
| Cost per non-resident student through 12th grade                         |                     | \$ 224,593          | \$ 214,654          |
| Less: Revenue per student from Metco and Materials Fee payments (NOTE 1) |                     | \$ 22,578           | \$ 32,370           |
| <b>Net 13-year cost commitment per student by Brookline taxpayers</b>    |                     | <b>\$ 202,015</b>   | <b>\$ 182,284</b>   |
| Cost through 12th grade  | \$ 9,234,133        | \$ 4,941,049        | \$ 4,293,085        |
| Less: Revenues from Metco and Materials Fee payments (NOTE 1)            | \$ 1,144,120        | \$ 496,720          | \$ 647,400          |
| <b>Net 13-year cost commitment by Brookline taxpayers</b>                | <b>\$ 8,090,013</b> | <b>\$ 4,444,328</b> | <b>\$ 3,645,685</b> |

**SCENARIO 1: SUSPEND ALL FURTHER KINDERGARTEN ENROLLMENTS  
STARTING IN FALL 2014**

| <b>Arising from total current Metco/Materials Fee Enrollment</b> | TOTAL                | Metco                | Materials Fee        |
|--|----------------------|----------------------|----------------------|
| Cost through 12th grade (NOTE 2)                                 | \$ 60,527,990        | \$ 36,121,585        | \$ 24,406,405        |
| Less: Revenues from Metco and Materials Fee payments             | \$ 7,311,781         | \$ 3,631,279         | \$ 3,680,502         |
| <b>Net 13-year cost to Brookline</b>                             | <b>\$ 53,216,209</b> | <b>\$ 32,490,306</b> | <b>\$ 20,725,903</b> |

**SCENARIO 2: CONTINUE BROOKLINE PARTICIPATION IN METCO AND  
MATERIALS FEE PROGRAMS INDEFINITELY**

| <b>Arising from total continued full Metco/Materials Fee Enrollment</b> | TOTAL                 | Metco                | Materials Fee        |
|---|-----------------------|----------------------|----------------------|
| Cost through 12th grade (NOTE 3)  | \$ 121,220,005        | \$ 66,099,271        | \$ 55,120,734        |
| Less: Revenues from Metco and Materials Fee payments                    | \$ 14,957,159         | \$ 6,644,916         | \$ 8,312,243         |
| <b>Net 13-year cost to Brookline</b>                                    | <b>\$ 106,262,846</b> | <b>\$ 59,454,355</b> | <b>\$ 46,808,491</b> |

NOTE 1: METCO revenues are those funds remaining after payment of certain METCO-specific costs that are not included in total School Department costs.

NOTE 2: In this scenario, we assume that Brookline would suspend all further initial kindergarten enrollments in METCO and Materials Fee programs beginning with the 2014-15 school year, but continue to serve existing program participants through the 12th grade. If Brookline continues to accept siblings of existing program participants, the level of unfunded support would be greater than as presented here.

NOTE 3: In this scenario, we assume an average of approximately 300 METCO students (23 per class) and 260 Materials Fee students (20 per class, based upon recent years' kindergarten enrollments). While it is assumed that participation in these programs would continue indefinitely, the calculation itself is limited to a 13-year period (i.e., from FY15 through FY27).

Table A2

**LONG RUN INCREMENTAL COSTS (LRIC) SPECIFIC TO METCO AND MATERIALS FEE PROGRAMS  
AND 13-YEAR COSTS TO BROOKLINE**

**Sensitivity Analysis at +/- \$1,000 Base LRIC Estimate**

The regression analysis presented in this report exhibits extremely strong statistical properties, including an R-squared (a measure of the overall explanatory power of the regression model) of 0.9708, implying that the model "explains" 97.08% of the variation in the dependent variable, TOTAL EXPENDITURES. The coefficient of the PUPILS variable (\$15,159) which is interpreted as constituting the annual Long Run Incremental Cost per pupil in FY14 \$, is statistically significant at a level in excess of 99.99%. However, due to small imprecisions in the source data, the base estimate was rounded to \$15,000 and a sensitivity analysis of plus or minus \$1,000 was conducted.

| <b>ANNUAL LONG RUN INCREMENATAL COSTS</b>                                      | <b>Estimated</b> | <b>Lower bound</b> | <b>Upper bound</b> |
|--|------------------|--------------------|--------------------|
| Long run incremental cost per PSB pupil per year                               | \$ 15,748        | \$ 14,748          | \$ 16,748          |
| Long run incremental cost per resident pupil per year                          | \$ 15,658        | \$ 14,658          | \$ 16,658          |
| Long run incremental cost per METCO pupil per year                             | \$ 17,276        | \$ 16,276          | \$ 18,276          |
| Less: METCO revenue per student net of transportation and METCO-specific costs | \$ 1,737         | \$ 1,737           | \$ 1,737           |
| Per-student support provided by Brookline taxpayers                            | \$ 15,540        | \$ 14,540          | \$ 16,540          |
| FY13 METCO enrollment  | 297              | 297                | 297                |
| FY13 net cost to Brookline of METCO participation                              | \$ 4,615,264     | \$ 4,318,264       | \$ 4,912,264       |
| Long run incremental cost per Materials Fee pupil per year                     | \$ 16,512        | \$ 15,512          | \$ 17,512          |
| Less: Materials Fee revenue per student paid by program participants           | \$ 2,490         | \$ 2,490           | \$ 2,490           |
| Per-student support provided by Brookline taxpayers                            | \$ 14,022        | \$ 13,022          | \$ 15,022          |
| FY13 Materials Fee enrollment  | 178              | 178                | 178                |
| FY13 net cost to Brookline of Materials Fee program                            | \$ 2,495,892     | \$ 2,317,892       | \$ 2,673,892       |
| FY13 Total net cost of non-resident programs                                   | \$ 7,111,156     | \$ 6,636,156       | \$ 7,586,156       |

