Massachusetts STEM Pipeline Fund

@Scale Project Initiative

Request for Proposals 2012

Post-Secondary Graduation Rate & Workforce Development

Massachusetts Department of Higher Education
One Ashburton Place, Room 1401
Boston, Massachusetts 02108
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I. Introduction

Massachusetts' STEM Plan, released at the 2010 state STEM Summit, provides the Commonwealth with a roadmap to student success based upon five goals:

1. Student Interest
2. Student Academic Achievement
3. Student Readiness to pursue post-secondary STEM programs
4. Graduation Rates from post-secondary STEM programs
5. Educator Effectiveness.

In February of 2012, the Governor’s STEM Advisory Council directed that a sixth goal focused on STEM Workforce Development (Appendix A) be added to the STEM Plan.

The Massachusetts Department of Higher Education seeks proposals that address either or both goals 4 and 6 of the STEM plan, to: Improve Graduation Rates from Post-Secondary STEM Programs, and Close STEM Workforce Gaps through Targeted Training Programs.

This is the second in what is anticipated to be four phases of grant awards issued as part of the STEM Council’s @Scale Initiative. The first phase of the @Scale grant program called for proposals that addressed the goals of Student Interest and Student Readiness through scale-up implementation projects at middle school and high school. Seven projects were selected and are in implementation. This second phase calls for proposals that address the goals of Post-Secondary Graduation Rate Improvement and Workforce Development to include projects that engage vocational technical schools, community colleges, and public universities. The third phase, scheduled for late-summer/fall 2012, will call for proposals focused on the goals of Student Academic Achievement and Educator Effectiveness through science inquiry and applied mathematics projects at middle and high school. Finally, the fourth phase will call for proposals targeting the goals of Student Interest and Educator Effectiveness at Elementary and Pre-K as well as after school programs. This will complete the STEM @Scale implementation projects portfolio by late Q2 early Q3 FY13.

The @Scale Initiative is designed to select a limited portfolio of projects that can be quickly scaled-up to benefit many students, educators and workers, quickly.

Qualifying projects must:

- Address one or more goals of the Massachusetts STEM plan.
- Reflect a strong education research foundation.
- Demonstrate a history of successful outcomes for targeted populations of students, workers and/or educators.
- Be cost-effective on a per-student/teacher basis.
- Report prior formative and summative results determined through independent 3rd party evaluations, and,
- Incorporate design characteristics, infrastructure and support systems that support scale-up and/or replication (including classroom-based and online technology to enhance and
extend student learning and data systems that enable improved student success) to serve many more students/workers/educators.

Collaborative education and employer partnerships are an essential element of all @Scale projects but even more so for projects that address the challenges of improving Post-Secondary Graduation Rates and Workforce Development.

Such partnerships must inform and continuously evolve STEM education and workforce development programs to reflect current and projected industry practices (workplace competencies and certification requirements), adjust program capacity consistent with projected workforce demand, align education curriculum with in-demand career tracks and forecasted jobs, and facilitate the provision of experiential learning opportunities (internships, co-op’s, clinical placements and mentored work assignments). Finally, these partnerships must help to promote awareness of STEM education and workforce development programs to maximize the hiring of the Commonwealth’s STEM talent. Partnerships should include but are not limited to: K12 comprehensive and vocational education schools, community colleges, public universities, workforce development organizations and importantly, industry and employer representatives.

Through this RFP, the Massachusetts Department of Higher Education solicits and will select a limited number of proposals to be endorsed by the STEM Advisory Council and be eligible to receive public matching funds. Proposals must address at least one of the two goals of the Massachusetts STEM Plan (Goal 4) Improve Graduation Rates from Post-Secondary STEM Programs or (Goal 6), Close STEM Workforce Gaps through Targeted Training Programs. Successful projects will be expected to secure matching funds on the ratio of $1:$3 (Massachusetts State Funds to Private (Corporate or Foundation) or other sources (Federal Program e.g. NSF, DOE, other).

II. Grant Purpose and Priorities

Massachusetts benefits from an abundance of STEM projects and programs. Many of these reflect local school and community priorities and are supported by local resources while others are national initiatives reflecting the priorities of the respective funding organization. These projects benefit their targeted audiences and add value to STEM education overall. However, too often, such projects are not designed nor implemented with the intention of affecting transformative, system-wide and sustainable improvements consistent with or complementary to the goals described in the Massachusetts STEM plan.

