

# Building Multiple Pathways to a High School Diploma:

## *A Cost Study of Non-Traditional Academic Options*

### Overview

Over the last two decades, Massachusetts has emerged as a national and global education leader. Our commitment to high standards and accountability for results, combined with increased resources and supports for teaching and learning, have elevated student performance to nationally and internationally recognized levels. Yet for all of our successes, we continue to battle persistent achievement and attainment gaps. These gaps form the basis of our current era of education reform. As we examine our triumphs and lingering challenges, we are forced to reconsider how schooling is defined and provided if we are earnest in striving to ensure that *all* students are adequately prepared for college and career, and ultimately productive citizens in the 21<sup>st</sup> century economy.

In many instances, it's not *what* is being taught; it's the where, when, and how that pose challenges to students. The traditional school calendar and format (i.e. six hours a day, five days a week, in teacher-led classrooms) largely prevail in K-12 public education; yet, neither account for students who have significant obligations outside of school or those for whom seat-time is an ineffective proxy for engagement and learning. While the traditional school structure may work for some students, it undoubtedly is a barrier for many. Students who struggle in, or become disengaged from, traditional educational programs need options that better suit their academic and often social and economic needs. Because the factors influencing students' decision to leave school are varied and diverse, districts can benefit from creating multiple strategies to help students earn a high school diploma. Yet, non-traditional education programs that yield a high school diploma remain largely unknown and underutilized across the state.

### Multiple Pathways in Massachusetts: Opportunities and Challenges

Featuring flexible scheduling, multiple means to earn credit, differentiated instruction, and personalized learning, alternative programming can offer districts a model for multiple pathways. Alternative education programming—in Massachusetts as in other states—typically has been offered to students who have struggled in traditional educational environments and who are at-risk of dropping



ROADMAP TO  
Expanding Opportunity  
Evidence on What Works in Education

The promise of a high-quality education leading to opportunity and shared prosperity for all children is a deeply held value in Massachusetts. Despite a record of prominent successes, however, our Commonwealth has struggled to provide students from all backgrounds the supports necessary for long-term life success. To confront this challenge, the Massachusetts Budget and Policy Center and the Rennie Center for Education Research & Policy are undertaking this shared research project: the *Roadmap for Expanding Opportunity: Evidence on What Works in Education*.

This series of reports builds on progress initiated with the Education Reform Act of 1993, addressing critical areas in which progress has stalled. Ultimately, this project will provide a roadmap for bringing education reform into the 21<sup>st</sup> century. Reports will examine promising evidence-based strategies for supporting all children in achieving college, career, and life success. In particular, analyses will be grounded in a recognition that learning must extend beyond traditional school structures and offerings.

Reports will offer strategies for adapting a broad evidence base to local contexts, including cost analyses to assess the level of resources required to support district and statewide innovation. Ultimately, these briefs are designed to provide education leaders and practitioners with building blocks for driving future educational reforms across the Commonwealth.

out.<sup>A</sup> Across the Commonwealth, examples can be found of districts that have been able to cultivate multiple academic options or *multiple pathways* for students, defined by access to more than one learning opportunity through which students' can earn credit towards the completion of a high school diploma. Many districts have expanded these multiple academic options beyond their at-risk student populations. For example, some districts offer accelerated access to college and careers, such as dual enrollment and Early College High Schools. Others offer career/vocational technical education and work-based learning. When taken together, implementing a menu of non-traditional academic options can help districts (either independently or in partnership with neighboring communities) meet diverse student learning styles and academic needs, and offer all students supportive routes to high school graduation and postsecondary success.

However, the qualities that make alternative programming successful simultaneously complicate efforts to scale up these offerings within districts. Previous research conducted by the Rennie Center found that in Massachusetts, very few districts—only 61 of the state's 400 public school districts—offer alternative academic options.<sup>1</sup> Further, districts that do offer alternative programming may be limited to a singular program model due to resource constraints (e.g., funding, staff expertise, facilities). These districts face tough choices between building one model universal enough to serve several different kinds of student needs, or creating a far more specific model that serves the most prevalent need of one student group. The popularity and oversubscription of many existing programs indicates the need to expand non-traditional education offerings across the state.

In this report, the Rennie Center for Education Policy & Research aims to expand the conversation about effective practices in offering multiple pathways by documenting a menu of research-based models underway in districts across the Commonwealth. Based on a scan of recent literature, the Rennie Center first identifies research-based, effective practices in developing multiple pathways. Then, the team describes the structure and practice of four very different district programs—focusing on practices that could be prime for inclusion in a pathway. Finally, the team compiles cost estimates for replicating program strategies across Massachusetts public school districts. By documenting promising practices, the Rennie Center team hopes to support the innovation, adoption, and replication necessary to transform non-traditional academic options from a disparate network of largely independent practices to a more cohesive multiple pathways approach consistent with the needs of 21<sup>st</sup> century learners.

## Study Methods

To meet these goals, the Rennie Center team pursued a comprehensive data collection and analysis plan including:

- **Promising practice scan.** Based on previous research, the team identified non-traditional academic options in Massachusetts with a demonstrated record of effectiveness. The team then reviewed recent research on providing high school-aged students with multiple pathways/options and compared programs' practices to the larger evidence base.
- **Qualitative research with selected programs.** The team selected four study sites that collectively represent a range of academic models currently in practice in Massachusetts. In collaboration with the Massachusetts Department of Elementary and Secondary Education (ESE), we drew from recent interviews conducted with programmatic personnel, to document the practices underway at each program as well as the costs associated with program implementation. We also conducted a document review of materials pertaining to program practices, including data from program contracts and budgets.

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<sup>A</sup> The Massachusetts Department of Elementary and Secondary Education (ESE) defines alternative education as “an approach offered to ‘at-risk’ students in a nontraditional setting.”

- **Cost analysis of program components.** Once program practices were identified, the Rennie Center team used existing data from two recent ESE reports to examine cost estimates. These estimates rely on a resource-based cost analysis approach, described in detail below, to identify attendant costs to Massachusetts’ public K-12 districts.

## Case study site selection

Although there is a broad array of educational activities that could exist under the umbrella of multiple pathways, including high school equivalency preparation, home schooling, and charter schools, the Rennie Center used the parameters listed below to set the scope of this policy brief. Selected programs must:

- Lead to a high school diploma awarded from a public school district;
- Serve students who are high school-aged, or students in pursuit of a high school diploma;
- Provide students with academic offerings that vary from a traditional school structure; and
- Operate as part of an existing school (e.g., not as a separate school) allowing students to transition into—and out of—academic offerings.<sup>B</sup>

Within these parameters, the team aimed to capture a broad range of academic program models currently serving students across the state in non-traditional educational settings, and whose practices align closely with research-based recommendations. Each of these models represent a single pathway; a multiple pathways approach is defined by students having access to more than one of these types of programmatic options. Selected models included in this paper are:

- **Drury High School Learning Lab** in North Adams, MA, an online lab that serves a variety of students including those determined to be at-risk or students taking more advanced courses.
- **Career and Technical Education (CTE) at Somerville High School**, a Chapter 74 approved career/vocational technical education program within Somerville’s comprehensive high school.
- **Gateway to College Program at Massasoit Community College** in Canton, MA, an early college dual enrollment program allowing students to recover high school credits while earning additional credits towards a college degree.
- **Gerald M. Creamer Center** in Worcester, MA, a day and evening program offering students academic and socio-emotional supports towards credit recovery and high school graduation.