| <b>13-YEAR COST COMMITMENT FOR METCO AND MATERIALS FEE PROGRAMS</b>    | <b>Estimated</b> | <b>Lower bound</b> | <b>Upper bound</b> |
|--|------------------|--------------------|--------------------|
| 13-YEAR COST PER STUDENT ARISING FROM FALL 2014 COHORT - METCO         | \$ 202,015       | \$ 189,015         | \$ 215,015         |
| 13-YEAR COST PER STUDENT ARISING FROM FALL 2014 COHORT - Materials Fee | \$ 182,284       | \$ 169,284         | \$ 195,284         |
| 13-YEAR COST COMMITMENT ARISING FROM FALL 2014 COHORT - METCO          | \$ 4,444,328     | \$ 4,158,328       | \$ 4,730,328       |
| 13-YEAR COST COMMITMENT ARISING FROM FALL 2014 COHORT - Materials Fee  | \$ 3,645,685     | \$ 3,385,685       | \$ 3,905,685       |
| 13-YEAR COST COMMITMENT ARISING FROM FALL 2014 COHORT - TOTAL          | \$ 8,090,013     | \$ 7,544,013       | \$ 8,636,013       |
| 13-YEAR COST COMMITMENT -- SCENARIO 1 - METCO                          | \$ 32,490,306    | \$ 30,399,500      | \$ 34,581,112      |
| 13-YEAR COST COMMITMENT -- SCENARIO 1 - Materials Fee                  | \$ 20,725,903    | \$ 19,247,790      | \$ 22,204,016      |
| 13-YEAR COST COMMITMENT -- SCENARIO 1 - TOTAL                          | \$ 53,216,209    | \$ 49,647,290      | \$ 56,785,128      |
| 13-YEAR COST COMMITMENT -- SCENARIO 2 - METCO                          | \$ 59,454,355    | \$ 55,628,367      | \$ 63,280,342      |
| 13-YEAR COST COMMITMENT -- SCENARIO 2 - Materials Fee                  | \$ 46,808,491    | \$ 43,470,241      | \$ 50,146,741      |
| 13-YEAR COST COMMITMENT -- SCENARIO 2 - TOTAL                          | \$ 106,262,846   | \$ 99,098,608      | \$ 113,427,084     |

Table A3

**LONG RUN INCREMENTAL COSTS (LRIC) SPECIFIC TO METCO AND MATERIALS FEE PROGRAMS**

|   | "School" costs | "Town" costs  | Total cost     |
|---|----------------|---------------|----------------|
| Long Run annual incremental cost per student from regression model, rounded to nearest \$1000 |                |               | \$ 15,000      |
| FY14 Schools operating expenses net of ODD, BEEP  | \$ 78,798,174  | \$ 34,992,840 | \$ 113,791,014 |
| FY14 Special Educ net of OOD & BEEP   | \$ 16,543,627  | \$ 7,547,879  | \$ 24,091,506  |
| Less: Estimated Cost of District-wide programs  | \$ 5,000,000   | \$ 2,281,204  | \$ 7,281,204   |
| Special Educ costs net of OOD, BEEP and District-Wide   | \$ 11,543,627  | \$ 5,266,674  | \$ 16,810,301  |

| <b>Cost Allocation Factors</b>  |        |           |        |               |
|---|--------|-----------|--------|---------------|
| Average special educ cost per student:                                  | Total  | Residents | METCO  | Materials Fee |
| Total K-12 student population   | 7,030  | 6,555     | 297    | 178           |
| Total K-12 spec educ population - District-wide Programs                | 229    | 229       |        |               |
| Total K-12 spec educ population - School-based Programs                 | 784    | 664       | 79     | 41            |
| Total K-12 spec educ population (excl. Out-of-District)                 | 1,013  | 893       | 79     | 41            |
| Percent of K-12 population in Special educ programs                     | 14.41% | 13.62%    | 26.60% | 23.03%        |
| Percent of K-12 population in School-based Special educ programs        | 11.15% | 10.13%    | 26.60% | 23.03%        |
| Allocation factors based on total student populations                   | 100%   | 93.24%    | 4.22%  | 2.53%         |
| Allocation factors based on District-Wide, OOD Special Educ populations | 100%   | 100.00%   | 0.00%  | 0.00%         |
| Allocation factors based on School-based Special Educ populations       | 100%   | 84.69%    | 10.08% | 5.23%         |