The purpose of the @Scale initiative is to provide a framework to select and fund projects that:
- Effectively use data to identify, quantify and measure outcomes in context of STEM education/workforce development challenges,
- Are grounded in research, designed for replication and scale-up, and have demonstrated prior success in achieving student and worker outcomes related to these challenges,
- Promote partnerships with school districts, colleges and universities and workforce development organizations to address the needs of significant numbers of students and workers pursuing careers in key industry sectors and demonstrate confirmed and sustainable commitments of time and resources from partners and key stakeholders and,
- Successfully secure matching private/other funds to support scale-up implementation projects that achieve widespread, measurable student and worker outcomes.
III. Needs to be Addressed

Goal 4 - Improving Post-Secondary STEM Graduation Rates

A significant number of Massachusetts’ students demonstrate academic readiness for and interest in STEM postsecondary majors. These same students successfully enroll and are accepted into STEM programs in public and private colleges and universities across the state. However, far too few of these students persist and successfully complete their initial or an alternative STEM program. As indicated in Chart 1, the six year completion rate within any STEM field (a broader measure than completion rates in an initial STEM field) ranges from a high of approximately 40% at UMass to a low of less than 20% in the community college system.

This data tracks with national trends as reported by the President’s Council of Advisors on Science and Technology (2012). ENGAGE TO EXCEL: PRODUCING ONE MILLION ADDITIONAL COLLEGE GRADUATES WITH DEGREES IN SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS. This report suggests that by increasing the national average graduation rate in STEM post-secondary majors from 40% to 50% the United States would produce some 750K additional STEM graduates over a ten year period.

As a result of prior research, there are many well understood and successfully demonstrated strategies for improving recruitment, retention and graduation rates for all students in post-secondary STEM programs and especially those from under-represented minority groups. These include but are not limited to: early engagement of high school students in college-level coursework, summer readiness programs for incoming freshmen, transfer and reverse-transfer programs between community college and four year programs, early exposure to laboratory research experiences for high-school and community college students, technology enhanced (classroom based or online) learning technologies, internships/co-op and other experiential learning experiences for high-school and college students, improved counseling/advising/mentoring of students along the continuum of secondary school to college and into initial work assignments, cohort-based academic progressions and more.
These and other proven strategies must be enhanced, expanded upon and made available to many more students with the goal of significantly increasing recruitment, retention and graduation rates of ALL students, and especially under-represented minority students from STEM post-secondary programs in Massachusetts. While the focus of proposals to this grant program should emphasize replication and scale-up of proven strategies to affect transformative and sustainable improvements, we also encourage investigation and development of new strategies reflecting student feedback about barriers, challenges and opportunities that may not have been previously addressed in research.

Massachusetts STEM Plan includes the following goal and associated reference data targeting an improvement in STEM Post-secondary Graduation Rates by 2016. Proposals should address quantitative improvements in context of this data that will be achieved as a result of the proposed project.

**STEM Plan Goal 4: Increase the number of students who graduate from a postsecondary institution with a degree in a STEM field.**

*Standard:* Increase the number of students who complete STEM post-secondary degrees At Massachusetts public and private institutions by 50% from 2008 to 2016.

- Increase the number of Bachelor's degrees granted in all STEM majors to all students by 50% by 2016.
- Increase the number of Bachelor's degrees granted in all STEM majors to the underrepresented gender in majors with a gender based gap in degrees.
- Increase the number of Bachelor's degrees granted in all STEM majors to the underrepresented race/ethnicity in majors with a race/ethnicity-based gap in degrees.

Note: The above standard reflects the STEM plan goal as originally drafted in 2010 with a focus on increasing the number of Bachelor’s degrees granted. With the current focus on workforce development and recognition of the value of STEM Associate Degree’s and Certificates to employment, for the purpose of this RFP we also seek proposals that will increase STEM Associate Degree and Certificate attainment.