## Analytic Approach

The Rennie Center team analyzed both program and cost data. In the findings section below, we distill research-based program practices to recommend components and practices that have the potential to help districts develop a multiple pathways approach. Next, the Rennie Center team constructed detailed resource profiles that describe the personnel and non-personnel resources associated with each relevant program component, combining existing cost estimates on selected sites and original analyses for other sites.

## Best Practices from the Literature and Program Review

Several salient characteristics align programs selected for this study with the research base. Most notably, programs offer self-paced learning opportunities tailored to individual students’ strengths and needs.<sup>2</sup> Adults

<sup>B</sup> In Massachusetts, alternative and career/vocational technical education options exist as both programs within traditional/comprehensive high schools and as separate high schools. The team has chosen to include only programs—not schools—as these are likely to be more fiscally and programmatically possible for districts to implement in the current policy climate. These programs are also structured so that students maintain their enrollment in their “home” school so that the comprehensive high school remains accountable for student outcomes, like graduation.

develop close relationships with students and engage them in activating choices for academic options.<sup>3</sup> Programs supplement academic instruction and remediation with non-academic supports. And, effective implementation often leverages partnerships with local universities, businesses and/or community organizations to expand innovative learning options.<sup>4</sup> Taken together, multiple pathways encompass breadth and depth in student learning by offering a wide menu of individualized learning opportunities that are difficult to replicate in a traditional classroom setting.

The findings section below details how program strengths—from a diverse set of Massachusetts programs—can be combined to inform a comprehensive, multiple pathways approach. To note, findings discussed below are organized according to program components. Within each program component, the discussion highlights effective practices as drawn from existing research and program-specific data. For a full overview of each program model in this study, please refer to one-page program descriptions in Appendix A.

***Referral and enrollment processes use student data to personalize student supports.***<sup>5</sup> Student recruitment varies widely across selected sites. Depending on the focus, programs either accept students on a referral basis or use a student application. When and where referrals are used, teachers and guidance counselors draw on varied sources of student data to identify students who may benefit most from the program's offerings. For example, Somerville High School's CTE program brings current students to each K-8 school in the district to meet with 8<sup>th</sup> graders who might be interested in the program. Interested students—whether 8<sup>th</sup> graders, or 9<sup>th</sup> graders who apply once enrolled at the high school—work with their guidance counselor to complete the comprehensive application, which provides CTE staff with detailed student data. Teachers and guidance counselors help students chart a path towards graduation, creating student-specific learning plans that identify academic or career goals and relevant internship or workplace learning opportunities.

All sites use data and student observations to monitor students' progress towards their goals and to update plans as necessary. At the Creamer Center, for example, teachers meet with students to review their high school transcript and determine the additional coursework that is necessary for graduation. The review process then documents the support services necessary to help students meet their goals, including everything from parenting support to transportation needs.

***Core academic instruction accommodates student learning needs without compromising rigor.***<sup>6</sup> All program sites use standards-based instruction that is customized to students' learning styles and responsive to students' needs and/or interests. However, models for delivery vary from credit recovery to evening classes to online coursework to classroom-based courses. Courses are commonly taught by certified K-12 educators or adjunct faculty at a partnering community college, as is the case in the Gateway to College program. In Somerville, all students in the CTE program are expected to meet both MassCore academic requirements<sup>C</sup> and Chapter 74 frameworks<sup>D</sup> to earn a high school diploma and a Chapter 74 certificate. As recommended by research literature, all sites offer some opportunities for self-paced learning.<sup>7</sup> All programs' offerings include a high school diploma, and some go beyond graduation requirements to prepare students for more challenging postsecondary work. At the Drury High School Learning Lab, for example, students have opportunities to pursue credit recovery coursework towards graduation and/or to engage in Advanced Placement or International Baccalaureate courses. Similarly all students in the Gateway to College program enroll in college-level courses that satisfy high school graduation requirements while allowing students to earn credits towards an associate's degree in liberal arts from Massasoit Community College.

<sup>C</sup> The Massachusetts High School Program of Studies (MassCore) is the recommended program of study to help students graduate high school with college and career ready skills. MassCore recommends a comprehensive set of subject area courses and units as well as other learning opportunities to complete before graduating from high school, including: four years of English, four years of Math, three years of a lab-based Science, three years of history, two years of the same foreign language, one year of an arts program, and five additional "core" courses such as business education, health, and/or technology. MassCore also includes additional learning opportunities including AP classes, dual enrollment, a senior project, online courses for high school or college credit, and service or work-based learning. Additional information is available from ESE: <http://www.doe.mass.edu/ccr/masscore/>.

<sup>D</sup> Established by ESE, the Chapter 74 frameworks are academic standards for vocational and technical education and are organized into six career clusters. Additional information is available from ESE: <http://www.doe.mass.edu/cte/frameworks/>.

**Applied learning opportunities include practical workplace experience.**<sup>8</sup> While specific options vary, workplace learning that is connected both to students' academic instruction as well as their individual career goals is available to students in all programs. Often, partnerships with local businesses and/or community-based organizations facilitate these workplace learning opportunities. During the summer, the Creamer Center offers students paid employment opportunities for three hours a day following the Center's summer MCAS seminar. Employment opportunities are coordinated by various city offices, including the Worcester Public Schools district and the Department of Public Works. Students in the Somerville CTE program have diverse options for applied learning—aligned with coursework in one of 13 majors (ranging from information technology to child development to architectural design/pre-engineering). Based on their GPA, seniors can qualify for co-operative education opportunities (e.g., paid employment opportunities). These require daily attendance, and students are closely monitored by site-based mentors and CTE staff. Students who major in healthcare or childcare can obtain internships; culinary arts and cosmetology students operate community programs, including the high school's restaurant. Additionally, an advisory group of 10-20 industry members, CTE alumni, parents, students, and representatives from local universities meet twice per year to review and update the curriculum for each vocational major to ensure its relevancy to current employment in selected industries.

**Academic remediation features multiple opportunities for intensive, personalized support.**<sup>9</sup> Selected sites feature a wide array of research-based academic remediation and supports, including: individual tutoring,<sup>10</sup> online credit recovery,<sup>11</sup> summer MCAS preparation and enrichment,<sup>12</sup> college/career seminars,<sup>13</sup> and attendance buy-back programs<sup>14</sup> where students attend evening study sessions to make up for absences during their normal classes. To offer these supports, teachers meet regularly in decision-making teams<sup>15</sup> to match students to specific remediation opportunities and make necessary adjustments in students' academic plans. In the Gateway to College program, for example, students enroll in a "College Experience" seminar taught by program staff—a supplement to their college coursework. This experience provides intensive coaching in time management and study skills to help students succeed. Additionally, students can access the Academic Resource Center at Massasoit Community College, which offers one-on-one tutoring with experienced educators, group study areas, and a student computer lab, all of which have been found effective in helping students to succeed in math courses and to improve their writing. Students in certain academic majors within the CTE program at Somerville High School receive support from a full-time staff member who provides individualized remediation in applied math.