|   | Total          | Residents      | METCO        | Materials Fee |
|---|----------------|----------------|--------------|---------------|
| Total LIRC (all K-12 students)  | \$ 105,450,000 |                |              |               |
| Total LIRC excluding costs of special educ (assign based on total K-12 share) | \$ 81,358,494  | \$ 75,861,299  | \$ 3,437,194 | \$ 2,060,002  |
| Total District-wide costs (assign exclusively to Brookline Students)          | \$ 7,281,204   | \$ 7,281,204   | \$ -         | \$ -          |
| School-based special educ costs (assign based on no. of students served)      | \$ 16,810,301  | \$ 14,237,296  | \$ 1,693,895 | \$ 879,110    |
| OOD Spec Educ Cost allocated to resident students only                        | \$ 5,255,584   | \$ 5,255,584   |              |               |
| Total annual cost per category  | \$ 110,705,584 | \$ 102,635,383 | \$ 5,131,089 | \$ 2,939,112  |
| Net Annual Revenues received in support of non-Resident programs              | \$ 959,045     |                | \$ 515,825   | \$ 443,220    |
| <b>Annual Net cost of non-Resident programs</b>                               | \$ 7,111,156   |                | \$ 4,615,264 | \$ 2,495,892  |
| <b>Per-student LIRC (including share of total Spec Educ costs)</b>            | \$ 15,748      | \$ 15,658      | \$ 17,276    | \$ 16,512     |
| <b>Per-student program revenue</b>  |                |                | \$ 1,737     | \$ 2,490      |

Table A4

**BROOKLINE'S 13-YEAR COST COMMITMENT  
METCO AND MATERIALS FEE PROGRAMS**

**SCENARIO 1: SUSPEND ALL FURTHER KINDERGARTEN ENROLLMENTS STARTING IN FALL 2014**

| GRADE   | TOTAL K-12           | 0                   | 1                   | 2                   | 3                   | 4                   | 5                   | 6                   | 7                   | 8                   | 9                   | 10                  | 11                  | 12                |
|---|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-------------------|
| <b>FY14 METCO and Materials Fee Students by Grade</b>               |                      |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                   |
| METCO   | 297                  | 22                  | 19                  | 23                  | 20                  | 21                  | 29                  | 28                  | 22                  | 20                  | 34                  | 24                  | 17                  | 18                |
| Mat Fee   | 178                  | 20                  | 24                  | 18                  | 13                  | 14                  | 17                  | 14                  | 16                  | 8                   | 8                   | 9                   | 12                  | 5                 |
| <b>TOTAL</b>  | <b>475</b>           | <b>42</b>           | <b>43</b>           | <b>41</b>           | <b>33</b>           | <b>35</b>           | <b>46</b>           | <b>42</b>           | <b>38</b>           | <b>28</b>           | <b>42</b>           | <b>33</b>           | <b>29</b>           | <b>23</b>         |
| <b>Student-years remaining in PSB for each cohort</b>               |                      |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                   |
| METCO   | 2076                 | 286                 | 228                 | 253                 | 200                 | 189                 | 232                 | 196                 | 132                 | 100                 | 136                 | 72                  | 34                  | 18                |
| Mat Fee   | 1460                 | 260                 | 288                 | 198                 | 130                 | 126                 | 136                 | 98                  | 96                  | 40                  | 32                  | 27                  | 24                  | 5                 |
| <b>TOTAL</b>  | <b>3536</b>          | <b>546</b>          | <b>516</b>          | <b>451</b>          | <b>330</b>          | <b>315</b>          | <b>368</b>          | <b>294</b>          | <b>228</b>          | <b>140</b>          | <b>168</b>          | <b>99</b>           | <b>58</b>           | <b>23</b>         |