**Tool:** Integrated Postsecondary Education Data System

**Reference data:** Integrated Postsecondary Education Data System. Data Prepared by UMass Donahue Institute.

<table>
<thead>
<tr>
<th>2009 Bachelor's Degrees Granted in STEM Areas by MA Public and Private Institutions</th>
<th>All</th>
<th>Female</th>
<th>Male</th>
<th>African-American</th>
<th>Asian</th>
<th>Hispanic</th>
<th>White</th>
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</thead>
<tbody>
<tr>
<td># Bachelor's Degrees Granted in All Subjects</td>
<td>54,686</td>
<td>31,559</td>
<td>23,127</td>
<td>2,484</td>
<td>3,607</td>
<td>2,522</td>
<td>33,595</td>
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<tr>
<td># Bachelor's Degrees Granted in Agriculture &amp; Natural Resources</td>
<td>471</td>
<td>219</td>
<td>252</td>
<td>7</td>
<td>19</td>
<td>14</td>
<td>359</td>
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<tr>
<td># Bachelor's Degrees Granted in Architecture</td>
<td>421</td>
<td>170</td>
<td>251</td>
<td>9</td>
<td>20</td>
<td>19</td>
<td>313</td>
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<tr>
<td># Bachelor's Degrees Granted in All Subjects</td>
<td>2,567</td>
<td>1,620</td>
<td>947</td>
<td>124</td>
<td>400</td>
<td>100</td>
<td>1,425</td>
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<tr>
<td>Biological &amp; Biomedical Sciences</td>
<td>1,077</td>
<td>182</td>
<td>895</td>
<td>42</td>
<td>123</td>
<td>36</td>
<td>627</td>
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<tr>
<td># Bachelor's Degrees Granted in</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer &amp; Information Sciences</td>
<td>2,851</td>
<td>642</td>
<td>2,209</td>
<td>92</td>
<td>319</td>
<td>141</td>
<td>1,685</td>
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<tr>
<td>Engineering &amp; Engineering</td>
<td>3,354</td>
<td>2,860</td>
<td>494</td>
<td>152</td>
<td>170</td>
<td>96</td>
<td>1,941</td>
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<tr>
<td>Technology/Technicians</td>
<td>904</td>
<td>400</td>
<td>504</td>
<td>22</td>
<td>102</td>
<td>21</td>
<td>516</td>
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<td>Health Professions</td>
<td>966</td>
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<td>515</td>
<td>20</td>
<td>109</td>
<td>31</td>
<td>570</td>
</tr>
<tr>
<td># Bachelor's Degrees Granted in</td>
<td>12,611</td>
<td>6,544</td>
<td>6,067</td>
<td>468</td>
<td>1,262</td>
<td>458</td>
<td>7,436</td>
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<tr>
<td>All STEM Majors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| % Bachelor's Degrees Granted in  | 0.9% | 0.7% | 1.1% | 0.3% | 0.5% | 0.6% | 1.1% |
| Agriculture & Natural Resources  | 0.8% | 0.5% | 1.1% | 0.4% | 0.6% | 0.8% | 0.9% |
| Architecture                     | 4.7% | 5.1% | 4.1% | 5.0% | 11.1% | 4.0% | 4.2% |
| Biological & Biomedical Sciences | 2.0% | 0.6% | 3.9% | 1.7% | 3.4% | 1.4% | 1.9% |
| Computer & Information Sciences  | 5.2% | 2.0% | 9.6% | 3.7% | 8.8% | 5.6% | 5.0% |
| Engineering & Engineering        | 6.1% | 9.1% | 2.1% | 6.1% | 4.7% | 3.8% | 5.8% |
| Technology/Technicians           | 1.7% | 1.3% | 2.2% | 0.8% | 3.0% | 1.2% | 1.7% |
| Health Professions               | 1.8% | 1.4% | 2.2% | 0.8% | 3.0% | 1.2% | 1.7% |
| Mathematics & Statistics         | 23.1% | 20.7% | 26.2% | 18.8% | 35.0% | 18.2% | 22.1% |

**STEM Plan Goal 6 - Workforce Development**

The workforce development goal was written to address four categories of need:

1. To upgrade the knowledge/skills of incumbent workers to address workplace requirements in their current industry.

2. To upgrade the knowledge/skills of displaced workers that seek to transfer and upgrade their knowledge and skills for opportunities in new industry sectors.

3. To support traditional students (ages 18-24) that lack specific industry skills and credentials leading to initial employment opportunities.
4. To support aspiring workers who seek to develop foundation knowledge and skills contextualized for STEM careers, in preparation for entry into post-secondary workforce training programs leading to certificates and degrees.

