GRAY ASSOCIATES

Free Community College Planning

A Proposal for Assistance

Prepared for: Massachusetts Association of Community Colleges

Massachusetts Association of Community Colleges

October 2, 2023

Contents

Executive Summary

Free Community College (Free CC) is a bold initiative that promises to increase enrollment and reduce the cost of college in 31 states and at each of the 15 Massachusetts Community Colleges. When Massachusetts extends its Free CC program to people under 25, it should attract thousands of students and enable them to earn degrees and credentials that substantially increase their lifetime earnings, address employers' hiring needs, and enable economic growth. Enrollment growth may require increases in capacity in every function, ranging from faculty to financial aid, career services staff, classrooms, labs, and IT infrastructure. It may also require "catch-ups" to fix existing problems (e.g., faculty compensation) that limit capacity, access, or student success. Policy decisions will also affect the cost and benefits of a Free CC initiative.

Gray proposes to estimate the impact of Free CC on Student Demand for community college education by campus and academic program. We will draw on GrayData for over 70,000 U.S. census tracts, including population, demographic attributes, and student enrollment by academic program. Using GrayData, we will build models that predict the impact of Free CC. This work will draw on expertise and machine learning models that Gray has developed to predict enrollment for new campuses and thousands of academic programs. We will predict overall enrollment and break it down by academic discipline for each Massachusetts Community College and the State.

This local, discipline-specific detail is essential. Enrollment at some campuses or programs may decline despite Free CC, perhaps because the local population is falling. In growing towns, free CC might make campuses burst at the seams. Similarly, some academic disciplines may continue to decline despite Free CC, while Free CC may accelerate growth in others that are already full and struggling to hire faculty (e.g., cybersecurity). Higher-level estimates will tend to average out these differences, masking demand declines and growth that are likely to occur.

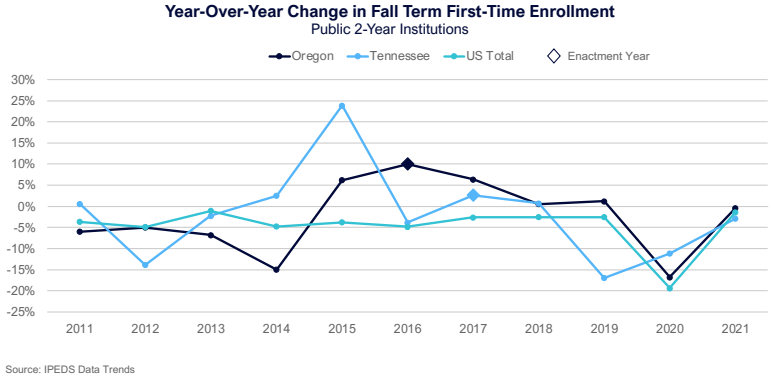
We will use Gray's Academic Performance software to document Current Capacity by campus, academic discipline, function, and facility type. Gray Performance will incorporate campus-specific data on faculty, compensation, course capacity and utilization, facilities, and support functions. It includes benchmarks for faculty loads, course size, and compensation by academic discipline and course level. This data will provide insights into the current state of community college education capabilities.

We will subtract Current Capacity from estimated Student Demand to determine Capacity Gaps by campus, academic discipline, function, and facility type. In addition, we will identify best practices that may be adopted to achieve Free CC's goals fully. In Gray's work with the Gates Foundation, we have learned the best practices for Institutional Transformation for Equitable Student Success – how to help underserved and minority students graduate from college. For the Foundation, Gray developed a model that enables colleges to estimate the cost of Institutional Transformation, which we will use to determine what the State should invest to ensure that Free CC students not only enroll but also successfully complete their education.

To fill capacity gaps, the colleges will need to pay enough to attract and retain qualified faculty to meet current and Free CC student demand. The compensation and recruiting challenge is likely to be most

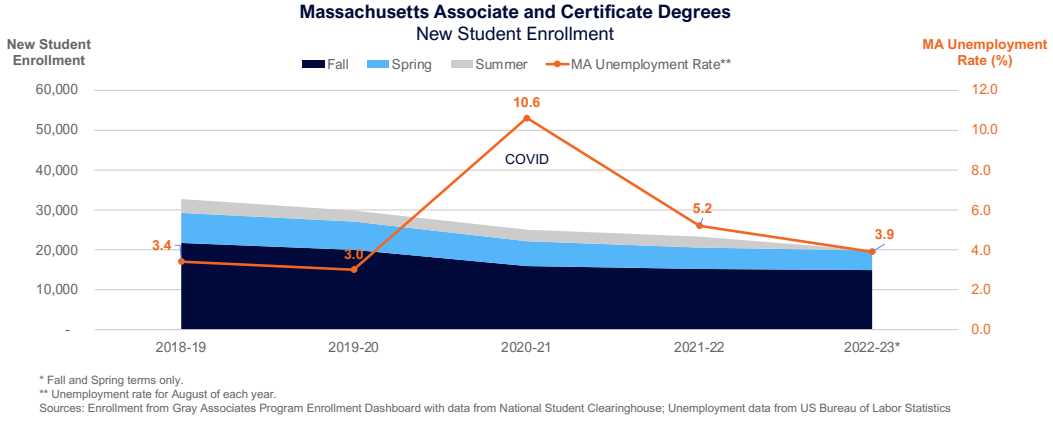
To fill capacity gaps, the colleges will need to pay enough to attract and retain qualified faculty to meet current and Free CC student demand. The compensation and recruiting challenge is likely to be most acute in rapidly growing fields, like cybersecurity, where commercial pay is high, employers want to hire graduates – and classes are already over-subscribed. Gray keeps detailed compensation data by occupation and degree level; we will also draw data from the National Education Association on community college faculty pay nationwide. This combination of commercial and faculty wages will provide objective data on the pay required to fill the gaps in faculty capacity.

A bold initiative like free CC is intended to achieve significant results. As shown in the chart below, very preliminary research suggests that the actual results in the states that have enacted Free CC are modest – and certainly were not helped by COVID.



Free CC policies, the college value proposition, and marketing messages need to be addressed to attract more students and achieve the underlying goals of Free CC. We will review the policies enacted in other states, compare the enrollment results and costs (as available), and interview state experts to identify successful and unsuccessful policies.

Closer to home, we will research the drivers behind the decline in enrollment in Associate and undergraduate certificate programs in Massachusetts (illustrated below). In our experience, enrollment closely tracks changes in unemployment; for example, through 2019 and again in 2021-22, the decline in the unemployment rate closely tracks the decline in Massachusetts Community College enrollment.



One barrier to enrollment may be the state's marketing and admissions funding and practices. We will review Free CC marketing in other states to identify successful practices that can be adopted in Massachusetts. Our marketing and admissions experts will review and identify opportunities to improve the admissions process.

Another barrier may be perceptions of the value of college in general and of Massachusetts Community Colleges. As a starting point, we will explore student-provided data on brand searches for each community college to determine the volume, market share, and location of searches for the college. As a starting point, we will explore the extent to which each college is part of prospective students' consideration set. In parallel, we will ask the colleges to give us permission to pull National Student Clearinghouse data on the schools your applicants consider and which schools they choose (if any). We will review existing surveys you may have and conduct a survey to assess the perceived value of Massachusetts Community Colleges, how Free CC may change the perceived value, and features (e.g., hybrid course delivery) that may enhance the appeal and impact of Free CC. If the models suggest that Free CC will fall short of its goals, we have proposed an optional survey to determine how to augment its value.

Though they receive state funding, the Massachusetts Community Colleges are individually accredited and somewhat independent entities. The Free CC plan must be accepted and implemented by the MACC Advisory Board, each of the community colleges, and the related unions to succeed. As we gather data and perform our analyses, we will review and refine the local results with each college President and other campus representatives they may wish to include. We will gather their observations on capacity gaps and carefully consider their policy suggestions. We expect this will require two rounds of meetings with each college. We also suggest meetings with the Advisory Committee approximately once a month. At the start of the project, these meetings will cover project plans and status. As the work is completed, they will cover our findings and draft recommendations.

Gray Associates has the right credentials for this work. Gray focuses its work exclusively on higher education. We understand the issues. We have invested time and money to build databases and develop analyses that will enable us to predict student demand, capacity, and gaps. We have compensation data and best practices that will be directly relevant to the success of Free CC. We have worked with most Massachusetts Community Colleges and met their faculty and leaders. We understand their commitment to educating our citizens, developing our workforce, and helping our economy grow. We are headquartered in Massachusetts and would be honored to help our state evaluate and plan for a successful extension of Free CC.

Free Community College Goals and Project Objectives

The Goals of MassReconnect

In launching MassReconnect, Governor Healey states that the program is intended to:

> *"...bolster the role of community colleges as economic drivers in our state and help us better meet the needs of businesses to find qualified, well-trained workers. We can also make progress in breaking cycles of intergenerational poverty by helping residents complete their higher education credentials so they can attain good jobs and build a career path. Our administration is grateful for the partnership of the Legislature to move forward on this critical program that will make our state more affordable, competitive and equitable."*

This message suggests that a successful MassReconnect program will substantially:

- Increase enrollment
- Improve access for minority and underserved communities
- Increase the number of graduates with the credentials and skills required by Massachusetts employers in current and emerging industries and occupations
- Contribute to the economic growth of the Commonwealth

For now, we assume the new Free CC initiative will have similar goals.

However, there are undoubtedly aspects of the Commonwealth's goals that we do not yet understand. We look forward to discussing the goals with you and incorporating your insights into our objectives and work plan.