**Programs offer support services to help students transition to college and/or career.**<sup>16</sup> Research notes the effectiveness of college and career coaching<sup>17</sup> and graduation coaches<sup>18</sup> as mechanisms for helping students make successful transitions. Students in the Gateway to College program create a portfolio that documents their experiences in the program and charts a postsecondary path, building on goals identified at program entry. As part of the program's Academic Labs, students then receive a wide variety of academic and non-academic support, including life skills coaching and opportunities for career research, while students refine their portfolios. Meanwhile, postsecondary transition options exist for students in Somerville High School's CTE program. All students must complete the ACCUPLACER<sup>E</sup> with a qualifying grade to participate; if students need support to do so, they can enroll in an ACCUPLACER "boot camp" offered at Somerville High School during school vacation weeks and taught by community college faculty. The CTE program also offers career transition supports. At multiple points each year, students meet with a CTE program counselor to revisit and revise the career plans they developed as freshman. These rigorous processes have helped the CTE program place 90 percent of students in a career, college, or the military each year.

**Programs supplement academic instruction with social-emotional supports and services.**<sup>19</sup> All sites offer support from guidance counselors, social workers or behavioral counselors that is shaped by individual

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<sup>E</sup> ACCUPLACER is a diagnostic assessment used by public institutions of higher education to provide information on students' skills in math, reading and writing to determine students' readiness for college-level work. Students who do not reach a certain score, determined by the institution, are often referred to remedial coursework. More information is available from: <https://www.accuplacer.org/cat/>.

students' learning goals, strengths and needs. For example, the Creamer Center offers services to pregnant and parenting teens through its School Aged Mothers (SAM) program. Staffed by two registered nurses and two social workers, the SAM program is a partnership between the Creamer Center and Children's Friend,<sup>F</sup> offering health education classes to new or expecting mothers in addition to free childcare. While priority is given to Creamer Center students, SAM enrolls any Worcester Public Schools student who has a child under 3 years old and has not yet received her high school diploma.

## Program Costs

Using a combination of extant data from recent Massachusetts Department of Elementary and Secondary Education (ESE) reports and original data collection and analysis,<sup>G</sup> the Rennie Center team identified resources districts would need to implement identified research-based practices. The cost estimates associated with each of the selected models enable us to address two key questions for policymakers and district leaders:

1. What does it cost to provide research-based services to high-school aged students leading to a high school diploma using a multiple pathways approach?
2. What accounts for the differences in costs across different pathways?

The descriptive profiles of the four selected programs taken together with per pupil cost estimates provide us with a range of options and associated costs for providing multiple pathways to a high school diploma. A resource cost model approach was used to estimate the costs associated with each of the four selected programs after identifying the “ingredients,” or resources, used by each to deliver the research-based components of each program (e.g., credit recovery, guidance and career counseling). Identified resources were organized into eight program components culled from the research base:

- a. Recruitment & Enrollment
- b. Academic Instruction
- c. Academic Remediation & Supports
- d. Applied Learning Opportunities
- e. Non-academic Supports & Services
- f. Transitional Support
- g. Transportation
- h. School-based Program Administration

These eight components provide a common framework for organizing resources across the four programs. Within each of the components, the Rennie Center team identified specific activities provided by the four programs (see Table 1). For example, at the Creamer Center, academic instruction is provided through a combination of classroom-based and online instruction. Similarly, at the Drury High School Learning Lab, students can opt to take online standards-based courses in addition to classroom-based instruction. As explained in the reports from which these data are drawn, these activities comprise the “package” of

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<sup>F</sup> Children's Friend, Inc., is a private, not-for-profit agency in Worcester that has been serving children and families in Worcester County since 1849.

<sup>G</sup> Cost estimates for the Creamer Center and the Gateway to College Program at Massasoit Community College are drawn from *The Cost of Alternative Education: A Comparison of High Performing Alternative Education Sites in Massachusetts*, prepared by Tammy Kolbe (University of Vermont) for the Massachusetts EOE and ESE, June 2014. Cost estimates for Drury High School Learning Lab are taken from the Rennie Center's October 2013 *Cost Study of Massachusetts Chapter 222: An Act Relative to Student Access to Education Service and Exclusion from School*, submitted to ESE. Estimates for Somerville High School's Center for Career and Technical Education were developed for this report using the same resource cost methodology.

resources provided to high school students that will lead to a diploma. A dollar value was assigned to each resource according to its unit/market price. Resource values were then annualized so that the resulting cost estimates reflect the total annual cost. To note, most program resources are personnel.

For each program, resource values were then added together to estimate both per pupil costs of each of the eight program components, as well as the total cost per pupil. The resulting cost estimates reflect the value of all the resources used by a given program to deliver key program activities. This allows comparisons across sites both in terms of the types of research-based services offered and their corresponding costs. Readers should note that the resources and corresponding cost estimates reflect the costs of replicating each of the program models in districts where no similar program resources are currently available. For the Creamer Center and for Gateway to College at Massasoit Community College, these are the total costs to educate students who attend the program. For the other two program models, the costs are indicative of what it would cost to add these types of resources to an existing high school. However, the costs are not over and above existing per pupil costs in these schools, because in many cases the resources supplant existing resources. At Drury High School, for example, academic instruction through the Learning Lab replaces classroom instruction for part of their academic program. Students in Somerville’s CTE program, choose courses in one of the 13 majors instead of other electives offered at Somerville High School.

**Table 1: Program Activities Included in Resource Cost Estimates<sup>H</sup>**

|                                     | <b>Creamer Center</b>                                                                                                                                                                                                              | <b>Gateway to College Program at Massasoit Community College</b>                                                                              | <b>Drury High School Learning Lab</b>                                                                                                                                                | <b>CTE at Somerville High School</b>                                                                                                                                                                                                                      |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Recruitment &amp; Enrollment</b> | <ul style="list-style-type: none"> <li>• Student enrollment, assessment, &amp; placement</li> <li>• Developing, monitoring and updating students' graduation plans</li> </ul>                                                      | <ul style="list-style-type: none"> <li>• Information sessions and student placement testing</li> <li>• Applications and admissions</li> </ul> | <ul style="list-style-type: none"> <li>• Students are referred to the lab via their school's instructional and behavioral support teams</li> </ul>                                   | <ul style="list-style-type: none"> <li>• Student enrollment, assessment, and placement</li> </ul>                                                                                                                                                         |
| <b>Academic Instruction</b>         | <ul style="list-style-type: none"> <li>• Day program: Classroom-based academic instruction</li> <li>• Evening program: Classroom-based academic instruction</li> <li>• Credit recovery program for 9th and 10th graders</li> </ul> | <ul style="list-style-type: none"> <li>• Classroom-based academic instruction</li> <li>• Summer Session</li> </ul>                            | <ul style="list-style-type: none"> <li>• Online, standards-based coursework on a wide array of topics that is supported via one licensed teacher and one paraprofessional</li> </ul> | <ul style="list-style-type: none"> <li>• Classroom-based academic instruction provided as part of the comprehensive high school</li> <li>• CTE students use electives to engage in vocational coursework aligned with the Chapter 74 framework</li> </ul> |