This RFP will prioritize responses that address current or near-term workforce gaps through direct training and education of workers/students in the following order: (1) incumbent workers that seek to upgrade or develop their knowledge and skill in response to workplace advancements (technology, business practice, certification requirements…), (2) displaced workers who seek to enhance their transferable knowledge and skills and/or add new knowledge and skills to meet job demands in their current or in a new industry sector, (3) traditional students that are seeking specific industry skills and credentials that will lead to initial employment opportunities

Project proposals may address the need to train a diverse spectrum of workers in industry specific career competencies (Knowledge, Skills, Abilities) and may address worker needs to attain industry recognized “stackable” credentials including certifications and degrees.

Near-term job opportunities may address employer need for growth and expansion of business opportunities as well as replacement of retiring workers.

Measurable objectives of the project should include:

- Achieving a measurable increase in employment of STEM qualified workers.
- Achieving a measurable increase in STEM certifications and degrees awarded.

**IV. Eligibility**

**General Project Attributes:**

- Projects must:
  - Address the goals of Improving Post-Secondary STEM Graduation Rates or STEM Workforce Development.
  - Effectively use data to identify and quantify STEM education/workforce development challenges to be addressed by this project and measured as outcomes of the project.
  - Promote partnerships with school districts, community colleges and public universities, and/or workforce development organizations to address the needs of significant numbers of students and workers in key industry sectors for multiple employers across all geographic regions of the Commonwealth.
  - Begin by the end of calendar 2012 and must be completed by the end of calendar 2013.

**Scalability:**

- Projects must:
o Be based on prior successful initiatives, the principles of which, if not the complete design, should be incorporate in this scale-up proposal.
o Be grounded in research, designed for replication and scale-up, and have demonstrated prior success in achieving student and worker outcomes related to these challenges.
o Demonstrate the ability to expand (scale-up or replicate) the delivery model beyond the original site.
o Be designed, packaged and supported for ease of implementation at an adopting site.
o As relevant to the project, address the application of in-classroom or online technologies to enhance student engagement and learning, support data systems that enable improved student success rates and support implementation scale-up.

Funding:

- Projects selected for @Scale endorsement by the STEM Council and eligible to receive STEM Pipeline grant funds must secure a commitment for matching private/other (business, foundations, federal agencies etc.) funding on a target ratio of $1:$3 (public:private).

V. Proposal Requirements

A. Project Abstract (one page). Include the following:
   1. Name of project
   2. Type of project (e.g. Workforce Development and/or Graduation Rate)
   3. Target Population Served (e.g. Under-represented minorities or Incumbent Workers)
   4. Key Personnel

B. Narrative (not to exceed 8 pages, with standard 1” margins, single or double spaced and 12 pt. font) that includes the following elements:
   1. The project objectives, milestones to be achieved during the project period and intended outcomes beyond the project period.
   2. Demographic characteristics of the target community of students/workers to be served.
   3. The proposed timeline and phased implementation (if relevant) of the project. When will the project begin? When will students/workers first be engaged and how many students? If there will be a subsequent phased engagement, describe the timing of those phases.
   4. For what purposes will the requested funding be used (e.g. equipment or educational resources, teacher professional development, stipends…).
   5. The expected milestones during the duration of the project and the anticipated outcomes at the end of the project including the measures used. If outcomes are anticipated to accrue beyond the scope of the project, indicate those as well.
   6. Description of private matching commitment for funding and disclosure of any existing gap to achieve the $1:$3 public:private funding match.
   7. Plan for long-term sustainability
i. Describe the relationship, if any, with the PreK-16 Regional STEM Networks\(^1\) in support of the implementation of this project.

ii. Describe the relationship of the project to the Department of Labor Grant to the Community Colleges – the Transformation Agenda project.

iii. Describe the plan for sustainability of the project after the funding period expires.

8. A description of already measured outcomes by independent 3rd party evaluators including:
   i. Numbers of participants (students, workers) directly served by the project.
   ii. Pre- and post-test result changes; and
   iii. Other relevant evidence of success

9. An explanation of how the project aligns with the quantitative measures described for Goals 4 and 6 of the STEM plan. Describe specifically how your project addresses the respective goal and the process by which you measure the achievement of your project against that goal.