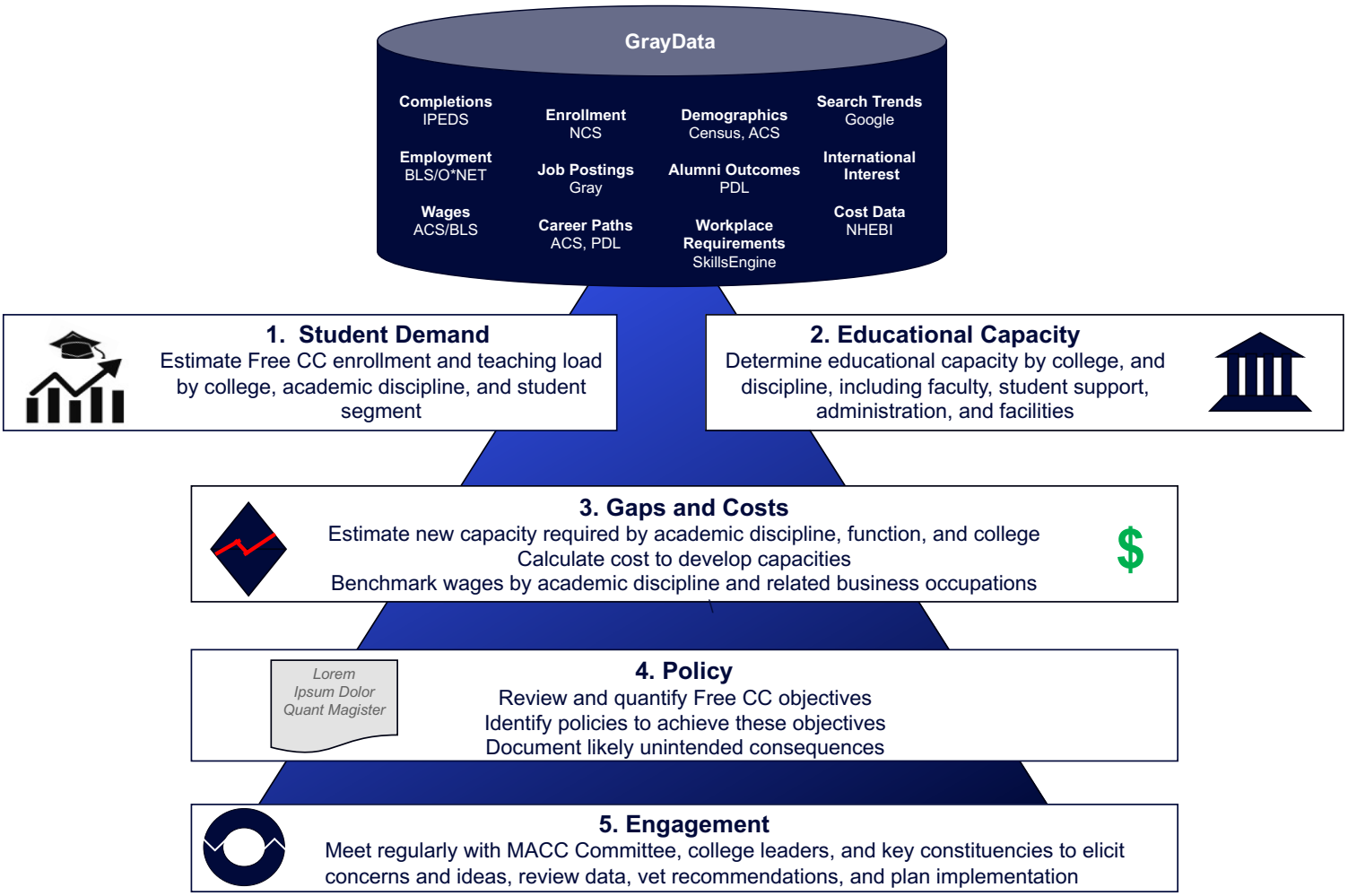
Project Objectives

As outlined in the RFP, our project objectives are shown below.

- Assess the current public higher-education landscape in Massachusetts and nationally to determine the potential impact of implementing free community college on access to higher education, workforce development, and economic growth
- Identify potential design and financial models to create and sustain a free community college program in Massachusetts
- Evaluate the administrative and logistical requirements for successful implementation
- Provide a range of recommendations on the design and execution of a free community college initiative, focusing on cost, associated policy and regulatory changes, and outcomes/impacts

Approach

To achieve the objectives for this project and the MassReconnect, Gray proposes an approach that leverages GrayData (our education market database), and our expertise in demand modeling, capacity analysis, policy development, and client engagement. This approach is pictured below and described on the following pages.



Approach

GrayData includes US Census data on 200 demographic variables and 70,000 census tracts. We augment the tract-level information with campus locations and data from the National Student Clearinghouse on enrollment by academic program and degree level. This data is the cornerstone of Gray's predictive models.

Student Demand: Gray's data scientists and machine learning models have accurately predicted enrollment for dozens of campuses and thousands of academic programs. Using GrayData, they will build models to predict Massachusetts Community College enrollment by campus and statewide, with and without Free CC.

- **Develop Baseline Prediction:** To estimate the effect of Free CC, you need to estimate what would happen without it. The impact of Free CC can then be added to the baseline. For example, enrollment in many community colleges has been declining; Free CC would have to offset this decline before it can drive enrollment growth. Using data from states that have not enacted Free CC, we will develop geo-demographic models that estimate baseline enrollment.
- **Estimate Incremental Enrollment:** We will model the results from states that have enacted Free CC to identify the demographic clusters it appeals to and the volume of new students it generates. We will analyze retention and completion rates to determine how they are affected by Free CC.
- **Combine Models and Run Them for Massachusetts:** We will run the Baseline and Incremental Enrollment models using Massachusetts demographics by census tract.
- **Summarize Results by College:** We will develop and document enrollment growth estimates for each Massachusetts Community College.

Educational Capacity: Gray **Program Economics** was built to track capacity and cost by campus, modality, credit hour, and academic program. We will use it to house and analyze current capacities, including faculty, student support, classrooms, labs, food services, other functions, and facilities. This system includes benchmark student-faculty ratios, faculty wages, credit hour loads, cost per student credit hour, and other data that we will use to estimate the baseline and required capacity and cost to support Free CC.

During this module, Gray will also research the current state of community college education in Massachusetts, using much of the same data, as well as interviews with relevant stakeholders.

Approach

Gaps: In effect, we will subtract the predicted enrollment from current educational capacity to determine "unit gaps" in capacity (e.g., the additional number of required full-time equivalent faculty or FTEs).

Costs: We will research the unit cost for each unit gap (e.g., the wages and benefits for a faculty FTE). For each gap, we will estimate the operating or capital cost (unit gap times unit cost) to close the gap.

Lorem Ipsum Dolor Quant Magister

Policy: Gray will review policies and results for each state that has implemented Free CC. We will interview experts and stakeholders in each state to understand their perceptions of the policies. We will compare policies with their impact on costs, enrollment, and student outcomes. We will identify policies that have been efficient and effective and those that have not achieved the goals of Free CC.

It is likely, given the ongoing enrollment decline in states with Free CC, that the promise of free college is not, on its own, enough to achieve the initiative's goal. Gray will conduct survey research to identify features that could enhance the Free CC value proposition. The survey technique (discrete choice) will enable us to estimate the effect on statewide enrollment for each value-added feature. We will also model the cost of these enhancements.

Engagement: To effectively develop and communicate the plan to the MACC Advisory Board and each college, Gray will facilitate meetings and conduct working sessions with the MACC board, each community college, and the related unions. As we gather data and perform our analyses, we will review and refine the local results with each college President, CFO, and other campus representatives they may wish to include. We will gather their observations on capacity gaps and carefully consider their policy suggestions. We expect this will require two rounds of meetings with each college. We also suggest meetings with the Advisory Committee approximately once a month. At the start of the project, these meetings will cover project plans and status. As the work is completed, they will cover our findings and draft recommendations.

Experienced Advisors: To engage at this senior level, Gray will assign professionals with decades of experience consulting to business executives, college leadership, and state governments. Each of our project leaders also has over a decade of experience using demographic and educational data to build models that predict enrollment, capacities, and costs.

Consistent with this approach, Gray will complete following tasks. The tasks are listed primarily in the order in which we plan to complete them and secondarily by the related element of the approach.

1. Conduct Kick-Off Meeting

Gray will plan and facilitate a kick-off meeting with the MACC Leadership Council. The meeting will cover the following topics:

a. Confirm Free CC and project objectives
b. Agree on project tasks, schedule, and responsibilities
c. Identify contacts at MACC and the colleges
d. Schedule monthly updates with MACC and the Presidents leading this effort

2. Model *Student Demand*

a. Assemble relevant data (demographics and enrollment)
   - States with no Free CC
   - States with Free CC
   - Massachusetts
b. Set up test and control databases
c. Develop and run Baseline Model
   - Screen geo-demographic variables for their predictive power
   - Transform variables, as needed, using Gray's known transformations (e.g., distance-weighting for demand variables)
   - Run machine learning models to identify optimal model(s)
   - Refine best-model
   - Document Baseline predictions and their accuracy, by state group (Baseline, with Free CC, Massachusetts)
d. Develop and Run Free CC model: Follow the process above to model and document the effects of Free CC in states that have adopted it and in Massachusetts.
e. Summarize the models and the predicted effect of Free CC on student enrollment in Massachusetts by college, academic discipline, and for the state
f. Analyze Massachusetts labor markets, by standard Occupation Code (SOC). Size current and predicted future labor market gaps for Associate and certificate-degree graduates.
g. Conduct meetings to review **Student Demand** estimates:
   - Review and refine Student Demand Presentation with MACC leadership group. Gain agreement whether predicted demand is consistent with the Commonwealth's goals and employer needs.
   - Refine presentation
   - Share findings with each campus President

2. Model Student Demand *(continued)*

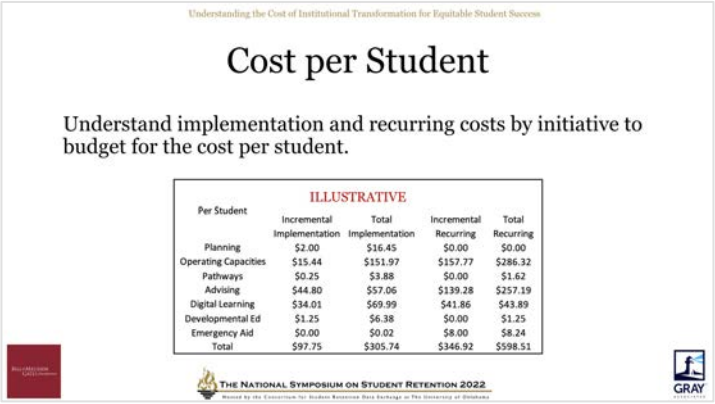
Enrollment in CC has fallen sharply and continues to decline. It is possible that Free CC will slow this decline, or even flatten it out, but fall well short of its goals of increasing equity and filling labor market needs. One of the proven ways to increase enrollment and graduates is to improve retention and graduation rates.