<sup>H</sup> Project activities in italics are provided for descriptive purposes, but are not included in the costs for a particular program. For example, at Drury High School, students enrolled in the Learning Lab have access to services that are part of the high school, such as guidance counselors, but these are not considered to be resources provided through the Learning Lab and are thus not included in the resource cost estimates. Similarly for Somerville High School's CTE program, core academic instruction is provided as part of the comprehensive high school. Only the resources associated with the vocationally-related coursework are included in the cost estimates for this program.

|                                  | Cremer Center                                                                                                                                                                                                                                                                                                                 | Gateway to College Program at Massasoit Community College                                                                                                                                                          | Drury High School Learning Lab                                                                                                                                                                            | CTE at Somerville High School                                                                                                                                                                                                                                                                             |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Academic Remediation & Supports  | <ul style="list-style-type: none"> <li>• Tutoring and academic support activities</li> <li>• Online credit recovery</li> <li>• Summer MCAS preparation/tutoring program</li> <li>• Reading intervention</li> <li>• Attendance buy back/study hall</li> <li>• Teacher decision-making teams for struggling students</li> </ul> | <ul style="list-style-type: none"> <li>• “Gateway Prep Academy” to prepare students for program</li> <li>• Academic labs</li> <li>• “College Experience” coursework</li> <li>• Academic Resource Center</li> </ul> | <ul style="list-style-type: none"> <li>• Support via academic counselors, IEP counseling, and academic advising</li> <li>• Self-paced learning environment</li> <li>• Flexible course schedule</li> </ul> | <ul style="list-style-type: none"> <li>• Math and English language arts (ELA) support and safety training</li> <li>• Additional academic supports available as part of the comprehensive high school program, including MCAS advisory, access to ELL-tutors, and credit-recovery opportunities</li> </ul> |
| Applied Learning Opportunities   | <ul style="list-style-type: none"> <li>• Summer work opportunities for students</li> </ul>                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>• Community service/ internship requirement (40 hours)</li> </ul>                                                                                                           | <ul style="list-style-type: none"> <li>• Support via Drury High School’s internship coordinator</li> </ul>                                                                                                | <ul style="list-style-type: none"> <li>• Internships with local employers</li> <li>• Community projects with local community-based organizations</li> <li>• A co-operative education program that provides students with paid work opportunities</li> </ul>                                               |
| Non-academic Supports & Services | <ul style="list-style-type: none"> <li>• Guidance counseling and social work services/support</li> <li>• Program for pregnant and parenting teens</li> </ul>                                                                                                                                                                  | <ul style="list-style-type: none"> <li>• Guidance counseling and academic/career planning</li> </ul>                                                                                                               | <ul style="list-style-type: none"> <li>• Support via Drury High School’s behavioral counselors</li> </ul>                                                                                                 | <ul style="list-style-type: none"> <li>• Supports available as part of the comprehensive high school program, including career and guidance counseling</li> </ul>                                                                                                                                         |
| Transitional Support             | <ul style="list-style-type: none"> <li>• Career days</li> <li>• College visits</li> </ul>                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>• Portfolio development</li> </ul>                                                                                                                                          | <ul style="list-style-type: none"> <li>• Support via Drury High School’s graduation coaches</li> </ul>                                                                                                    | <ul style="list-style-type: none"> <li>• Individualized career counseling that includes assistance with application to college or employment</li> </ul>                                                                                                                                                   |
| Transportation                   | <ul style="list-style-type: none"> <li>• Transportation for parenting/pregnant teens &amp; their children</li> <li>• Bus service from central city for students</li> <li>• Public transportation vouchers for students</li> </ul>                                                                                             | <ul style="list-style-type: none"> <li>• Transportation is not provided</li> </ul>                                                                                                                                 | <ul style="list-style-type: none"> <li>• Transportation is not provided</li> </ul>                                                                                                                        | <ul style="list-style-type: none"> <li>• Transportation to dual enrollment options at Bunker Hill Community College is provided by the college (not CTE program)</li> </ul>                                                                                                                               |
| Program Admin. (School)          | <ul style="list-style-type: none"> <li>• Administrative personnel</li> <li>• Faculty meetings</li> <li>• Parent/family involvement activities</li> <li>• School-specific teacher professional development</li> </ul>                                                                                                          | <ul style="list-style-type: none"> <li>• Administrative personnel</li> <li>• Faculty/staff meetings</li> </ul>                                                                                                     | <ul style="list-style-type: none"> <li>• Teacher salaries and Plato system are included in the district budget each year</li> </ul>                                                                       | <ul style="list-style-type: none"> <li>• Administrative personnel</li> <li>• Advisory committees for each vocational major</li> </ul>                                                                                                                                                                     |



## Understanding Program Costs

Table 2 provides total costs per pupil for comparable program components across the four sites.<sup>1</sup> For the 2013-14 academic year, costs ranged from \$3,904 to \$9,469 with the Gateway to College Program at Massasoit Community College being the least costly program and the Creamer Center the most costly. Per participant costs at Drury High School were a close second to the Creamer Center at \$8,276, and the CTE program at Somerville High School fell squarely in the middle. These programs have different programmatic goals in response to the students they serve; as such, costs are driven primarily by the resources used by these programs to deliver academic services. For example, the Creamer Center primarily serves Worcester Public Schools students in 11<sup>th</sup> and 12<sup>th</sup> grades who often graduate the same academic year in which they enroll, based on a personalized graduation plan. The Gateway to College Program at Massasoit Community College is a dual enrollment program where students take college courses to earn a high school diploma, as well as earn credits that count towards a college degree. Most students attend the program full-time for two years. The Learning Lab at Drury High School was established to provide North Adams' high school students with a flexible option for online credit recovery, credit acceleration, and instructional support for traditional classroom coursework. Student work in the Lab is primarily self-directed, with oversight and assistance from the Lab's teacher and paraprofessional as needed. Students may participate in the program at school or from another location. The CTE program at Somerville High School is primarily a career- and technical-education program. Some courses offered through the CTE program are open to all students who attend the high school, but the vast majority of enrolled students complete the coursework necessary for a Chapter 74 certificate in one of the 13 majors offered.

Moreover, each of the selected programs has a unique approach to meeting student needs; therefore, the differences in costs must be considered according to their varied programmatic emphases and strategies to meeting these needs. These are also reflected in schools' staffing decisions, which account for the vast majority of each program's costs.

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<sup>1</sup> Because we drew on extant data for cost estimates for three of the four selected programs, we did not have data on all eight program components for each of the sites. More specifically, we did not have data on non-academic supports and services for Drury High School since the report from which those estimates were taken focused only on academic activities. In addition, non-academic services for students enrolled in the CTE program at Somerville High School are provided through the comprehensive high school so there are no costs to the CTE program for these services. Cost estimates for the non-academic activities associated with the Creamer Center and the Gateway to College Program are provided in Appendix B.