| Dscnt Factor  |                      | 1.0000              | 0.9990              | 0.9928              | 0.9787              | 0.9523              | 0.9260              | 0.8948              | 0.8593              | 0.8293              | 0.7904              | 0.7646              | 0.7390              | 0.7133            |
| Inflation factor  |                      | 1.0000              | 1.0204              | 1.0412              | 1.0624              | 1.0841              | 1.1062              | 1.1288              | 1.1518              | 1.1753              | 1.1993              | 1.2237              | 1.2487              | 1.2742            |
| <b>Long Run Incremental Cost per cohort (at current \$ amounts)</b> |                      |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                   |
|   | <b>NPV</b>           |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                   |
| METCO   | \$ 36,121,585        | \$ 4,941,049        | \$ 4,019,357        | \$ 4,551,042        | \$ 3,671,038        | \$ 3,539,886        | \$ 4,433,882        | \$ 3,822,265        | \$ 2,626,680        | \$ 2,030,495        | \$ 2,817,795        | \$ 1,522,200        | \$ 733,477          | \$ 396,231        |
| Mat Fee   | \$ 24,406,405        | \$ 4,293,085        | \$ 4,852,407        | \$ 3,404,070        | \$ 2,280,580        | \$ 2,255,491        | \$ 2,484,151        | \$ 1,826,559        | \$ 1,825,776        | \$ 776,256          | \$ 633,671          | \$ 545,564          | \$ 494,837          | \$ 105,194        |
| <b>TOTAL</b>  | <b>\$ 60,527,990</b> | <b>\$ 9,234,133</b> | <b>\$ 8,871,763</b> | <b>\$ 7,955,112</b> | <b>\$ 5,951,618</b> | <b>\$ 5,795,377</b> | <b>\$ 6,918,033</b> | <b>\$ 5,648,824</b> | <b>\$ 4,452,457</b> | <b>\$ 2,806,751</b> | <b>\$ 3,451,466</b> | <b>\$ 2,067,764</b> | <b>\$ 1,228,314</b> | <b>\$ 501,425</b> |
| <b>Anticipated revenues per cohort (at current \$ amounts)</b>      |                      |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                   |
|   | <b>NPV</b>           |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                   |
| METCO   | \$ 3,631,279         | \$ 496,720          | \$ 404,063          | \$ 457,513          | \$ 369,047          | \$ 355,862          | \$ 445,735          | \$ 384,250          | \$ 264,058          | \$ 204,124          | \$ 283,271          | \$ 153,026          | \$ 73,736           | \$ 39,833         |
| Mat Fee   | \$ 3,680,502         | \$ 647,400          | \$ 731,746          | \$ 513,336          | \$ 343,913          | \$ 340,130          | \$ 374,612          | \$ 275,446          | \$ 275,328          | \$ 117,060          | \$ 95,558           | \$ 82,271           | \$ 74,622           | \$ 15,863         |
| <b>TOTAL</b>  | <b>\$ 7,311,781</b>  | <b>\$ 1,144,120</b> | <b>\$ 1,135,809</b> | <b>\$ 970,849</b>   | <b>\$ 712,960</b>   | <b>\$ 695,992</b>   | <b>\$ 820,347</b>   | <b>\$ 659,696</b>   | <b>\$ 539,387</b>   | <b>\$ 321,184</b>   | <b>\$ 378,829</b>   | <b>\$ 235,297</b>   | <b>\$ 148,358</b>   | <b>\$ 55,696</b>  |
| <b>Net Brookline taxpayer support per cohort</b>                    |                      |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                   |
|   | <b>NPV</b>           |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                   |
| METCO   | \$ 32,490,306        | \$ 4,444,328        | \$ 3,615,293        | \$ 4,093,529        | \$ 3,301,991        | \$ 3,184,024        | \$ 3,988,146        | \$ 3,438,015        | \$ 2,362,622        | \$ 1,826,371        | \$ 2,534,524        | \$ 1,369,174        | \$ 659,741          | \$ 356,398        |
| Mat Fee   | \$ 20,725,903        | \$ 3,645,685        | \$ 4,120,661        | \$ 2,890,734        | \$ 1,936,667        | \$ 1,915,361        | \$ 2,109,540        | \$ 1,551,113        | \$ 1,550,448        | \$ 659,196          | \$ 538,113          | \$ 463,293          | \$ 420,215          | \$ 89,330         |
| <b>TOTAL</b>  | <b>\$ 53,216,209</b> | <b>\$ 8,090,013</b> | <b>\$ 7,735,954</b> | <b>\$ 6,984,263</b> | <b>\$ 5,238,658</b> | <b>\$ 5,099,385</b> | <b>\$ 6,097,686</b> | <b>\$ 4,989,128</b> | <b>\$ 3,913,070</b> | <b>\$ 2,485,567</b> | <b>\$ 3,072,637</b> | <b>\$ 1,832,467</b> | <b>\$ 1,079,956</b> | <b>\$ 445,729</b> |