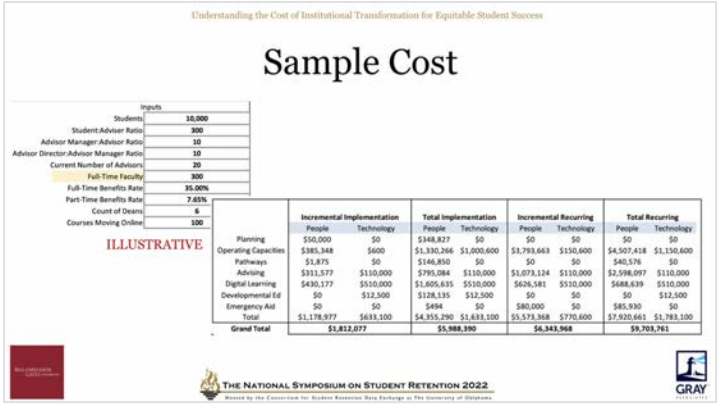
h. Best Practices for Student Success

Getting students into school is only part of the problem – getting them through school is another, especially for underserved students. Gray will summarize best practices and support required to enable underserved students to graduate. For this work, we will rely on retention research conducted by the Bill and Melinda Gates Foundation, Institutional Transformation for Equitable Student Success.

To estimate the cost of a student success initiative, Gray Associates will use the Cost of Transformation model we developed for the Foundation and have permission to share. The Transformation model will enable us to efficiently calculate the cost of improving completion rates, particularly for underserved students, for each college. Specific tasks include:

i. Incorporate costs of student support initiatives
   - Identify best practices
   - Model costs
   - Review and refine with MACC
   - Estimate incremental teaching and support costs required by Free CC





If Free CC and improvement in student success still fall short of the enrollment and graduation goals of the initiative, MACC may wish to identify options for improving the value proposition of Massachusetts Community Colleges and Free CC. Gray has a proven methodology for designing value proposition and quantifying the impact on enrollment. This approach is documented in the Appendix.

3. Assess Current *Educational Capacity* and the State of Community Colleges in Massachusetts

a. Gray will submit a data request to each community college (see Appendix 1). We will conduct one or more working sessions to explain the data request and answer questions from the institutions.

b. Gray will set up our academic economics software platform, **PES Economics**, for each institution and load their data as it is submitted.

c. Gray will work directly with leaders at each college to collect, clean, and validate the data before loading it into the model. Once loaded, we will then review the model data with them and make any necessary adjustments and refinements.

d. PES Economics will provide a rich array of dashboards, including current capacity by campus and academic discipline, including:

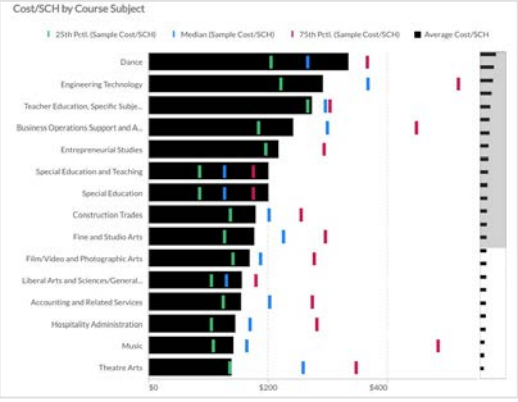
- Teaching loads and capacity
- Student Support
- Administration
- Facilities

e. PES Economics also includes cost and productivity benchmarks by academic discipline and course level. We will compare the MACC results with benchmarks to identify available capacity and shortfalls by discipline and campus.

- Analyze current teaching loads, course and section maximums, and fill rates

Course Code	Section Type	Section Capacity	Section Number	Students	Unused Seats	Student Credit Hours	Full-Time Cost	Adjunct Cost
UCHEM1515	Lecture	199	41308	199	0	852	$33,160	$0
UPSYC1560	Lecture	200	40192	196	4	801	$40,509	$0
UCHEM1515	Lecture	199	41309	195	4	856	$11,797	$0
UPSYC1560	Lecture	200	40187	193	7	759	$0	$5,386
UPSYC1560	Lecture	200	40184	192	8	849	$0	$4,614
UCHEM1516	Lecture	199	20244	189	10	804	$32,948	$0
UENST1500	Lecture	180	40117	179	1	744	$25,554	$0
UENST1500	Lecture	180	42633	177	3	774	$36,565	$0
MMUEN0006	Music Lessons	200	40346	167	33	205	$33,579	$0
UENST1500	Lecture	165	22037	164	1	621	$23,280	$0
UENST1500	Lecture	165	22036	157	8	612	$32,595	$0
UCHEM3719	Lecture	160	41381	153	7	628	$42,503	$0
UBIOL2601	Lecture	173	40018	148	25	692	$27,679	$0
UENST1500	Lecture	150	42752	145	5	567	$0	$1,360
USOC1500	Lecture	145	40197	142	3	630	$0	$6,076
UCHEM1510	Lecture	146	25685	138	8	584	$27,027	$0
UENST1500	Lecture	165	22500	138	27	504	$22,454	$0
UKSS1549	Practicum/ Clinical/ Internship	200	21481	138	62	159	$0	$1,194

- Compare MACC results with Gray's benchmarking data, including cost and productivity metrics by campus, academic discipline and course level



3. Assess Current *Educational Capacity* and the State of Community Colleges in Massachusetts *(continued)*

f. Identify latent facility capacity by comparing recent enrollment peaks with current enrollment

g. Request input from campuses on facilities issues and updates required to support potential growth and emerging educational requirements (e.g., labs for cybersecurity training)

h. Profile the current state of the Massachusetts Community Colleges:
- Summarize performance data from the Economics system, including enrollment volume, persistence, completions and completion rates.
- Compare performance with Gray benchmarks
- Analyze GrayData on Massachusetts labor market needs by SOC.
  - Determine size and growth of all major occupations, including number of job postings and related skills
  - Identify occupations and academic programs that have an above average job postings per graduate ratio
  - Calculate the number of skilled graduates needed to bring the job to graduate ratio down to healthy levels. In effect, this number is both a goal for Free CC and a soft ceiling on the number of graduates the colleges should aim to produce.

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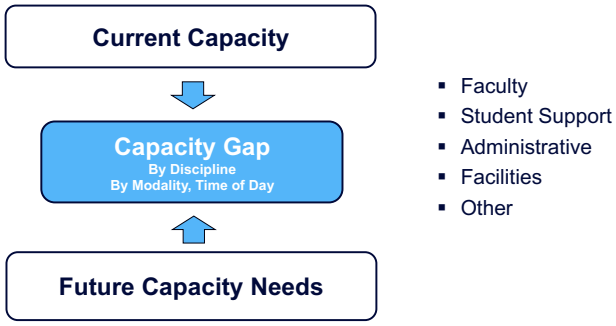
4. Identify Gaps and Costs

At the State level, total capacity may align with future Free CC enrollment (i.e., Free CC may offset recent declines); however, the mix of faculty and staff (and their wages) may be misaligned with future needs. To address this issue, Gray will assess capacity requirements and wages by academic discipline and campus, and estimate the funding required to attract faculty and develop facilities for high-demand programs (e.g., cybersecurity).

a. Using the results of the Student Demand and Educational Capacity models, we will identify "gaps" where Gray's predictions for Free CC enrollment will exceed extant capacities:
   - By college
   - By discipline, including emerging/high growth disciplines
   - For faculty and facilities



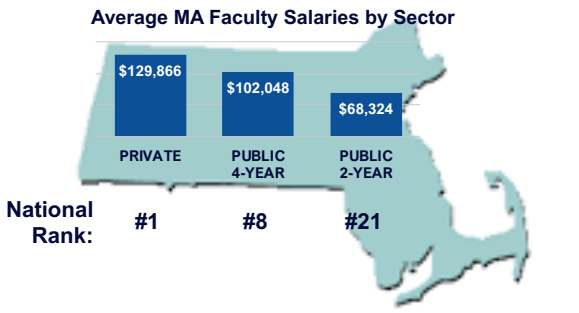
b. Benchmark Faculty Compensation *(see illustrative example below)*
   - Pull GrayData on faculty roles, pay, and benefits
   - Gather data from the National Education Association on faculty pay and benefits
   - Compare their compensation to faculty in other states and the private sector, by academic program and commercial occupation (SOC)

c. Identify needed adjustments to faculty compensation
   - Review faculty compensation and benchmarks with MACC
   - Identify and quantify costs of needed adjustments

Benchmarking Faculty Pay: Illustrative Example

Recent data from the National Education Association shows that average faculty pay at Massachusetts Community Colleges is $68,324. This is below the national average of $74,173 and ranks Massachusetts as #21 among all states. In contrast, average faculty pay at Massachusetts private colleges is the highest in the nation at $129,886, pay at the state's public 4-year institutions is the eighth highest in the nation.

Additionally, in high-demand fields such as computer science or cybersecurity, colleges compete for expertise with the private sector as well. Data from Gray's job postings database shows the average advertised salary for information security analysts in Massachusetts was $110,409, well over the average pay of a community college professor.



Source: National Education Association: NEA Higher Education Faculty Salary Analysis, April 2023.