Table 2: Per Pupil Resource Cost Estimates (2011-12)<sup>J</sup>

|                                        | The Creamer Center <sup>K</sup> | Gateway to College Program at Massasoit Community College <sup>11</sup> | Drury High School Learning Lab | Somerville High School Center for Career and Technical Education |
|----------------------------------------|---------------------------------|-------------------------------------------------------------------------|--------------------------------|------------------------------------------------------------------|
| <b>Resource Costs</b>                  |                                 |                                                                         |                                |                                                                  |
| 2011-12 Per Pupil Resource Cost (PPRC) | \$9,469                         | \$3,904                                                                 | \$8,276                        | \$5,350                                                          |
| 2011-12 Enrollment                     | 243                             | 115                                                                     | 12                             | 555                                                              |
| <b>By Program Components</b>           |                                 |                                                                         |                                |                                                                  |
| Recruitment & Enrollment               | \$884                           | \$417                                                                   | \$0                            | \$116                                                            |
| Academic Instruction                   | \$5,160                         | \$998                                                                   | \$6,378                        | \$4,431                                                          |
| Academic Remediation & Supports        | \$1,847                         | \$798                                                                   | \$0                            | \$287                                                            |
| Applied Learning Opportunities         | \$33                            | \$60                                                                    | \$0                            | \$50                                                             |
| Transitional Support                   | \$35                            | \$87                                                                    | \$0                            | \$169                                                            |
| Transportation & Housing               | \$277                           | \$0                                                                     | \$0                            | \$0                                                              |
| Program Administration—School          | \$1,232                         | \$1,542                                                                 | \$1,898                        | \$297                                                            |

More specifically, the majority of per pupil costs in the selected programs are directed towards academic instruction. For the models included here, per pupil costs for this component ranged between \$998 and \$6,378—a difference of more than \$5,000 per pupil (see Table 2). As Tammy Kolbe explains in *The Cost of Alternative Education: A Comparison of High Performing Alternative Education Sites in Massachusetts*, from which cost estimates for two of the programs described here are drawn, the lower resource costs for academic instruction at the Gateway to College Program at Massasoit Community College are directly related to how the courses are staffed. During the 2011-12 academic year, adjunct community college faculty who were paid a fixed rate per course (about \$2,700) taught most of the program’s courses. Even teaching 13 courses per semester, the staffing costs for this program would be \$35,000 per semester, less than half of the compensation of the Massachusetts teachers who might be employed by the Creamer Center to provide academic instruction.

In another example of how staffing decisions drive program costs, the Rennie Center *Cost Study of Massachusetts Chapter 222: An Act Relative to Student Access to Education Service and Exclusion from School* indicates that the Drury High School Learning Lab relies on a fixed staffing plan. During the 2012-13 academic year, one full-time teacher and one part-time paraprofessional educator (working ten hours per week) provided instructional supervision and support to students. Although the annual per pupil costs for the

<sup>J</sup> Estimates are from 2011-12 because of the use of extant data. Data for the CTE program at Somerville were standardized to the unit prices used for the other programs, although enrollment data are from 2013-14.

<sup>K</sup> The Creamer Center and the Gateway to College Program at Massasoit include substantial non-academic supports and services as part of their programs; in this way their program offerings are not comparable to Drury High School Learning Lab and Somerville High School’s CTE program where non-academic offerings are provided by the comprehensive high school. These non-academic supports and associated resources characterizing student offerings at the Creamer Center and Gateway to College at Massasoit are detailed in Appendix B.

online learning system were modest (about \$400 per student, for six credit hours per day), it was the personnel costs associated with academic support, distributed over a small number of students (i.e., ten) that resulted in the model’s relatively high per pupil costs. Also to note, academic remediation and supports for students who access the Learning Lab at Drury High School are provided by the comprehensive high school, not by the Learning Lab. Therefore, there are no per pupil costs for this component for the Learning Lab. Similarly, most academic remediation and supports for students enrolled in the CTE program at Somerville High School are provided through the comprehensive high school program. Although some academic remediation is offered through the CTE program by CTE-dedicated staff, the relatively low per pupil costs for this program (\$287) reflect the smaller subset of these services that are offered directly through the CTE program. At the Creamer Center, however, the program employs a wide range of additional instructional staff to support student learning needs (e.g., a part-time tutor for English language learners, a full-time instructional assistant), which contributes to their relatively high per pupil cost for this component of \$1,847. The Gateway to College Program at Massasoit Community College, which falls in the middle at \$798 per pupil, also employs a range of staff for academic remediation and support as they are focused primarily on college readiness activities.

Aside from school level program administration which is reflective of the program size and context, the cost estimates for the remaining program components—transitional support, applied learning opportunities—each contribute quite small percentages to the overall program costs (3.2 percent or less) and again are largely reflective of program intentions (see Table 3).

**Table 3: Distribution of Total Program Costs by Program Component<sup>L</sup>**

|                                 | The Creamer Center* | Gateway to College Program at Massasoit Community College* | Drury High School Learning Lab | Somerville High School Center for Career and Technical Education |
|---------------------------------|---------------------|------------------------------------------------------------|--------------------------------|------------------------------------------------------------------|
| <i>By Program Components</i>    |                     |                                                            |                                |                                                                  |
| Recruitment & Enrollment        | 9.3%                | 10.7%                                                      | 0%                             | 2.2%                                                             |
| Academic Instruction            | 54.5%               | 25.6%                                                      | 77.0%                          | 82.8%                                                            |
| Academic Remediation & Supports | 19.5%               | 20.4%                                                      | 0%                             | 5.4%                                                             |
| Applied Learning Opportunities  | 0.4%                | 1.5%                                                       | 0%                             | 0.9%                                                             |
| Transitional Support            | 0.4%                | 2.3%                                                       | 0%                             | 3.2%                                                             |
| Transportation & Housing        | 2.9%                | 0%                                                         | 0%                             | 0%                                                               |
| Program Administration—School   | 13.0%               | 39.5%                                                      | 22.9%                          | 5.6%                                                             |

\*The Creamer Center and the Gateway to College Program at Massasoit include substantial non-academic supports and services as part of their programs; in this way their program offerings are not comparable to Drury High School Learning Lab and Somerville High School’s CTE program where non-academic offerings are provided by the comprehensive high school. These non-academic supports and associated resources characterizing student offerings at the Creamer Center and Gateway to College at Massasoit are detailed in Appendix B.

These examples highlight the differences in programmatic focus and serve to identify a range of approaches to meeting student needs as they seek a high school diploma. Each of the program models provides a different package of resources, driven by their staffing approach, overall program purpose and goals, and needs of their student population. The range in the per pupil cost estimates reflects this variation in the programmatic

<sup>L</sup> Estimates are from 2011-12 because of the use of extant data. Data for the CTE program at Somerville were standardized to the unit prices used for the other programs, although enrollment data are from 2013-14. Salary data used for all cost estimates is detailed in Appendix C.

activities—both academic and non-academic. Programs that are more narrowly focused on a particular set of activities, such as the Drury High School Learning Lab, require fewer resources. Sites that provide a more comprehensive program accompanied by an extensive network of supports, such as the Creamer Center, require far more resources and are more costly.