NOTE 1: METCO revenues are those funds remaining after payment of certain METCO-specific costs that are not included in total School Department costs.

NOTE 2: In this scenario, we assume that Brookline would suspend all further initial kindergarten enrollments in METCO and Materials Fee programs beginning with the 2014-15 school year, but continue to serve existing program participants through the 12th grade. If Brookline continues to accept siblings of existing program participants, the level of unfunded support would be greater than as presented here.

Table A5

## BROOKLINE'S 13-YEAR COST COMMITMENT METCO AND MATERIALS FEE PROGRAMS

### SCENARIO 2: CONTINUE BROOKLINE PARTICIPATION IN METCO AND MATERIALS FEE PROGRAMS INDEFINITELY

| GRADE   | TOTAL K-12     | 0            | 1            | 2            | 3             | 4             | 5             | 6             | 7             | 8             | 9             | 10            | 11            | 12            |
|---|----------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>FY13 METCO and Materials Fee Students by Grade</b>               |                |              |              |              |               |               |               |               |               |               |               |               |               |               |
| METCO   | 298            | 22           | 23           | 23           | 23            | 23            | 23            | 23            | 23            | 23            | 23            | 23            | 23            | 23            |
| Mat Fee   | 260            | 20           | 20           | 20           | 20            | 20            | 20            | 20            | 20            | 20            | 20            | 20            | 20            | 20            |
| TOTAL   | 558            | 42           | 43           | 43           | 43            | 43            | 43            | 43            | 43            | 43            | 43            | 43            | 43            | 43            |
| <b>Student-years remaining in PSB for each cohort</b>               |                |              |              |              |               |               |               |               |               |               |               |               |               |               |
| METCO   | 3874           | 286          | 299          | 299          | 299           | 299           | 299           | 299           | 299           | 299           | 299           | 299           | 299           | 299           |
| Mat Fee   | 3380           | 260          | 260          | 260          | 260           | 260           | 260           | 260           | 260           | 260           | 260           | 260           | 260           | 260           |
| TOTAL   | 7254           | 546          | 559          | 559          | 559           | 559           | 559           | 559           | 559           | 559           | 559           | 559           | 559           | 559           |
| Dscnt Factor  |                | 1.0000       | 0.9990       | 0.9928       | 0.9787        | 0.9523        | 0.9260        | 0.8948        | 0.8593        | 0.8293        | 0.7904        | 0.7646        | 0.7390        | 0.7133        |
| Inflation factor  |                | 1.0000       | 1.0204       | 1.0412       | 1.0624        | 1.0841        | 1.1062        | 1.1288        | 1.1518        | 1.1753        | 1.1993        | 1.2237        | 1.2487        | 1.2742        |
| <b>Long Run Incremental Cost per cohort (at current \$ amounts)</b> |                |              |              |              |               |               |               |               |               |               |               |               |               |               |
| NPV   |                |              |              |              |               |               |               |               |               |               |               |               |               |               |
| METCO   | \$ 66,099,271  | \$ 4,941,049 | \$ 5,270,998 | \$ 5,378,504 | \$ 5,488,202  | \$ 5,600,138  | \$ 5,714,356  | \$ 5,830,904  | \$ 5,949,829  | \$ 6,071,180  | \$ 6,195,006  | \$ 6,321,357  | \$ 6,450,285  | \$ 6,581,843  |
| Mat Fee   | \$ 55,120,734  | \$ 4,293,085 | \$ 4,380,645 | \$ 4,469,991 | \$ 4,561,160  | \$ 4,654,187  | \$ 4,749,113  | \$ 4,845,974  | \$ 4,944,811  | \$ 5,045,663  | \$ 5,148,573  | \$ 5,253,582  | \$ 5,360,732  | \$ 5,470,068  |
| TOTAL   | \$ 121,220,005 | \$ 9,234,133 | \$ 9,651,643 | \$ 9,848,495 | \$ 10,049,362 | \$ 10,254,325 | \$ 10,463,469 | \$ 10,676,878 | \$ 10,894,640 | \$ 11,116,843 | \$ 11,343,579 | \$ 11,574,939 | \$ 11,811,017 | \$ 12,051,911 |
| <b>Anticipated revenues per cohort (at current \$ amounts)</b>      |                |              |              |              |               |               |               |               |               |               |               |               |               |               |
| NPV   |                |              |              |              |               |               |               |               |               |               |               |               |               |               |
| METCO   | \$ 6,644,916   | \$ 496,720   | \$ 529,890   | \$ 540,697   | \$ 551,725    | \$ 562,978    | \$ 574,460    | \$ 586,177    | \$ 598,132    | \$ 610,332    | \$ 622,780    | \$ 635,482    | \$ 648,443    | \$ 661,668    |
| Mat Fee   | \$ 8,312,243   | \$ 647,400   | \$ 660,604   | \$ 674,078   | \$ 687,826    | \$ 701,855    | \$ 716,169    | \$ 730,776    | \$ 745,681    | \$ 760,889    | \$ 776,408    | \$ 792,244    | \$ 808,402    | \$ 824,890    |
| TOTAL   | \$ 14,957,159  | \$ 1,144,120 | \$ 1,190,494 | \$ 1,214,775 | \$ 1,239,551  | \$ 1,264,833  | \$ 1,290,630  | \$ 1,316,953  | \$ 1,343,813  | \$ 1,371,221  | \$ 1,399,188  | \$ 1,427,725  | \$ 1,456,845  | \$ 1,486,558  |
| <b>Net Brookline taxpayer support per cohort</b>                    |                |              |              |              |               |               |               |               |               |               |               |               |               |               |
| NPV   |                |              |              |              |               |               |               |               |               |               |               |               |               |               |
| METCO   | \$ 59,454,355  | \$ 4,444,328 | \$ 4,741,108 | \$ 4,837,807 | \$ 4,936,477  | \$ 5,037,159  | \$ 5,139,896  | \$ 5,244,727  | \$ 5,351,697  | \$ 5,460,848  | \$ 5,572,226  | \$ 5,685,875  | \$ 5,801,842  | \$ 5,920,175  |
| Mat Fee   | \$ 46,808,491  | \$ 3,645,685 | \$ 3,720,041 | \$ 3,795,914 | \$ 3,873,334  | \$ 3,952,333  | \$ 4,032,943  | \$ 4,115,198  | \$ 4,199,130  | \$ 4,284,774  | \$ 4,372,165  | \$ 4,461,338  | \$ 4,552,330  | \$ 4,645,178  |
| TOTAL   | \$ 106,262,846 | \$ 8,090,013 | \$ 8,461,149 | \$ 8,633,720 | \$ 8,809,810  | \$ 8,989,492  | \$ 9,172,839  | \$ 9,359,925  | \$ 9,550,827  | \$ 9,745,622  | \$ 9,944,391  | \$ 10,147,213 | \$ 10,354,172 | \$ 10,565,352 |

NOTE 1: METCO revenues are those funds remaining after payment of certain METCO-specific costs that are not included in total School Department costs.

NOTE 3: In this scenario, we assume an average of approximately 300 METCO students (23 per class) and 260 Materials Fee students (20 per class, based upon recent years' kindergarten enrollments). While it is assumed that participation in these programs would continue indefinitely, the calculation itself is limited to a 13-year period (i.e., from FY15 through FY27).