5. Identify Best Practices in Marketing and Communication Strategies

Gray's subject matter expert will review marketing, communication, and admissions strategies used by other states (and MassReconnect), assess their effectiveness, and identify best practices applicable to Massachusetts.

a. Work with community college admissions and registration staff to document current processes, marketing channels, budgets, and messaging
b. Identify opportunities to simplify the processes and make them more accessible to prospective students, especially underserved students
c. Align objectives and processes across marketing and admissions

Marketing: Executive Summary

- Marketing Organization and People
  - Very lean organization that thinks and acts first as an internal agency; Client-services approach
- Marketing Strategy
  - Strategically very plans.
- Student Acquisitio
  - Very strong lead
  - Web, internal ar
  - Metrics/reports
- Marketing Comm
  - Creative team h
  - Lacking a PR str
- Program Manage
  - New and quickly opportunity
- The ability and ap university's Mark
  - A number of inc constraints

Marketing Strategy

Topic	Assessment	Comments	Quotes
Brand Positioning		Although visual identity guidelines exist, as well as a mission statement, no formal positioning work has been conducted. All senior leaders identify graduate employment as the heart of the institutions' mission and as what may potentially differentiate client.	"We have a lot of brand development to do starting next year." "We don't have a brand."
Messaging		No formal messaging research has been conducted. No understanding of which messages will motivate prospects and students through the "funnel". Reasonably good guesses show up in communications pieces but not consistently across all channels	"50 Years of Healthcare Education; Education for Careers; Focus on Jobs."
Competitive Insights		Limited reviews of competitive marketing activities take place, although not on a regimented, routine basis. Analyses should include: Share of Voice (SOV) (broadcast and web); review of competitive messages and creative; aggregator messaging; and competitive offers/promotions. No formal strategy or focus on employers as your primary customer.	"We conduct share of voice analysis from time-to-time but not on a regular schedule – same with creative reviews."
Marketing Intelligence		Very limited knowledge base and virtually no research. Demographic information, beyond male/female split, is not well understood or utilized. No formalized process to assess specific program awareness/understanding in a given market. Segmentation is minimally utilized (i.e., HS and Military). No formal way to assess perceptions of the brand by market or as a whole.	"We don't h… …nic reports, but I think the data is availabl… …e". "We desperately need to conduct res… …s why we are glad to be able to work with …s down this path."
Customer Profitability		Student profitability by program / campus is unknown or not … and is not considered when making marketing decisions (… CPS levels; differentiated CPS by program or core/clinica…	"It would be ideal to determine marketing spend based around student profitability, but we don't have that information today."
Customer Satisfaction		Net Promoter Scores for current students are not measured nor utilized (for potential marketing claims and retention improvements). Alumni satisfaction (if high) and testimonials can be valuable marketing levers. Employer satisfaction surveys are necessary for program evolution.	"We do track student satisfaction with their programs – but why would that be within the scope of your analysis?"
New Program Launches		Program feasibility studies are evidence-based, but no research is conducted for program awareness / understanding prior to marketing launch – therefore, the "standard" marketing approach may not be successful and does not allow for any customization by market.	"I don't believe we know how to market for new programs – especially for those that are not as easy to understand as nursing."
Campus Location Selection		Campus location studies are evidence-based, but orchestrated marketing planning for a new campus launch is not fully present. Marketing planning for the new Online Campus has not been conducted / completed.	"We do not have a formal marketing plan for new campuses – to ensure that we are spending appropriately prior to the campus opening."
Local Market Knowledge		Informal data collection from Campus leadership does take place but is often not acted on as it is based primarily on opinions without data.	

ILLUSTRATIVE

6. Policy: Assess the effectiveness of policies launched in other states

a. Interview MA stakeholders to establish a clear and shared understanding of the goals and objectives of Free CC in Massachusetts. Solicit their ideas, pinpoint concerns, identify potential constraints or roadblocks.
   - The following is a preliminary list of leaders we would like to interview. We will work with the MACC working group to review and refine this list at the beginning of the project:
     - Massachusetts Community College presidents and senior administrators
     - Legislative leaders (or their representatives)
     - Faculty and union leaders
     - Other relevant stakeholders identified by MACC

b. Identify policies (e.g., what people and programs are eligible for Free CC) and document how they vary by state (see illustrative example below).

State	Full Funding Through State Legislature	Financial Support Beyond Tuition	Eligibility Requirements and Conditions	Program Requirements or Emphasis
Michigan	X	▪ Last dollar program ▪ Limited, one-time additional support available	▪ Age 21+ ▪ Must be continuously enrolled (at least 2 semesters for at least 6 credits) ▪ Must maintain a minimum cumulative 2.0 GPA ▪ Provides funding for up to four years	▪ No requirements; all programs of study are funded
Rhode Island	X	▪ Last dollar program ▪ Does not cover course materials	▪ Age <19 at time of enrollment ▪ Must enroll full-time (at least 12 credits) ▪ Must earn 30 credits/year ▪ Must maintain a minimum 2.5 GPA ▪ Provides funding for up to two years	▪ No requirements; all programs of study are funded
Colorado	X	▪ Last dollar program ▪ Covers course materials	▪ Any age ▪ Must enroll in at least 6+ credits ▪ Must meet eligible financial aid SAP ▪ Provides funding for up to two years	▪ Programs aligned to 7 industries (where significant workforce shortages exist) are funded (e.g., education, early childhood education, nursing, law enforcement, firefighting, forestry, construction)

c. Interview 10 experts with in-depth knowledge of free community college programs. (As noted in the RFP, this work might include travel with the MACC team for in-person meetings and site visits as appropriate.)

d. Using our models and other data, gauge the effectiveness of the policies. In particular, assess whether Free CC alone will achieve the goals of the Massachusetts Free CC initiative.

e. Document costs, benefits, and risks of the policies

f. Outline policy recommendations for Massachusetts

g. Evaluate potential unintended consequences, for example, cannibalization of public 4-year college enrollment, declines in persistence or graduation rates, worsening worker shortages in the near term (while workers go back to school), enrollment increases in low-priority segments (e.g., affluent families), and unemployed graduates (e.g., if the economy goes into a recession).

h. Review and refine the draft policies with the MACC advisory team, community college presidents, and other stakeholders you may suggest

i. Develop summaries describing the recommended policies

7. Engagement and Support

a. **Engagement:** Gray will meet regularly with MACC Committee, college leaders, and key constituencies to elicit concerns and ideas, review data, vet recommendations, and plan implementation.

b. **Ongoing Access** to Gray Software: Each community college will maintain access to Gray's customized software modules (PES Markets and PES Economics) developed for this project for one year from the start of this project.

- **PES Markets:** The underlying data and analytics used for our Student Demand estimates is contained in Gray's Program Evaluation System (PES) in the Markets module. We will provide each community college with access to PES Markets, customized to their specific geographic markets.

  It is important that the colleges have a voice in choosing academic programs to start or grow to meet state needs and the growth from Free CC. Accreditors usually require that faculty have the primary responsibility for program decisions. Gray will teach the colleges how to use PES Markets to identify in-demand programs to start or grow, so their choices can inform and align with the findings of the Free CC project (see below, Training and Support).

- **PES Economics:** As mentioned above, the capacity models built for this project will be developed at the college level using Gray's PES Economics software platform. Gray will provide each college with access to the data and dashboards for their school. This will allow the colleges and the state to assess capacity utilization, performance, and outcomes after the project is complete.

c. **Training and Support:** Our Customer Success team will help college leaders and representatives use the systems for the Free CC project and in their on-going program review and management processes.

- Training Workshops: We are available to conduct workshops with college leaders (in groups of 3-4 colleges each) to teach them how to use PES to identify market requirements for new programs, growth opportunities, and possible stranded capacity (unfilled seats in low-demand programs).
- Our Customer Success team will provide Office Hours to help deans and other college leaders to use PES Markets to identify growth areas likely with Free CC.

Deliverables

Gray will provide the following deliverables:

Draft Report: The content of Gray's draft report will depend on when the project is awarded and the ability of institutions to meet with us and provide requested data. At a minimum, the draft will include:

- An analysis of the Massachusetts Community Colleges market positions:
  - Employer needs by program and occupation, including high growth occupations, graduates to job postings ratios, education requirements and wages
  - Student interest and enrollment by program
  - The Community Colleges position within these markets, including share of Google search volume, share of enrollment, and program alignment with employer needs
- Preliminary Free CC policies and results in other states (interviews with experts from the states may still be underway)
  - What worked
  - What did not
  - Semester-to-semester and year-over-year changes in enrollment (not the results of the models described above)
  - Student outcomes
  - Impact on completions to jobs ratios
- Results of capacity analyses for institutions that have submitted their data
- Project status and next steps

Final Report: Gray will deliver a final report with recommendations for free community college models in Massachusetts. This will include:

- Estimates of student demand by college and discipline, refined to include value elements identified by prospective students and student supports identified by college presidents
- The costs of implementing MA Free CC, including any increases in faculty (and associated staff) counts, faculty mix by discipline, and compensation.
- Potential unintended consequences of Free CC as it relates to other higher education sectors in the state, workforce impact, and other considerations surfaced during this work
- Recommendations for streamlining admissions processes and communication strategies

Software Access and Training for Massachusetts Community Colleges

Project Management and Timeline

As noted in the RFP, we will schedule regular (at least monthly) meetings with the MACC working group and other stakeholders to maintain continual communication throughout the project and provide regular reviews of work status, models, and policy findings.

These meetings will be critical to ensuring that the project work and findings are shared, discussed, and validated throughout the engagement. This also allows for continual input and guidance from the MACC team regarding potential policy issues or impacts that may surface along the way and be material to the final recommendations.

Please see the following page for a preliminary timeline of project modules and major tasks.

We will review this timeline with the MACC working group at the onset of the project and throughout the engagement and make adjustments as necessary. Of note, timely receipt of student and faculty data from the community colleges will affect the schedule for our work. Reasonable delays should not affect the cost.

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Project Management and Timeline

The dates below assume contract approval by October 15, 2023.

The dates below assume contract approval by Oct 15, 2023

Project Module and Major Tasks	Responsibility	Oct 2023	Nov 2023	Dec 2023	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024
Engagement and Support, Project Management, Milestones											
Conduct Kickoff Meeting	Gray/MACC/CCs										
Conduct regular check in meetings	Gray/MACC										
Submit draft report	Gray			12/15/23							
Deliver final report and recommendations	Gray							4/30/24			
Conduct follow-up presentations and meetings	Gray/MACC										
Provide access to PES Markets to all CCs	Gray										
Provide access to PES Economics to each CC	Gray				3-4 colleges per month, as data is submitted and reviewed by colleges						
Train and support users	Gray/CCs										
Model Student Demand											
Assemble and load relevant data (e.g. test and control sets)	Gray										
Develop and run Baseline Model	Gray										
Develop and Run Free CC model	Gray										
Estimate incremental enrollment from MA Free CC	Gray										
Analyze Massachusetts labor markets	Gray										
Conduct meetings to review Student Demand estimates	Gray/MACC/CCs										
Summarize and share Best Practices for Student Success	Gray										
Assess Current Educational Capacity and the State of Community Colleges in Massachusetts											
Submit data requests to 15 community colleges	Gray										
Receive data from colleges	CCs				some colleges likely to be delayed						
Clean and validate data with college leaders	Gray/CCs										
Load data into Capacity models	Gray										
Review and refine data with college leaders	Gray/CCs										
Model current capacity by college	Gray										
Model future capacity requirements of Free CC	Gray										
Review and refine model results	Gray/MACC/CCs										
Identify Gaps and Costs											
Estimate additional capacity required for Free CC	Gray										
Benchmark faculty compensation	Gray										
Identify needed adjustments to faculty compensation	Gray/MACC										
Estimate incremental teaching costs	Gray										
Incorporate costs of student support initiatives	Gray/MACC										
Review and refine capacity and cost estimates	Gray/MACC										
Communication and Admissions Strategies	Gray										
Policy: Assess the effectiveness of policies launched in other states											
Research and summarize existing free college policies	Gray										
Interview MA stakeholders	Gray/MACC										
Interview policy experts	Gray/MACC										
Gauge effectiveness and applicability to MA	Gray										
Document costs, benefits, and risks of the policies.	Gray										
Outline policy recommendations for Massachusetts	Gray										
Evaluate potential unintended consequences	Gray										
Review and refine the draft policies	Gray/MACC/CCs										
Develop summaries describing the recommended policies	Gray/MACC										
Optional Tasks:											
Brainstorm, screen, and evaluate new features of Free CC	Gray										

Professional Fees: Professional fees for this work will be $785,500.