## Policy Considerations

### For State Policymakers

***Serve as a knowledge broker to continue to improve learning among districts.*** Currently, students in Massachusetts are engaged in a number of alternative academic options, such as career/vocational technical education, service learning, work-based learning, and virtual learning environments. Further, a number of districts have been able to expand their alternative options through MassGrad funds (the High School Graduation Initiative). In addition to disseminating information about these programs and effective practices,<sup>M</sup> the Massachusetts Department of Elementary and Secondary Education (ESE) could host symposia that showcase non-traditional education practices to foster innovation. Bringing together the aforementioned educational communities, along with traditional district representatives, can create opportunities for cross-pollination of ideas and practices that further the development of multiple pathways to a diploma.

***Explore new funding opportunities that incentivize districts to develop multiple academic options.*** ESE currently administers state and federal initiatives and grant programs that can support the development of multiple pathways, such as Innovation Schools and 21<sup>st</sup> Century Community Learning Centers. Highlighting which funding sources can be used to develop and implement offerings that can be combined into a multiple pathways approach will help districts to identify available resources. The Massachusetts state budget line item for alternative education—which could support expanded work on building multiple pathways at the district-level—has been significantly cut over the past several years; additional state funding could continue to support innovation. ESE could also consider new grant programs that prioritize efficiency through regional collaborations.

***Support collaborations between districts and community colleges.*** Massachusetts' community colleges are ideally suited to serve as partners to districts in the development of multiple pathways to a diploma. In addition to the Gateway to College sites, many other community colleges engage in dual enrollment and early college programs that foster college and career readiness for a broad-based population of students. They also are a critical link to the workforce. An initial way to expand opportunities for collaboration would be to increase funding for the Commonwealth Dual Enrollment Partnership. The current funding level limits the number of students who can participate, and prohibits the creation of a systemic program or set of practices.

### For District Leaders

***Map out all of the options available to students in your district.*** One barrier to taking advantage of non-traditional education programming is limited information about what is available. As a first step to creating multiple pathways to a diploma, districts can take inventory of all of their existing options for students, such as alternative education, career/vocational technical education, service learning, dual enrollment, online learning, etc. Included in the list should be the requirements, prerequisites, and/or referral and enrollment practices associated with each program. To maximize the benefit to students, this list should include options that may reside outside the district, such as the local regional vocational technical school

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<sup>M</sup> ESE has published a document called Alternative Education Resources and Other Academic Options Overview, which outlines currently available options and pathways. This resource can be found at <http://www.doe.mass.edu/dropout/>.

district. This exercise will not only broaden students' and families' awareness of their options, but it will also help districts to identify gaps in their programming.

***Make information about pathways to a diploma easily accessible.*** Once a district has mapped out its pathway options, this information should be made public and easy to find. Students and their families are the primary audience, but other interested parties—including other districts—should be able to locate the information as well. In addition to posting pathways materials on the district's website, the district should also provide a contact for questions and requests for additional information, and have an outreach strategy to ensure that this information is available for students and their families, school and district leaders, and educators. Districts that have cultivated exemplary non-traditional academic programs should actively seek opportunities to share their knowledge and experience with districts that are seeking to expand their offerings.

***Expand options for students through partnerships with other districts, institutions of higher education, and non-profit organizations.*** Rarely can one district's educational options be all things to all students. However, coordinating work on multiple academic options and developing equitable agreements that enable students to venture outside their home district may provide a more comprehensive set of options, as well as help share costs. In addition, the use of data across district lines can improve possibilities for regionalization of services. Current service delivery models in alternative education already exist in Massachusetts based on these principles.

## Conclusion

Multiple pathways enable districts to diversify and expand students' learning options as they pursue a high school diploma. Although pathways have been commonly thought of as a strategy to serve students who struggle academically, the programs selected for this study demonstrate that more diverse academic options can support the learning of all students. To be effective, however, strong connections must be built across varied programs that provide rigorous academic coursework and/or applied learning opportunities, along with non-academic supports. When utilized more broadly, the multiple pathways approach can offer students at all learning levels connections to college and career-based experiences, resulting in a high return on investment from graduates who contribute productively in the 21<sup>st</sup> century economy.

## Appendix A: Brief Program Profiles of Selected Pathway Programs

### North Adams Public Schools—Drury High School Learning Lab

#### District context

North Adams Public Schools has a small student population, with just over 1,500 students enrolled in the 2013-14 school year.<sup>20</sup> Mirroring the district at large, the student population of Drury High School is predominantly white (83.4 percent of students) and low-income (57.6 percent of students).<sup>21</sup> Additionally, over 60 percent of Drury High School students are classified in the high needs subgroup, a full 10 percent greater than the state average.<sup>22</sup> Following the 2012-13 school year, the most recent year of available data, the district's cohort dropout rate was just over 14 percent, more than double than the state average of 6.5 percent.<sup>23</sup>

#### Program model

The Learning Lab at Drury High School was established to provide North Adams' high school students with a flexible option for online credit recovery, credit acceleration, and instructional support for traditional classroom coursework. Student work in the Lab is primarily self-directed, with oversight and assistance from the Lab's teacher and paraprofessional as needed. Students may participate in the program at school or from another location, taking 1-2 courses online at a time.

#### Program characteristics

- **Students served:** The Learning Lab can serve up to 60 students at a time, with online coursework accessible from one or more locations. Any NAPS student may participate, including those in need of credit recovery opportunities.
- **Referral and transitions:** The high school's instructional and behavioral support teams meet to evaluate students' academic record and behavioral data to determine appropriate referrals. There is no formal paperwork or referral process specific to the Learning Lab. Upon successful completion of online coursework, students transition to traditional high school coursework.
- **Academic services:** The Learning Lab offers students online coursework for a wide range of academic courses. The classroom is staffed with one teacher and one paraprofessional, who monitors and guides students in an individual learning environment. Staff and students have access to computer stations.
- **Non-academic services:** Any student who attends the Learning Lab may access the high school's non-academic supports. The district's network of supports includes: academic and behavioral counselors, graduation coaches, a contracted agency managing IEP counseling, an internship coordinator, academic advising, and legal assistance.
- **Staffing:** During the 2012-13 school year, one licensed general education teacher supervised the Learning Lab. This teacher was responsible for coordinating students' academic programming and support using Learning Lab resources, and provided instructional support and assistance to students in the program. One paraprofessional educator also supported students' academic work in the program. The Drury High School principal is responsible for most program administration duties. At-risk students may also receive support from the Instructional and Behavioral Support team. (This team is not considered part of the Learning Lab model, but staff members are available to students in the program.)
- **Operations:** The Learning Lab is located in a separate classroom in the high school building; students are able to work at their own pace through academic courses chosen for their individual needs. The program operates year-round and is not bound by the academic calendar. Hours are flexible, and based on student needs. Students and staff access online coursework hosted by Plato Courseware, a standards-based online learning program<sup>24</sup> at individual computer stations or at a non-school location. Plato offers curriculum in a broad range of subjects, which can be used to attain course credit or to supplement traditional classroom instruction. The Learning Lab teacher salary and licenses for use of the Plato system are included in the district budget each year.