Table A6 (page 1)

**SOURCE DATA FOR REGRESSION ANALYSIS**

| TOTAL ANNUAL EXPENDITURES |                                     |                                       |                               |  |                                      |  |                            |                                    |              |  |  |  |
|---------------------------|-------------------------------------|---------------------------------------|-------------------------------|--|--------------------------------------|--|----------------------------|------------------------------------|--------------|--|--|--|
| Fiscal Year               | School Expenses net of ODD, 2014 \$ | Town expenses K-12 schools Nominal \$ | Total K-12 expense Nominal \$ | Total K-12 expenses incl OOD, nominal \$ | Total K-12 expenses incl OOD,2014 \$ | Cumulative Pct Change in Total CPI-adjusted K-12 Expenses incl OOD | Town/School Expense Factor | Total Expense CPI-adjusted 2014 \$ | DELTA        | Cumulative Pct Change in Total CPI-adjusted Expenses | Average Total Expense per Pupil, 2014 \$ | Pct change in avg cost per pupil since FY06, 2014 \$ |
| FY06                      | \$ 54,032,868                       | \$ 26,508,943                         | \$ 80,541,810                 | \$ 85,425,327                            | \$ 100,400,407                       |  | 49.06%                     | \$94,660,808                       |              |  | \$17,412                                 |  |
| FY07                      | \$ 56,428,257                       | \$ 27,177,702                         | \$ 83,605,960                 | \$ 88,612,207                            | \$ 101,208,497                       | 0.80%  | 48.16%                     | \$95,490,608                       | \$829,800    | 0.88%  | \$17,204                                 | -1.20%   |
| FY08                      | \$ 59,256,671                       | \$ 29,769,659                         | \$ 89,026,330                 | \$ 93,064,298                            | \$ 103,673,270                       | 3.26%  | 50.24%                     | \$99,174,989                       | \$3,684,380  | 4.77%  | \$17,554                                 | 0.81%  |
| FY09                      | \$ 64,351,891                       | \$ 31,813,319                         | \$ 96,165,210                 | \$ 101,242,323                           | \$ 108,726,603                       | 8.29%  | 49.44%                     | \$103,274,166                      | \$4,099,178  | 9.10%  | \$17,906                                 | 2.84%  |
| FY10                      | \$ 64,955,172                       | \$ 32,566,491                         | \$ 97,521,663                 | \$ 103,342,172                           | \$ 111,504,106                       | 11.06%   | 50.14%                     | \$105,223,895                      | \$1,949,729  | 11.16%   | \$17,935                                 | 3.00%  |
| FY11                      | \$ 67,722,461                       | \$ 29,415,589                         | \$ 97,138,050                 | \$ 103,073,629                           | \$ 109,651,696                       | 9.21%  | 43.44%                     | \$103,337,313                      | -\$1,886,582 | 9.17%  | \$17,309                                 | -0.60%   |
| FY12                      | \$ 70,914,382                       | \$ 31,317,362                         | \$ 102,231,744                | \$ 107,815,875                           | \$ 111,296,082                       | 10.85%   | 44.16%                     | \$105,531,700                      | \$2,194,388  | 11.48%   | \$16,868                                 | -3.13%   |
| FY13                      | \$ 73,922,208                       | \$ 33,624,056                         | \$ 107,546,265                | \$ 113,279,129                           | \$ 115,007,828                       | 14.55%   | 45.49%                     | \$109,187,477                      | \$3,655,777  | 15.35%   | \$16,824                                 | -3.38%   |
| FY14                      | \$ 78,798,174                       | \$ 34,992,840                         | \$ 113,791,014                | \$ 119,046,598                           | \$ 119,046,598                       | 18.57%   | 44.41%                     | \$113,791,014                      | \$4,603,537  | 20.21%   | \$16,934                                 | -2.75%   |