Invoicing Schedule: Gray will invoice for this project according to the following schedule:

Invoice Schedule	Percent of Professional Fees
Upon acceptance of this proposal	$215,000
Monthly for months 2 - 7	$75,000
Monthly for months 8 - 10	$25,000
On completion of project	$45,500

Sales Tax: In addition to fees, Gray is required to remit tax on certain products and services in each state. If MACC, or contracting entity Bunker Hill Community College, is tax-exempt, please send us your tax exemption certificate with the signed agreement.

Expenses: In addition, Gray charges for expenses, primarily travel, as they are incurred. Expenses will not exceed 15% of fees; since this is a local project, our expenses are likely to be much less.

***Optional Value Proposition Enhancement Research*:** $100,000

Qualifications: About Gray Associates

Founded in 2002, Gray Associates (Gray) is a software and services firm focused solely on higher education. We are headquartered in Concord, Massachusetts and have extensive experience working with colleges and universities in the state, including most of the Commonwealth's community colleges. We gather data, build systems, and facilitate processes that help institutions and state systems develop programmatic, marketing, and institutional strategies to drive enrollment and revenue growth while optimizing outcomes for students, the institution, and its constituents.

Gray has worked with over 250 higher-education institutions over the past five years, including public and private colleges and universities, community colleges, and trade schools.

Gray is uniquely suited to perform this work. We have, in hand, the best available data on higher education markets, including student demand, employer needs, and competition. We have years of experience using this data to build machine learning models to predict enrollment by program and market. We have developed systems to capture capacity data and benchmarks to evaluate capacity utilization. We understand community colleges in general and have worked with most of the community colleges in Massachusetts. We perform high quality research on issues, opportunities, and policies in higher education. Our project leaders have decades of experience managing large projects, working on state policy issues, engaging with stakeholders, and delivering projects, on-time and on-budget, that delight our clients.

Academic Program Evaluation: Gray provides the only academic Program Evaluation System for higher education: PES. PES powers enrollment and demand modeling, and program evaluation and analysis. By combining PES software, data, and facilitated processes, it enables institutions to make data-informed program decisions that strengthen relationships among faculty and administrators. Unlike labor market data providers, PES includes data at the census track level, current, local data on student demand, plus jobs, skills, and competition for over 1,500 academic programs, not just those advocated by institutional stakeholders. PES corrects profound errors in many widely-used higher-education data sources. For example, IPEDS reports several hundred thousand online completions in the wrong states – the headquarters location of the institution; Gray puts them back in the markets where the students live. PES also provides easy-to-understand dashboards that use internal data to calculate program economics and track academic performance and diversity. PES enables collaborative, data-informed program evaluations that increase enrollment and strengthen financials.

Qualifications: About Gray Associates *(continued)*

Economic Modeling: Gray understands and can model costs using our PES Economics tool. We will track revenue, discounts, costs, and margins by academic department, program, course, section, and student segment (including gender, ethnicity, and athletic participation). This system also includes detailed benchmarking information on costs by program, department, and core subject and level (e.g., the cost to teach 100-level English). The benchmarking data comes from over 40 institutions (including many small independent colleges), thousands of programs, and tens of thousands of courses. PES Economics also tracks overhead costs, such as administration, marketing, admissions, student services, sports, and other functions.

Admissions and Communication Strategy: Gray works with colleges and universities across all sectors of higher education to optimize marketing resources and strategies. One of the core project team members, Russ Natoce, is an expert in marketing online programs. He has over 15 years of experience marketing higher education programs to diverse audiences. This experience includes five years running marketing and admissions for NCU, where he recruited over 2,000 new students per year. Gray also provides GeoTargeting software to identify high-performing markets for admissions and recruiting investments.

Qualifications: Experienced Advisors

Gray's team has years of experience in the education industry. Our Partners and Analysts have an in-depth understanding of industry data sources and their strengths and weaknesses. We also have experience informing and facilitating program choices for colleges, universities, and trade schools. This work ranges from researching one program in one market to national program analysis, and the type of broad portfolio planning envisioned in this proposal.

Project Lead

Bob Atkins, Founder and CEO: Bob will lead this project and be responsible to MACC for the quality of our work. Bob led Gray's entry into the higher education industry and the development of Gray's proprietary industry databases and service offerings. He has worked directly with many of Gray's education clients, consulting with Presidents, CAOs, and CMOs on institutional strategy, pricing, location selection, curricular efficiency, and program strategy.

Bob is the author of *Stop, Start, or Grow? A Data-Informed Approach to Academic Program Evaluation and Management*. Bob received an MBA, with honors, from Harvard Business School and a BA, magna cum laude, from Harvard College.

Policy, Stakeholder and Client Engagement

Mary Upchurch, Senior Partner: Mary Upchurch, Senior Partner. Mary will be the primary liaison with state leaders, stakeholders, and community college presidents. Mary leads Gray's relationships with many of our largest institutions, including state-wide systems. Her work includes institutional strategy development, market location, and program portfolio analysis. She specializes in facilitating the critical engagement processes needed to support various governance models, key stakeholders and ensuring transparency of process for institutional alignment and success.

Mary's background includes more than 25 years of management experience with AT&T, where she led Consumer Strategy and key positions in Product Marketing, Operations, and Customer Care. She was named AT&T's Catherine B. Cleary "Woman of the Year."

Ms. Upchurch currently chairs the Advisory Board of Arizona State University's Morrison Institute for Public Policy. She is a member of the Board of Directors of Fresh Start Women's Foundation and its Nominating & Governance Committee. She also served two terms as its board chair. Mary is a member of Charter 100 Arizona, and is a past member of Greater Phoenix Leadership, serving as co-chair of its P-20 Education Committee.

Mary holds a Master of Science in Management degree from Purdue University and a Bachelor of Arts in Organizational Communications from Rollins College, graduating with high honors.

Analysis and Modeling, Quality Review

Steve Probst, Senior Partner: Steve will oversee the analysis and modeling, as well as the Quality Review. He has worked with more than 100 higher education institutions, bridging the perspectives of faculty, administrators, trustees, and other stakeholders. He leads engagements with colleges and universities to assess current and identify new academic programs, evaluate potential new geographic markets and campus locations, improve curricular efficiency, and address other strategic, enrollment, and financial challenges. He uses distinctive skills in creating, interpreting, and helping decision-makers use data about student demand, employment outcomes, competition and trends at other institutions, and instructional economics to reach shared understandings of their situations and agree on important decisions.

Before joining Gray Associates, Steve consulted in the motor vehicle and transportation industries, and on supply chain management strategy in other industries. This work included engagements in Europe and Asia as well as North America, and related work in management training and as an interim executive at client companies.

Steve has a Masters in Management, with Distinction, from Northwestern University's Kellogg Graduate School of Management, and a bachelor's degree from M.I.T.

Project Management, Modeling, Analysis

Pete Starrett, Senior Partner and Chief Product Officer, Economics: Pete will manage this project (with Elizabeth Atkins) on a day-to-day basis and oversee the enrollment and capacity modeling. He has extensive experience with project management, software application development, and modeling.

Pete developed Gray's Program Economics and has worked extensively with colleges and universities to model and analyze their academic economics, including revenue, cost, and margin by department, program, course, and section. He also brings experience with capacity analysis and acquisition models. Other work in higher education includes marketing, operations, program, and location strategies for on-campus and online institutions.

Pete holds a Bachelor of Arts in Economics from Harvard College.

Elizabeth Atkins, Principal: Elizabeth will co-manage this project (with Pete Starrett) and will also oversee the Analyst team. As a principal at Gray, Elizabeth has worked with over two dozen clients on projects including Program Portfolio Strategy Workshops, Program Economics, Curricular Efficiency, pricing and location modeling, and custom competitor and program analyses. Internally, she contributes to RFP submissions, leads analyst recruiting, hiring, and onboarding, and designs and develops data dashboards.

She graduated with Honors from Georgetown University with Bachelor's degrees in French and Economics. Elizabeth joined Gray in June 2018 after spending two years teaching high school math at a New Orleans charter school.

Policy Research

Elaine Rowles, Principal and Director of Research: Elaine will focus on researching and analyzing free college policies in other states. Elaine has worked with Gray's education clients on strategic planning projects, educational master planning, program portfolio evaluations, program feasibility studies, price benchmarking, and other research-intensive project work. She performs in-depth analyses of existing programs and institutions and manages our research on new and emerging program opportunities. Prior to joining Gray, Elaine worked as a management consultant, research specialist, and writer.

Elaine earned a Bachelor of Arts in History, with Honors, from Dartmouth College.

Data Modeling and Analysis

David Fox: Senior Data Scientist: David has spent 18 years in data science and machine learning roles, working with both structured and unstructured (natural language) data. He has built predictive models using job histories as well as local economic and health data published by the Census Bureau, the Centers for Disease Control, and Department of Health and Human Services.

David came to Massachusetts to earn a Ph.D. in physics from Harvard University (2001) and has stayed in the Boston metro area ever since.

Youssef Aljabi, Data Scientist: Youssef develops predictive models for Gray's clients, including enrollment and revenue forecasting and campus location selection. In addition to client-facing projects, Youssef leads efforts to improve Gray's data infrastructure and quality, builds data dashboards, and coordinates company cyber security measures. Youssef's background is in data science, business strategy, project management, and finance. He is passionate about the intersection of business, technology, and leadership, and believes problem-solving often relies on their synthesis. Prior to joining the Gray team, Youssef worked with ELEVIN Solutions as a consultant to help an early phase startup achieve traction. He has participated in advised research projects including analysis of stocks and dividend data, analysis of textual data (NASDAQ press releases), Human Computer Interactions (HCI) research, and Inverse Reinforcement Learning modeling.