## Worcester Public Schools—The Gerald M. Creamer Center

### District context

The third-largest public school district in the state, Worcester Public Schools had a population of just under 25,000 students enrolled in the 2013-14 school year.<sup>25</sup> Like many urban districts, Worcester has a very diverse enrollment, with a population that is 38 percent Hispanic, 36 percent white, 14 percent African American, and 7.7 percent Asian.<sup>26</sup> Seventy-three percent of Worcester students come from low-income households, and over 80 percent of students were determined to be high-needs, two groups that are disproportionately represented in statewide dropout data.<sup>27</sup> In the 2012-13 school year, the district's cohort dropout rate was 11.5 percent, nearly double the state average.<sup>28</sup>

### Program model

The Gerald M. Creamer Center is an alternative high school operated by Worcester Public Schools to serve students who are no longer attending a traditional district high school. The Center offers face-to-face and online coursework during a day program, as well as a four-week summer MCAS preparation program. Students who aren't able to regularly attend daytime courses can recover credits via online coursework or at afternoon "attendance buy back" study sessions. Among a variety of non-academic supports, the Center hosts the School Aged Mothers (SAM) program, which provides everything from health education to logistical support for parenting teens. The Center is not certified to provide a high school diploma; instead the Center aims to help students return to their traditional high school to graduate with their academic cohort. Typically, students spend no more than two years at the Center before transitioning back to their traditional high school.

### Program characteristics

- **Students served:** Programming at the Center is designed primarily to support 11th and 12th grade students who have struggled to accumulate credits at their traditional high school. The Center enrolls approximately 250 students each year who are typically enrolled for one academic year, with most students graduating with their academic cohort during the same year in which they enroll at the Center.
- **Referral and transitions:** Students are referred to the Center by teachers and guidance counselors at one of the seven high schools in Worcester. Enrollment occurs at the start of the fall and spring semesters, at which point students work with Center staff to develop personalized graduation plans based on a close review of their transcripts as well as their socio-emotional needs. To help with postsecondary transitions, the Center hosts career days and organizes field trips to local colleges. Additionally, the Center invites speakers from local colleges and business to talk about postsecondary opportunities, and an on-site guidance counselor helps students with applying for financial aid, completing college applications, and applying for jobs.
- **Academic services:** The Center offers traditional (i.e., face-to-face) courses in English language arts, math, science, social studies, business, health, physical education, and art. Common in the alternative setting, class size is limited typically to a 15:1 student-teacher ratio. While most students attend academic coursework during the day, the Center offers multiple opportunities for students to recover lost credits, including: online recovery via Plato courseware and "attendance buy back" in the form of afternoon study sessions. Decisions about pedagogy and academic support are made the by teacher teams who meet four days per week to monitor student progress towards their academic goals.
- **Non-academic services:** Students at the Center have priority access to the SAM program, which provides parenting support to help new mothers reach their academic goals and is offered to teens who are pregnant or parenting a child under 3 years old. Students at the Center also receive support from on-site social workers that offer counseling on a wide variety of socio-emotional needs. Students also have the opportunity to participate in a summer workplace learning opportunity coordinated by the district and Creamer Center staff.
- **Staffing:** Administrative staff at the Center consists of a school principal, an assistant principal (who primarily oversees the evening program), one department head, one lead teacher, and school secretary. Meanwhile, teaching staff is composed of approximately 15 full-time certified teachers, a part-time special education teacher, part-time tutors for ELL and MCAS preparation and a full-time instructional assistant.
- **Operations:** Daytime coursework at the Center meets from 7:30am to 1:30pm, five days per week. Each course meets in 65-minute periods each day. Meanwhile, in a 90-minute period after school, students have the opportunity to complete online coursework and/or to participate in "attendance buy back" study sessions supported by Center staff. Provided by the school district, transportation support is also offered to daytime students as well as those who attend afterschool credit recovery sessions and/or to teens engaged in the SAM program.

## Massasoit Community College—Gateway to College Program

### District context

The Gateway to College program primarily serves students from the Brockton Public Schools, although the program is accessible by a number of neighboring communities. In the 2013-14 school year, Brockton Public Schools enrolled a population of just over 17,000 students, making it the fourth largest district in the state.<sup>29</sup> The student population of is nearly 55 percent African American, 23.5 percent white, 14 percent Hispanic, 4 percent multi-race and just over 2 percent Asian.<sup>30</sup> Meanwhile, over 80 percent of Brockton's students come from low-income households and nearly 85 percent of students were determined to be high needs,<sup>31</sup> two sub-groups that are disproportionately represented in statewide dropout data. In 2012-13, the district's cohort dropout rate was just under 10 percent, nearly 4 percent points higher than the state average.<sup>32</sup>

### Program model

Gateway to College is a national network of dual enrollment programs in which students take college-level courses to help earn a high school diploma while accumulating credits towards an associate's degree. Typical of programs in the Gateway to College network, the program at Massasoit Community College (MCC) leverages university resources to provide opportunities for students aged 16-21 to enroll in courses taught by faculty at Massasoit Community College, and to receive remediation at the university's academic support centers. Students typically complete 39-42 college credits while enrolled in the program, a total roughly equal to 96 high school credits.

### Program characteristics

- **Students served:** The majority of Gateway to College students come from Brockton Public Schools; however, seven additional school districts have memoranda of understanding with MCC which allow students to receive a high school diploma from their home district. Students are typically older youth or young adults, ranging from 16-21 years old, and the MCC program enrolls about 115 students per year.
- **Referral and transitions:** Depending on each district's memorandum of understanding with MCC, students may either enroll directly in the Gateway to College program or may be required to submit an application through their high school's guidance office. The program has a focus on serving students who have dropped out, or are at-risk of dropping out, but any student that is referred by their district, or applies, can enroll. Provided that students attend a mandatory information session, virtually all applications to the MCC program are accepted. Meanwhile, at the conclusion of their time in the program, students complete an extensive portfolio that documents their academic learning and socio-emotional growth. In the process of creating their portfolios, students identify plans for post-secondary success.
- **Academic services:** Students take college-level courses taught by MCC faculty that are aligned with Brockton Public Schools' graduation requirements. Students enrolled in the program are expected to take 12 college credits per semester, or roughly five classes, and class sizes commonly range between 20-22 students. Additionally, students have access to various academic support services, including Academic Labs, semester-long seminars taught by Gateway to College staff, as well as the Academic Resource Center located at MCC.
- **Non-academic services:** In addition to required coursework, students also must complete at least 45 hours of community service in order to graduate. Students typically use this requirement as an opportunity to work in on a topic that might shape their postsecondary experience.
- **Staffing:** At any one time, 16-18 adjunct faculty at MCC teach Gateway to College courses. Additionally, the program supports students with four full-time staff members, including a Coordinator of Student Services and a Data Manager.
- **Operations:** The Gateway to College administrative offices are located inside the MCC library. Led by a full-time director, program staff meet once per month to monitor student progress and refine the services offered to students.