| SCHOOL DEPT EXPENSES |                            |                          |   |                              |  |  |                                      |  |
|----------------------|----------------------------|--------------------------|---|------------------------------|--|--|--------------------------------------|--|
| Fiscal Year          | School Expenses Nominal \$ | METCO Contrib Nominal \$ | Out-of-District SPED Tuition Payments, nominal \$ | Net Cost of BEEP, Nominal \$ | School Expenses net of SPED ODD & BEEP, Nominal \$ | School Expenses net of BEEP & ODD, 2014 \$ | Avg School Expense per pupil 2014 \$ | Pct change in avg cost per pupil since FY06, 2014 \$ |
| FY06                 | \$ 60,414,543              | \$ 376,000               | \$ 4,883,517                                      | \$ 1,874,158                 | \$ 54,032,868                                      | \$ 63,504,842                              | \$ 11,014                            |  |
| FY07                 | \$ 62,916,637              | \$ 460,000               | \$ 5,006,247                                      | \$ 1,942,133                 | \$ 56,428,257                                      | \$ 64,449,575                              | \$ 10,955                            | -0.53%   |
| FY08                 | \$ 64,786,212              | \$ 521,000               | \$ 4,037,968                                      | \$ 2,012,573                 | \$ 59,256,671                                      | \$ 66,011,703                              | \$ 11,177                            | 2.02%  |
| FY09                 | \$ 70,987,572              | \$ 527,000               | \$ 5,077,114                                      | \$ 2,085,568                 | \$ 64,351,891                                      | \$ 69,109,066                              | \$ 11,382                            | 1.83%  |
| FY10                 | \$ 72,515,419              | \$ 514,930               | \$ 5,820,509                                      | \$ 2,254,668                 | \$ 64,955,172                                      | \$ 70,085,312                              | \$ 11,273                            | -0.95%   |
| FY11                 | \$ 75,521,702              | \$ 472,782               | \$ 5,935,580                                      | \$ 2,336,444                 | \$ 67,722,461                                      | \$ 72,044,447                              | \$ 11,372                            | 0.88%  |
| FY12                 | \$ 78,443,875              | \$ 475,823               | \$ 5,584,131                                      | \$ 2,421,185                 | \$ 70,914,382                                      | \$ 73,203,440                              | \$ 11,095                            | -2.44%   |
| FY13                 | \$ 81,673,260              | \$ 490,813               | \$ 5,732,865                                      | \$ 2,509,000                 | \$ 73,922,208                                      | \$ 75,050,300                              | \$ 10,979                            | -1.05%   |
| FY14                 | \$ 86,137,933              | \$ 515,825               | \$ 5,255,584                                      | \$ 2,600,000                 | \$ 78,798,174                                      | \$ 78,798,174                              | \$ 11,209                            | 2.10%  |

Table A6 (page 2)

**SOURCE DATA FOR REGRESSION ANALYSIS**

x

| TOWN EXPENSES FOR SCHOOLS |               |                   |                         |                |              |                            |               |                                    |                                    |
|---------------------------|---------------|-------------------|-------------------------|----------------|--------------|----------------------------|---------------|------------------------------------|------------------------------------|
| Fiscal Year               | Town expenses | Town debt service | CIP for school projects | Total Town     |              | Town Portion of BEEP cost, | Total expense | Total Expense CPI-adjusted 2014 \$ | Avg Town Expense per pupil 2014 \$ |
|                           | for schools   | for schools       |                         | School-related | expenses,    |                            |               |                                    |                                    |
|                           | Nominal \$    | Nominal \$        | Nominal \$              | nominal \$     | nominal \$   | nominal \$                 | Nominal \$    | 2014 \$                            | 2014 \$                            |
| FY06                      | \$ 19,146,798 | \$ 7,677,475      | \$ 1,105,190            | \$ 27,929,463  | \$ 1,420,520 | \$ 26,508,943              | \$ 31,155,967 | \$ 5,403                           |                                    |
| FY07                      | \$ 19,712,618 | \$ 7,476,250      | \$ 1,415,845            | \$ 28,604,713  | \$ 1,427,010 | \$ 27,177,702              | \$ 31,041,033 | \$ 5,276                           |                                    |
| FY08                      | \$ 22,932,636 | \$ 7,203,990      | \$ 1,393,982            | \$ 31,530,608  | \$ 1,760,949 | \$ 29,769,659              | \$ 33,163,285 | \$ 5,615                           |                                    |
| FY09                      | \$ 24,951,941 | \$ 6,985,977      | \$ 1,659,412            | \$ 33,597,330  | \$ 1,784,011 | \$ 31,813,319              | \$ 34,165,100 | \$ 5,627                           |                                    |
| FY10                      | \$ 26,063,096 | \$ 7,201,020      | \$ 1,260,901            | \$ 34,525,017  | \$ 1,958,527 | \$ 32,566,491              | \$ 35,138,583 | \$ 5,652                           |                                    |
| FY11                      | \$ 25,135,512 | \$ 4,630,181      | \$ 1,427,760            | \$ 31,193,453  | \$ 1,777,865 | \$ 29,415,589              | \$ 31,292,865 | \$ 4,940                           |                                    |
| FY12                      | \$ 26,057,274 | \$ 5,772,568      | \$ 1,471,403            | \$ 33,301,245  | \$ 1,983,883 | \$ 31,317,362              | \$ 32,328,260 | \$ 4,900                           |                                    |
| FY13                      | \$ 27,590,096 | \$ 5,772,568      | \$ 2,357,850            | \$ 35,720,514  | \$ 2,096,458 | \$ 33,624,056              | \$ 34,137,177 | \$ 4,994                           |                                    |
| FY14                      | \$ 29,548,793 | \$ 5,758,139      | \$ 1,830,240            | \$ 37,137,172  | \$ 2,144,332 | \$ 34,992,840              | \$ 34,992,840 | \$ 4,978                           |                                    |

| PUPILS      |             |                    |                                  |                          |
|-------------|-------------|--------------------|----------------------------------|--------------------------|
| Fiscal Year | K-12 Pupils | Pct chg since FY06 | Non-ODD Special Education Pupils | Pct in Special Education |
| FY06        | 5766        |                    | 969                              | 16.81%                   |
| FY07        | 5883        | 2.03%              | 965                              | 16.40%                   |
| FY08        | 5906        | 2.43%              | 983                              | 16.64%                   |
| FY09        | 6072        | 5.31%              | 972                              | 16.01%                   |
| FY10        | 6217        | 7.82%              | 972                              | 15.63%                   |
| FY11        | 6335        | 9.87%              | 1022                             | 16.13%                   |
| FY12        | 6598        | 14.43%             | 1039                             | 15.75%                   |
| FY13        | 6836        | 18.56%             | 1074                             | 15.71%                   |
| FY14        | 7030        | 21.92%             | 1082                             | 15.39%                   |