Youssef holds a dual Bachelor of Science degree in Applied Data Science Analytics and Management Information Systems from Chatham University and a Master's in Business Analytics from Brandeis International Business School, both summa cum laude.

Admissions and Marketing Strategies

Russ Natoce, Marketing and Admission Expert: Russ will focus on advising and assessing the admissions and communication processes and suggest strategies for streamlining processes. With decades of experience in Marketing and Communications, he began his career at AT&T where he specialized in Marketing and Product Management. After over 20 years at AT&T, he continued to expand on his marketing and sales roles in Telecom and Technology companies (Qwest, AOL). In 2008 Russ began his higher education career working at several for-profit institutions as Chief Marketing Officer. At Northcentral University he was responsible for both Marketing and Enrollment organizations and successfully launched nearly 45 new Master's and Doctoral programs.

Support Team

Experienced Analysts: Gray's team of experienced Analysts will assist with all modules of this work. Team members will be determined based on relevant expertise and availability at the time of project approval.

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Qualifications: References

Massachusetts Bay Community College
Contact: Dr. David Podell, President
Email: dpodell@massbay.edu
Phone: 781.239.3101

North Shore Community College
Contact: Dr. William Heineman, President
Email: wheinema@northshore.edu
Phone: 978.762.4000

Bill and Melinda Gates Foundation
Contact: Matthew Crellin, Program Officer
Email: matthew.crellin@gatesfoundation.org
Phone: 202.662.8130

Berkshire Community College
Contact: Kierstyn Hunter, former VPAA (currently Senior Optimization Executive at CampusWorks)
Email: khunter@campusworksinc.com
Phone: 206.715.9156

Appendix

Value Proposition Enhancement Research

PES Economics Data Request

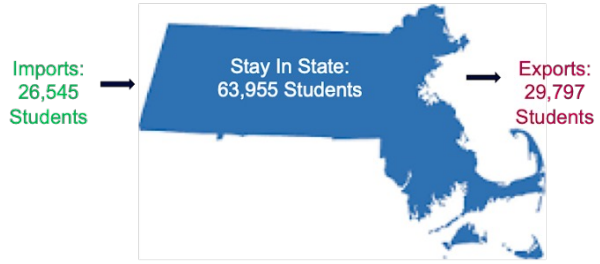
Gray Associates Terms & Conditions

Price alone may not be the only thing students consider when deciding if and where to enroll in college. What, if any, policy elements besides free tuition (e.g., textbooks, childcare, access to fully online/hybrid programs, support for student living expenses) enhance students' propensity to enroll in Massachusetts Community Colleges with Free CC?

As an example, the availability of online programs is often an important consideration for students of all ages. NC-SARA data shows that almost 30,000 Massachusetts students enrolled in online programs (across all award levels) at out-of-state institutions in fall 2022. Their tuition dollars flow out of Massachusetts, but their student debt remains in-state.

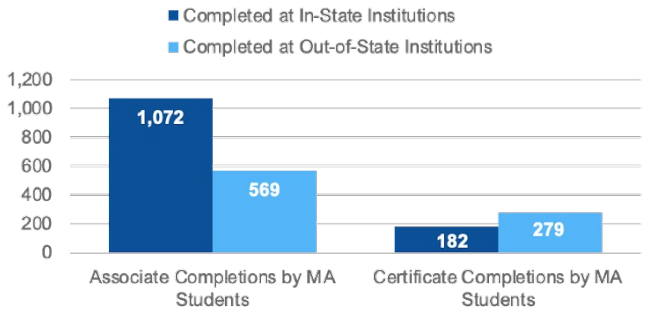
Further, Gray estimates that 569 Massachusetts students completed associate degrees online at out-of-state institutions in 2021. An additional 279 students completed online certificate programs out-of-state. Based on typical retention and graduation rates, this represents potentially thousands of Massachusetts students who have demonstrated they are willing to pay a premium to access desired programs online.

Online Enrollment by MA Students and MA Institutions
Fall 2022 - All Award Levels



Source: NC-SARA data dashboard; https://nc-sara.org/data-dashboards

2021 Online Completions By MA Students
By Institution Location

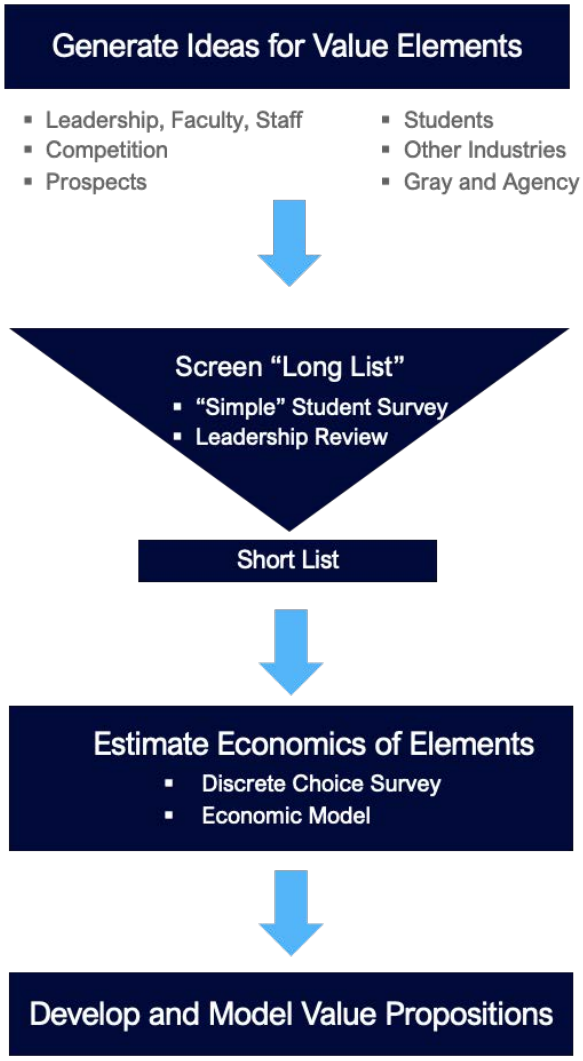


Source: Gray Associates Program Evaluation System: Markets module

Understanding the factors most important to prospective students when deciding to enroll - or not to enroll - in higher education will allow Massachusetts to craft a free community college program that effectively addresses potential barriers to enrollment and increases access across student segments.

Value Proposition Enhancement Research

Gray will conduct a Discrete Choice experiment (using email addresses of students who contacted the colleges) to identify and screen value elements most important to applicants and prospective students and quantify their effect on enrollment if included in a free college program.



- Identify: The Discrete Choice survey will incorporate the research on other states' free college programs and ideas generated in discussions with Massachusetts stakeholders and policy experts to identify a range of potential elements of value to be tested.
- Screen: The first phase will test these potential value elements with past applicants and prospective students, determine their relative importance and surface the few elements most important in enrollment decisions.
- Quantify: The second phase will test the most salient value elements from the screening process and estimate the impact of each on enrollment as part of a free college policy. In effect, this survey will also cross-check the results of the demand models.

PES Economics Data Request: Overview

Gray will submit a data request to the 15 community colleges to analyze current capacity and model future capacity requirements and costs. The data request is included here and on the following pages for reference.

Instructions
Include data for the most recent 3 Fiscal Years
Hash all student IDs and personnel IDs; save ID crosswalks internally
For documentation purposes, please provide the code/queries used to generate each file in a text file, and note the system being used
For future year updates, please plan to provide the same file name structure, including tab names. For instance, "Course Data 2022", "Course Data 2023", etc.
Please match the field names as Gray has provided, formatted in all capital letters with underscores instead of spaces between words

Files Requested
Course Data
Personnel Link
Student Link
Student Enrollment Information
Student Charges and Discounts
Personnel Compensation
Departmental Expense
Organizational Table

Additional Information
You will see a key symbol throughout the data request. This symbol indicates that the noted fields will be used to link different files. The indicated fields must match **exactly** across files for the system to be built.
If any of the information requested is easier to provide in more files than outlined, the key fields must be included in all files.

PES Economics Data Request: Student Data

Student Enrollment Data: Provides student-level enrollment details			
Field	**Description**	**Example(s)**	**Additional Information**
STUDENT_ID	Hashed, unique student ID that is not personally identifiable information	1020304	As indicated by the key symbol, the Student ID will be used in combination with the term_code as a link to associate student enrollment information to their course enrollment and Student Billing files. Please indicate whether the link to Billing and/or Grant files will be by term or by year.
TERM_CODE	Code for combination of year and semester	2021FA ; 202101	
STUDENT_LEVEL	Freshman ,Sophomore, Junior, Senior, Masters, Doctoral, Other	FR; Freshman	
ENROLL_STATUS	Enrollment status of student by term	PT; Part-time	Indicate part-time or full-time
AWARD_LEVEL	Award level of degree pursued, ie Associate, Bachelor's, Master's, Doctoral	A; Associate	
DEGREE	Specific type of degree pursued, ie BA or BS	BA: Bachelor of Arts	
PROGRAM	Program title. If undecided, indicate as such.	Accounting	
PROGRAM_CODE	Unique code associated with enrolled program	ACC	Please verify whether the Program Code will match the Grad Program Code.
CIP_CODE	IPEDS-reported program code	52.0301	
CONCENTRATION	Program concentration, if applicable	Risk Analysis	
SECONDARY_PROGRAM	Program title of secondary program, if applicable	Management	If a student is enrolled in a secondary program, please provide the secondary program as an additional field and not as an additional line of student information.
MINOR	Minor title, if applicable	Spanish	If a student is enrolled in multiple minors, please create additional fields of MINOR_2, MINOR_3, etc. as needed.
PELL_STATUS	Indication as Pell/Non for whether student received Pell grant	Pell; Non	
GENDER	Identified gender of student	M; Male	Provide as reported to IPEDS
RACE	Identified IPEDS race/ethnicity category of student	W; White	Provide as reported to IPEDS: Asian, Black, Hawaiian/Pacific Islander, Hispanic, International, Multi, Native American/Alaskan, White, Unknown
AGE	Age of student	34; Under 25; 1/1/1990	Age information can be provided in three forms: exact year of age, age groups, or date of birth. Please avoid duplicate lines if a student's age changes during a term.
GPA	Term-to-term GPA	3.4	
OTHER_DEMOGRAPHIC	Provide any further student demographic information		Examples: Student Athletic team, First-Generation Status,
START_TERM	First term student enrolled at the institution	2021FA ; 202101	Provide Term Code of first semester student enrolled
ENTRY_STATUS	Status of student upon entry, ie first-time, transfer	First-time	