## Somerville Public Schools—Center for Career and Technical Education

### District context

Somerville Public Schools has a diverse population of just under 5,000 students, with roughly 1,200 student enrolled at Somerville High School. Nearly 40 percent of Somerville High School students are Hispanic, 32 percent are white, over 15 percent are African American, and roughly 11 percent are Asian. While 70 percent of students from SHS are low-income, over 75% of SHS students are determined to be high-needs. In 2012-13, the district's cohort dropout rate was 9 percent.<sup>33</sup>

### Program model

Operated by the Center for Career and Technical Education (CTE), the Somerville High School CTE program prepares students for postsecondary education or employment in one of 13 fields chosen by enrolled students. All CTE students participate in the same core curriculum and academic classes as all other students at Somerville High School. However, CTE students use their elective credits to engage in vocational coursework, leading to a Chapter 74 certificate. During their freshman year, students engage in “exploratories” that provide an introduction to each of the program’s 13 career paths. Then, in years 2-4, students engage in coursework and applied learning opportunities in their vocational field of their choice. In partnership with local businesses and community colleges, the CTE program typically places 90 percent of its graduates in career or college opportunities that align with their professional interests.

### Program characteristics

- **Students served:** The CTE program is open to all students at Somerville High School. Additionally, as part of the SHORE collaborative, students from Boston, Cambridge, Medford, and Waltham are eligible to participate in the CTE program and to receive a Chapter 74 certificate upon graduation.
- **Referral and transitions:** Students must apply to the program, with support from their guidance counselor. CTE staff and students travel to all six district K-8 schools in the district to recruit students for the upcoming school year. Interested students must receive formal approval from their guidance counselors in 8th or 9th grade. Upon graduation, students receive a Chapter 74 certificate as well as a traditional diploma from Somerville High School.
- **Academic services:** Students participate in core academic classes at Somerville High School; all students are required to complete the Massachusetts core curriculum: 4 years of math, 4 years of English language arts (ELA), 4 years of physical education, 3 years of social studies and 2 years of a foreign language. To earn their vocational certificate, students use electives in their course schedule to enroll in CTE courses. All CTE courses align with the Chapter 74 framework that requires academic instruction in each of the following strands – safety, technical training, embedded academics, entrepreneurship, management and principles of technology. Additionally, CTE students have access to the academic remediation services available school-wide. An advisory group of 10-20 industry members, CTE alumni, parents, students, and representatives from local universities meet twice per year to review the curriculum and supports for each vocational major.
- **Non-academic services:** In partnership with local businesses and community colleges, students are offered a variety of opportunities to apply academic learning to the post-secondary context. Students in the health care and child care track have the opportunity to receive college credit through a dual enrollment agreement with Bunker Hill Community College. Additionally, culinary arts students staff the school’s cafeteria, and students in the cosmetology and auto repair tracks work with community-based organizations to offer workshops for the public. As the centerpiece of the program’s applied learning portfolio, seniors who qualify are eligible to earn course credit at a paid employment opportunity in their vocational field.
- **Staffing:** The CTE program is supported by 30 full-time staff members. Each vocational track has its own staff of 2-3 full-time certified teachers. Additionally, funded by a federal Perkins grant, the program supports students with two full-time educators who provide remediation in math and ELA. The program administration is composed of a full-time CTE Director and secretary.
- **Operations:** Students in the CTE program attend classes according to school-wide bell schedule, which features 6 blocks that meet daily. Unlike the more common vocational technical high school schedule, where students alternate one week of vocational courses with one week of academic courses, the schedule at Somerville High School allows for richer, more frequent integration of vocation and core academic experiences each day.

## Appendix B: Non-academic Cost Estimates

Table 4: Per Pupil Resource Cost Estimates including non-academic supports and services

|                                        | The Creamer Center | Gateway to College Program at Massasoit Community College |
|----------------------------------------|--------------------|-----------------------------------------------------------|
| <b>Resource Costs</b>                  |                    |                                                           |
| 2011-12 Per Pupil Resource Cost (PPRC) | \$11,093           | \$4,228                                                   |
| 2011-12 Enrollment                     | 243                | 115                                                       |
| <b>By Program Components</b>           |                    |                                                           |
| Recruitment & Enrollment               | \$884              | \$417                                                     |
| Academic Instruction                   | \$5,160            | \$998                                                     |
| Academic Remediation & Supports        | \$1,847            | \$798                                                     |
| Applied Learning Opportunities         | \$33               | \$60                                                      |
| Non-academic Supports & Services       | \$1,624            | \$324                                                     |
| Transitional Support                   | \$35               | \$87                                                      |
| Transportation & Housing               | \$277              | \$0                                                       |
| Program Administration—School          | \$1,232            | \$1,542                                                   |

Both the Creamer Center and the Gateway to College Program at Massasoit include substantial non-academic supports and services as part of their alternative education programs. The other two programs included in the report as examples of multiple pathways to a high school diploma, Drury High School’s Learning Lab, and Somerville High School’s Center for Career and Technical Education are programs included as part of a comprehensive high school. As such, non-academic supports and services are provided as part of the services available through the high school, making a comparison to the two alternative programs non-comparable. Here we show the per pupil resource costs of this program component for the alternative education programs. For the Creamer Center, this component comprises about 15% of the total program costs, nearly twice as much as the resources devoted to non-academic supports and services in the Gateway to College program.

## Appendix C: Resource Values

Table 5: Resource Values Used in Calculations of Cost Estimates

| Personnel                  | Statewide Average Annual Salary | Statewide Average Annual Compensation* | Source                                                                                                                                                                                                                                                |
|----------------------------|---------------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Licensed Teachers          | \$70,340                        | \$91,090                               | Massachusetts Department of Elementary and Secondary Education:<br><a href="http://profiles.doe.mass.edu/state_report/teachersalaries.aspx">http://profiles.doe.mass.edu/state_report/teachersalaries.aspx</a>                                        |
| School Principal           | \$105,139                       | \$136,155                              | Median salary information (from salary.com) was collected for a diverse sample of districts. This data was adjusted for geographic wage variations using the Comparable Wage Index (CWI; Taylor and Fowler (2006)) and a state average was calculated |
| Assistant School Principal | \$86,128                        | \$111,535                              | Median salary information (from salary.com) was collected for a diverse sample of districts. This data was adjusted for geographic wage variations using the Comparable Wage Index (CWI; Taylor and Fowler (2006)) and a state average was calculated |
| Guidance Counselor         | \$55,000                        | \$71,225                               | State average salary available from indeed.com                                                                                                                                                                                                        |
| School secretary           | \$39,180                        | \$54,460                               | State average salary available from indeed.com                                                                                                                                                                                                        |

\* Assumes a benefit rate of 29.5% applied to state average salary.

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## Endnotes

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