| INFLATION FACTORS |          |                    |                             |
|-------------------|----------|--------------------|-----------------------------|
| Fiscal Year       | CPI Year | CPI-U (1999=\$100) | Inflation factor to 2014 \$ |
| FY06              | 2005     | 113.700            | 1.1753                      |
| FY07              | 2006     | 117.000            | 1.1422                      |
| FY08              | 2007     | 119.957            | 1.1140                      |
| FY09              | 2008     | 124.433            | 1.0739                      |
| FY10              | 2009     | 123.850            | 1.0790                      |
| FY11              | 2010     | 125.615            | 1.0638                      |
| FY12              | 2011     | 129.453            | 1.0323                      |
| FY13              | 2012     | 131.623            | 1.0153                      |
| FY14              | 2013     | 133.632            | 1.0000                      |

Table A6 (page 3)

## SOURCE DATA FOR REGRESSION ANALYSIS

| BROOKLINE EARLY EDUCATION PROGRAM (BEEP) COSTS |                                |                 |                            |  |                             |                 |                                 |
|--|--------------------------------|-----------------|----------------------------|--|-----------------------------|-----------------|---------------------------------|
| Fiscal Year                                    | BEEP Revolving<br>Tuition Fund | BEEP SPED Costs | Total Schools BEEP<br>cost | Town/School<br>Factor (incl<br>BEEP costs) | Estimated Town<br>BEEP cost | Total BEEP cost | Net BEEP cost<br>to be excluded |
| FY06   | \$ 969,328                     | \$ 1,874,158    | \$ 2,843,486               | 49.96%                                     | \$ 1,420,520                | \$ 4,264,006    | \$ 3,294,678                    |
| FY07   | \$ 969,805                     | \$ 1,942,133    | \$ 2,911,938               | 49.01%                                     | \$ 1,427,010                | \$ 4,338,948    | \$ 3,369,143                    |
| FY08   | \$ 1,409,246                   | \$ 2,012,573    | \$ 3,421,819               | 51.46%                                     | \$ 1,760,949                | \$ 5,182,768    | \$ 3,773,522                    |
| FY09   | \$ 1,442,247                   | \$ 2,085,568    | \$ 3,527,815               | 50.57%                                     | \$ 1,784,011                | \$ 5,311,826    | \$ 3,869,579                    |
| FY10   | \$ 1,557,995                   | \$ 2,254,668    | \$ 3,812,663               | 51.37%                                     | \$ 1,958,527                | \$ 5,771,190    | \$ 4,213,195                    |
| FY11   | \$ 1,656,550                   | \$ 2,336,444    | \$ 3,992,994               | 44.52%                                     | \$ 1,777,865                | \$ 5,770,858    | \$ 4,114,308                    |
| FY12   | \$ 1,947,697                   | \$ 2,421,185    | \$ 4,368,882               | 45.41%                                     | \$ 1,983,883                | \$ 6,352,765    | \$ 4,405,068                    |
| FY13   | \$ 1,976,792                   | \$ 2,509,000    | \$ 4,485,792               | 46.74%                                     | \$ 2,096,458                | \$ 6,582,250    | \$ 4,605,458                    |
| FY14   | \$ 2,100,000                   | \$ 2,600,000    | \$ 4,700,000               | 45.62%                                     | \$ 2,144,332                | \$ 6,844,332    | \$ 4,744,332                    |



**Table A7**

**REGRESSION DATA**

| REGRESSION DATA |                |        |               |          |
|-----------------|----------------|--------|---------------|----------|
| Fiscal Year     | TOT EXP        | PUPILS | 2009 OVERRIDE | 2011 GIC |
| FY06            | \$ 94,660,808  | 5766   | 0             | 0        |
| FY07            | \$ 95,490,608  | 5883   | 0             | 0        |
| FY08            | \$ 99,174,989  | 5906   | 0             | 0        |
| FY09            | \$ 103,274,166 | 6072   | 1             | 0        |
| FY10            | \$ 105,223,895 | 6217   | 1             | 0        |
| FY11            | \$ 103,337,313 | 6335   | 1             | 1        |
| FY12            | \$ 105,531,700 | 6598   | 1             | 1        |
| FY13            | \$ 109,187,477 | 6836   | 1             | 1        |
| FY14            | \$ 113,791,014 | 7030   | 1             | 1        |

| TOTAL COST vs. K-12 ENROLLMENT |        |
|--------------------------------|--------|
| Total Expense (\$million:      | Pupils |
| \$ 94,660,808                  | 5766   |
| \$ 95,490,608                  | 5883   |
| \$ 99,174,989                  | 5906   |
| \$ 103,274,166                 | 6072   |
| \$ 105,223,895                 | 6217   |
| \$ 103,337,313                 | 6335   |
| \$ 105,531,700                 | 6598   |
| \$ 109,187,477                 | 6836   |
| \$ 113,791,014                 | 7030   |