Student Completion Data: Provides all degrees and certificates awarded			
Field	**Description**	**Example(s)**	**Additional Information**
STUDENT_ID	Hashed, unique student ID that is not personally identifiable information	1020304	As indicated by the key symbol, the Student ID will be used in combination with the term_code as a link to associate student enrollment information to their course enrollment and Student Billing files. Please indicate whether the link to Billing and/or Grant files will be by term or by year.
GRAD_TERM	Term student completed course of study; Code for combination of year and semester	2021FA ; 202101	Please provide in the same format as the TERM_CODE field the term of student program completion
GRAD_GPA	Cumulative GPA at graduation	3.4	
GRAD_PROGRAM_CODE	Code for program student completed	ACC	Please verify whether the Grad Program Code will match the Program Code.
GRAD_DEGREE	Specific type of degree obtained, ie BA or BS	BA: Bachelor of Arts	
DEGREE_SEQUENCE	If a student has obtained more than one degree or certificate, indicate the order in which they were received	1, 2, 3	Please provide all degrees and certificates awarded

PES Economics Data Request: Course Data

Course Data: Provides section-level descriptive information

Field	Description	Example(s)	Additional Information
COURSE_ID	Unique course-section identifier or CRN	ACC-201-1A; 50105	As indicated by the key symbol, the combination of course ID and term code should identify a unique section of a course offered in the term and year indicated, and will be used to associate student course enrollment and instructor course load. All course-section-term-specific information requested in the Course Data file should be associated with this unique combination.
TERM_CODE	Code for combination of year and semester	2021FA ; 202101	Please verify the type of year captured in the term code - calendar, academic, or fiscal
CROSS_LIST_CODE	Cross-listing code used to identify course-sections that have different Course_ID codes but are taught together by the same instructor at the same time	1Z	Single identifier used for all sections of courses that are taught together, to allow potentially unique course IDs to be associated with each other. For example, "1Z" would be used to identify that both the undergraduate course of ACC-401 and the graduate course of ACC-601 are taught as a single section. This identifier will be used to associate the instructor(s) with the appropriate number of sections taught, regardless of how students may be enrolled in the course. In addition to formally cross-listed courses, cross-list codes should also be assigned for any other course sections taught together by the same instructor at the same time (such as Studio Arts 1 and Studio Arts 2).
SECTION_ID	Section ID	1A	Please indicate if section_id is required in addition to course_id to identify unique sections of a course.
COURSE_SUBJECT	Content subject of course	ACC; Accounting	If course subjects are provided as abbreviations, please provide a crosswalk of abbreviations to the full title.
COURSE_NUMBER	Number of course	101	Course number typically identifies the level of the course offering as well as the specific course (but not the specific section)
COURSE_TITLE	Title of the course	Introduction to Accounting	
SECTION_TYPE	The component type of the section, ie Independent Study or Lab	LEC; Lecture	If section types are provided as abbreviations, please provide a crosswalk of abbreviations to the full title.
CREDIT_HOURS	Number of credits for the course	3; 0-2	Single unit entry preferred; variable-credit definition accepted.
COURSE_FEES	Additional fees involved with the course, ie Lab fees	50	Numeric value of course fees required of enrolled students.
COURSE_DEPT	Department offering course	BUS; Business	If course departments are provided as abbreviations, please provide a crosswalk of abbreviations to the full title.
DEPT_ID	Department ID that incurs instructional cost expenses. Can be a financial organization code.	BUS; Business; 40012	As indicated by the key symbol, department IDs will be used to associate departmental non-personnel costs with the relevant courses. This can be provided as an expense code.
SEMESTER	Description of term code, ie Fall	Fall, Spring, Summer, Winter	
MODALITY	Online, On-ground, Hybrid, etc.	F2F; Face-to-face	If modality is provided as abbreviations, please provide a crosswalk of abbreviations to the full title.
LOCATION	The location of the course	Main Campus; Room 201	Provide desired level of detail, ie room number, building, or campus
GENERAL_ED	Indicate as Yes/No whether the course can be used to fulfill general education requirements	Yes; No	Please verify whether General Education designation is specific to a course or if it varies per student.
HONORS	Indicate as as Yes/No whether the course is Honors level	Yes; No	Please verify whether Honors designation is specific to a course or if it varies per student.
CAPACITY	Maximum seat capacity for each section	25	Numeric value of maximum section capacity.

Student Link: Provides section-level student enrollment information

Field	Description	Example(s)	Additional Information
STUDENT_ID	Hashed, unique student ID that is not personally identifiable information	1020304	As indicated by the key symbol, the Student ID will be used in combination with the term_code as a link to associate student course enrollment with the Student Billing and Institutional Grant files. Please indicate whether the link to Billing and/or Grant files will be by term or by year.
TERM_CODE	Code for combination of year and semester	2021FA ; 202101	
COURSE_ID	Unique course-section identifier or CRN	ACC-201-1A; 50105	As indicated by the key symbol, the combination of course ID and term code will be used as a link to associate student course enrollment with the Course Data. All course-level information requested in the Course Data file should be associated with this unique combination.
SECTION_ID	Section ID	1A	Please provide if the Section ID is required in addition to the Course ID to identify unique sections of a course.
CRED_HRS_ATTEMPT	Credit hours student attempted per course	3	Indicate the number of credit hours a student is attempting to earn per course. In the case of variable-credit courses, this entry should be a single numberic value indicating the amount of credits each specific student would receive if the course is completed.
CRED_HRS_EARN	Credit hours student earned per course	3	Indicate the number of credit hours a student earned per course. In the case of variable-credit courses, this entry should be a single numberic value indicating the amount of credits each student received after completing the course.
FINAL_GRADE	Final grade student received per course	ABCD	Indicate the final grade a student received per course. If final letter grades extended beyond ABCDF, please provide a crosswalk of abbreviations to the full title.

Personnel Link: Provides section-level instructor information

Field	Description	Example(s)	Additional Information
PERSONNEL_ID	Hashed, unique instructor ID that is not personally identifiable information.	1020304	As indicated by the key symbol, the personnel ID will be used as a link to associate courses taught with personnel compensation. Please indicate whether the link to compensation files will be by term or by year, and it is understood that the time period may be dependent on instructor status (ie, adjunct payments are made by term, and full-time payments will be provided as yearly salaries).
TERM_CODE	Code for combination of year and semester	2021FA ; 202101	
COURSE_ID	Unique course-section identifier or CRN	ACC-201-1A; 50105	As indicated by the key symbol, the combination of course ID OR crosslisting code and term code will be used as a link to associate instructors with the Course Data information. The crosslisted code will be used to identify if unique course IDs are taught as one section by the same instructor. All course-level information requested in the Course Data file should be associated with this unique combination.
CROSS_LIST_CODE	Cross-listing code used to identify course-sections that have different Course_ID codes but are taught together by the same instructor at the same time	1Z	Single identifier used for all sections of courses that are taught together, to allow potentially unique course IDs to be associated with each other. For example, "1Z" would be used to identify that both the undergraduate course of ACC-401 and the graduate course of ACC-601 are taught as a single section. This identifier will be used to associate the instructor(s) with the appropriate number of sections taught, regardless of how students may be enrolled in the course. In addition to formally cross-listed courses, cross-list codes should also be assigned for any other course sections taught together by the same instructor at the same time (such as Studio Arts 1 and Studio Arts 2).
SECTION_ID	Section ID	1A	Please provide if the Section ID is required in addition to the Course ID to identify unique sections of a course.
TEAM_TAUGHT_SPLIT	If the section is team taught, provide the percentage associated with each instructor	0.5	Please provide as a decimal value. Please create unique lines per instructor per course for team-taught courses.
WORKLOAD_UNITS	Amount that the course counts towards a faculty member's expected teaching load	3	Please provide as available. If workload per course is not tracked, Gray will use the course credit hour units as a proxy.

PES Economics Data Request: Personnel, Department Data, Organization Table

Personnel Compensation Data: Provides compensation for all instructional personnel			
Field	**Description**	**Example(s)**	**Additional Information**
PERSONNEL_ID	Hashed, unique instructor ID that is not personally identifiable information.	1020304	As indicated by the key symbol, the personnel ID will be used as a link to associate personnel compensation with their courses taught. Adjunct and full-time faculty payments can be provided in separate files, as long as all files contain the same personnel_id and time
TERM_CODE	Code for combination of year and semester	2021FA ; 202101	It is understood that the time period provided may be dependent on instructor status (ie, adjunct payments are made by term, and full-time payments will be provided as yearly salaries).
FISCAL_YEAR	Fiscal year	FY21; 2021	
COMP_TYPE	Salary or type of payment, e.g. regular pay, overload, overtime	Salary	
PAY_AMT	Payment amount. May reflect yearly salary.	$5,000	**IPEDS.**
BENEFITS	Benefits can be provided as an amount or as a percentage that will be applied to the payment amount.	0.3; $20,000	If providing as a percentage, please provide as a decimal value.
PAY_RATE	Dollar amount	$100	instruction
PAY_RATE_TYPE	Units of pay rate (i.e. per Credit Hour, per Student)	Credit Hour	For example, a pay rate of $100 per Credit Hour.
FAC_DEPT	Unique department identifier of personnel	BIO; Biology	crosswalk of abbreviations to the full title.
PERS_CLASS	Classification of instructor, provided as their general title/role	AP; Associate Professor	Please provide identification of Deans
PROF_STATUS	Provide professional status as Full-Time, Part-Time, or Staff	ADJ; Adjunct	Staff means primary responsibility is not teaching.
TENURED	Provide tenure status as Yes, No, Tenure-Track	TE; Tenure	
TEACHING_LOAD	The expected instructor work load for the academic year	24	Indicate whether this is calculated using credit hours or a different method. Indicate whether expected workload applies to all terms or a
REASSIGN_LOAD	The instructor's total load reassigned to non-teaching duties, ie Chair responsibilities	3	for each instructor. This can include release for chairs, sabbaticals, etc.

Department Non-Personnel Direct Instructional Expense Data: Provides total expenses incurred by departments directly related to instruction and not overhead			
Field	**Description**	**Example(s)**	**Additional Information**
DEPT_ID	Department ID that incurs instructional cost expenses. Can be a financial organization code.	BUS; Business; 40012	As indicated by the key symbol, department IDs will be used to associate departmental non-personnel costs with the relevant courses. If departments are provided as abbreviations or financial expense codes, please provide a crosswalk to the full title.
COST_AMT	Department expense amount	$500	If data is by course, please add columnw for course ID and term code, and include the amounts for particular courses. For any non-course amounts we will determine the amount to be allocated and will divide the departmental costs by departmental credit hours and allocate to each course.
COST_CODE	Code for the type of cost	SUP; Supplies	If needed, please identify which cost codes are relevant to include in direct instructional expenses. This can include art supplies, lab materials, etc. but should not include overhead costs.
CODE_DESC	Description of the cost code	Classroom Supplies	
FISCAL_YEAR	Fiscal year	FY21; 2021	
	Optional: If department expenses are organized by FOAP (fund-organization-account-program) or a similar structure, please provide this detail as well.		

	Organizational Table: Provides programmatic organization by units and levels, i.e. Department, School, and College						
	AWARD_LEVEL	DEGREE	PROGRAM	PROGRAM_CODE	PROGRAM_DEPARTMENT	PROGRAM_ORG_LEVEL2	PROGRAM_ORG_LEVEL3
Example	Bachelor's	BA	Accounting	BACC	Accounting	School of Business	College of Business and Technology

Acceptance and Terms and Conditions

If the foregoing Statement of Work properly represents the work to be performed, it can serve as an agreement between Gray and MACC/Bunker Hill Community College. Please sign a copy and return it to Gray; we will sign and return a fully executed agreement to you.

Accepted and Agreed on Behalf of Gray Associates	Accepted and Agreed on Behalf of MACC/Bunker Hill Community College
Print Name: Robert G. Atkins	**Print Name**:
Title: CEO	**Title**:
Signature:	**Signature**:
Date:	**Date**:

Gray Associates, Inc.
Terms and Conditions

These Terms and Conditions shall govern the services set forth in the Proposal of which these Terms and Conditions form a part. Acceptance of the Proposal constitutes acceptance of these Terms and Conditions.

1. **Performance Standards:** Gray will perform the work described in the Proposal (the "Services") in a professional and workmanlike manner, as described in the work plans set forth in such Proposal and agreed with the Client.
2. **Payment:** Client agrees to pay Gray the professional fees described in the Proposal, plus project-related expenses as they are incurred. Invoices will be paid within 30 days after Gray submits the invoice to the client. Client agrees to pay Gray 1% per month for invoices over 30 days past due.
3. **Changes To the Proposal:** Client or Gray may request changes to the Services described in the Proposal. Client and Gray must document and agree to these changes in work, scope, fees, and/or expenses. The changes will then be considered binding addenda to the Proposal.
4. **Limitations of Use:** Gray Subscription Services, including all services included with PES Software and Services, are granted for internal use only. Client may not resell or publish the datasets in part or whole. Client may use summarized excerpts based on the dataset in public documents or statements.
5. **Limitation of Liability:** In no event will either party or its affiliates be liable to any party for any ordinary, special, indirect, incidental, punitive, consequential or exemplary damages, direct or indirect, of any kind or nature arising out of or related to the Services, or the Proposal, even if such party will have been advised of the possibility of such damages. The foregoing will apply regardless of whether such liability arises in contract, negligence, tort, product liability, strict liability or any other theory of liability. Under no circumstances will Gray or its affiliates be liable to Client or any third party for an amount greater than one month of fees agreed to in the Proposal. In no event shall Gray be liable in any respect for damages resulting from (a) any unauthorized access to or use of, or alteration or modification of, any Services, or any related documentation or materials, (b) any third-party data or content, or (c) any decision made by Client in reliance on the Services.
6. **Insurance:** Gray and Client warrant that each will maintain sufficient insurance coverage to enable each to meet their obligations created by the Proposal and by law.

7. **Third Party Data; Responsibility for Decision Making:** Client acknowledges that, in performing and delivering the Services, Gray collects and uses data and forecasts from various third-party sources. Gray can give no representation, warranty, or assurance as to the correctness, completeness, or accuracy or non-infringement of such sources and data, all of which are hereby expressly disclaimed. Client further agrees and acknowledges that Gray is not liable for any decisions made by Client following use of the Services, or the consequences of such decisions. All decisions are the sole and exclusive responsibility of Client. Gray is further not liable for the continued availability of any particular data source.
8. **Indemnification:** Gray agrees to defend, hold harmless, and indemnify Client from and against any and all claims, damages, losses, suits, actions, demands, proceedings, expenses, and/or liabilities of any kind (including but not limited to reasonable attorneys' fees incurred and/or those necessary to successfully establish the right to indemnification), threatened, asserted or filed (collectively “Claims”), by a third party against Client to the extent that such Claim alleges that the Services infringe or violate any patent, copyright, trademark, trade secret or other proprietary right of a third party; and in any case only in the event such Claims do not result from the negligent or willful acts of Client or its employees or agents. Client agrees to defend, hold harmless, and indemnify Gray from and against any and all Claims that arise out of or relate to any use by Client of the Services, any breach or alleged breach by Client of the Proposal or these Terms and Conditions, or Client’s violation of the intellectual property rights of another, in any case only in the event such Claims do not result from the grossly negligent or willful acts of Gray or its employees or agents. The foregoing indemnity is conditioned upon the party seeking indemnification providing prompt written notice of such Claim to the indemnifying party, granting the indemnifying party control of the defense of such claim, and cooperating with all reasonable requests of the indemnifying party in the defense thereof.
9. **Use Rights; Ownership:** Gray grants the Client a royalty-free, non-exclusive, non-transferable and non-sublicensable right to use the Services solely for Client’s internal business operations, subject to the terms and conditions set forth in this Section. Client may not decompile, reverse engineer, modify or create derivative works based upon, sell, rent, transfer, license, distribute or otherwise make available to third parties, copy, publish or reproduce, or commercially exploit the Services or any related documentation or materials, and shall be prohibited from removing or obscuring, and agrees not to remove or obscure, any notice of copyright, patent, trademark, trade secret or restricted or limited rights contained on or with respect to the Services and any related documentation or materials. Reports and other materials prepared by Gray solely for Client and that are unique to Client (the “Reports”) shall be works made for hire and shall be owned by Client. Gray shall retain sole ownership of and all intellectual property rights in, to and under (a) PES Software and Services, and any related documentation and materials other than Reports, (b) any data not provided by Client used in connection with the Services, and (c) any deliverables produced by Gray or its agents or subcontractors as a result of the Services (including designs, templates, processes, methodologies and procedures) that are not Reports, all of which Client expressly acknowledges are owned by Gray or third parties (the “Gray Products”). Gray hereby grants to the Client a royalty-free, non-exclusive, non-transferable, non-sublicensable right to use such Gray Products solely in connection with the Client’s use of the Services, subject to these Terms and Conditions. All rights not expressly granted by these Terms and Conditions are reserved to Gray.

10. **Non-Solicitation of Employees:** During the term of the Proposal, and for one (1) year after the conclusion of all Services provided by Gray to Client, neither party shall directly hire, solicit, interfere with or induce to leave their position, any person or entity who was an employee or independent contractor of the other party at any time during such term.
11. **Disclaimer of Warranties:** Except as set forth in Section 1 above, Gray does not make any representation or warranty of any kind regarding the Services, the results of the Services (including Reports), or any other matter, express or implied, including but not limited to any representations or warranties of merchantability, title, freedom from error, non-infringement or regarding the completeness, correctness, accuracy or fitness for a particular purpose or use of any data or system, or the consequences of use thereof by any party, all of which are hereby expressly disclaimed. Gray specifically makes no representation or warranty as to the results that may be obtained from the use of the Services.
12. **Termination:** Either party may terminate the Proposal upon sixty (60) days prior written notice to the other party, provided that Gray may terminate or suspend the provision of Services at any time if Client fails to pay any amount due under the Proposal and such failure is not cured within 10 days of the due date. Following the effective date of such termination, (a) Gray will not be obligated to continue performing any terminated Services, and (b) Client will pay Gray for all Services performed up to the termination date. ***Exclusion: Proposals or other agreements for Gray Subscription Services, including all services included with PES Software and Services, cannot be cancelled prior to the stated termination or expiration date. Sections 5, 7, 8, 9, 10, 12, 13, 14 of these Terms and Conditions survive any termination.***
13. **Governing Law:** The Proposal and these Terms and Conditions will be interpreted, construed and enforced in all respects in accordance with the laws of the Commonwealth of Massachusetts, USA. All disputes with respect to the Proposal, the Services or these Terms and Conditions shall be resolved first through negotiations between authorized executives at the parties and then through mediation. Each party hereby irrevocably consents to this process in connection with any such action, suit, proceeding or claim. In any mediation or other action to enforce any right or remedy under the Proposal or these Terms and Conditions or to interpret any provision hereof or thereof, the prevailing party will be entitled to recover its costs, including all reasonable attorney fees. Notwithstanding anything contained herein to the contrary, the parties hereto expressly agree that all disputes relating to fees and invoices shall be resolved exclusively in state and federal courts sitting in the Commonwealth of Massachusetts, and the parties hereby consent to such exclusive jurisdiction.
14. **Miscellaneous:** The parties are and shall remain independent contractors. Neither party may assign its rights or obligations under the Proposal or these Terms and Conditions without the other party's prior written consent; provided that Gray may assign its rights and obligations to a transferee of substantially all of its assets, stock or other equity. The Proposal and these Terms and Conditions constitute the entire agreement between the parties with respect to the subject matter hereof and thereof, and supersede all other previous agreements, written or oral, between the parties with respect to such subject matter. Gray shall not be liable for any delay or failure to perform resulting, directly or indirectly, from causes beyond its reasonable control, including without limitation weather, civil or military authority, acts of war, accidents, natural disasters, pandemics, power outages or work stoppages. Notices shall be provided by either party in writing to the address supplied for notice purposes by the other party (including via electronic mail so long as confirmation of receipt is obtained).