10. A description of the ways in which your project links to any other key attributes of the Massachusetts’ STEM Plan

11. Examples of successful project expansion/replication to demonstrate your project has the ability to expand the delivery model beyond the original site and sustain continuity of the project outcomes over time, include details such as:
    i. length of time your project has been in place
    ii. number of expansion sites and type of expansion (e.g. classroom -> classroom, school -> school, college or university etc.)
    iii. number of project cycles conducted at each site (start/ end date),
    iv. number of educators and/or student impacted
    v. cost per student/teacher/worker
    vi. hurdles and lessons learned

12. Explain the resources available to the adopting site such as:
    i. implementation guides or documented procedures
    ii. supplies (e.g. books, lab equipment, etc.), and
    iii. consultants, instructors, trainers etc

13. Evidence that the program has caused changes in practice at its present site.

VI. Budget Information

A. Proposed Budget. Fill out the attached Form 1. Budget Narrative. Provide an explanatory narrative that supports each line of your detailed budget request (Form 1). In your narrative include a description of the funding model to support and sustain the project over time.

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\(^1\) To learn more about the PreK-16 Regional STEM Networks or to locate your Network’s contact information, check out the DHE STEM Pipeline Fund website at: http://www.mass.edu/forinstitutions/prek16/pipelinenetworks.asp.
VII. Evaluation & Reporting

Project proposals will demonstrate a strong commitment to formative evaluation and will include plans to continue ongoing evaluation protocols extended to the proposed implementation projects. Grant funds may be requested to support ongoing project evaluations but should not exceed 5% of the grant total.

The DHE is engaged with statewide evaluation consultants on the development of a common STEM evaluation toolkit. Completion and deployment of the toolkit is planned for the fall of 2012. In accepting an award, projects agree to participate in any new evaluation protocols (contingent upon additional funding) needed to support the evaluation work.

Mid-year and year-end status reports will be due according to the table below. All reports will be based on a template to be provided by the DHE and will include the following elements:

- Narrative of project implementation,
- Evaluation report of the program/project’s effectiveness using quantifiable research methods and demonstrating results from pre- and post tests,
- Final Expense Report (budget)
- Participant data, including:
  - Numbers served with all student subgroup breakouts;
  - Grade levels represented;
  - Reasons for participation.

### Project Reporting Deadlines

<table>
<thead>
<tr>
<th>Report Type</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-Year Progress Report</td>
<td>June 15, 2013</td>
</tr>
<tr>
<td>Year-End Progress Report</td>
<td>December 15, 2013</td>
</tr>
</tbody>
</table>

VIII. Submission Instructions

To secure the appropriate number of proposal readers we request that those planning to submit a proposal notify the DHE by September 21, 2012 by email to the address below.

In order to be considered for selection, we must receive your *complete* proposal no later than 4:00 p.m., Thursday, October 25, 2012.

Please submit your completed proposal via email to:

Keith Connors, Program Manager of the STEM Pipeline Fund
Massachusetts Department of Higher Education

Submission Email: STEMProjectforScale@bhe.mass.edu

Representatives of the Operations Board of the Governor’s STEM Advisory Council will review the proposals and will score them based on a common scoring process and rubric. Up to 8 proposals addressing either Goal 4 or Goal 6 will be recommended to the Governor’s STEM Advisory Council for award approvals. The total STEM Pipeline funds available for match with
private sector funds are $400,000. The maximum available funding pool is anticipated to be $1.6M based upon achievement of a full $1:$3 public:private match.

### RFP Timeline

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release Date</td>
<td>August 31, 2012</td>
</tr>
<tr>
<td>Information Session (conference call)</td>
<td>September 25, 2012</td>
</tr>
<tr>
<td>Proposals Due</td>
<td>October 26, 2012</td>
</tr>
<tr>
<td>Grant Candidates Selected</td>
<td>November 23, 2012</td>
</tr>
</tbody>
</table>

### IX. Awards

The STEM Pipeline Fund commits $400,000 to support 4-8 implementation projects that address improvements in STEM Post-Secondary Graduation Rates and Workforce Development projects. We expect to fund at least two projects that address each of these two goals (four projects in total) and may fund as many as eight projects in total. The funding range for individual projects is anticipated to be between $50K and $150K per project. These public funds will be allocated based upon a match of private or other non-state funds targeted at a ratio of $1:$3 (public:private/other).

**A. Projects selected as candidates to receive grants from the STEM Pipeline fund will be announced November 23, 2012.**

1. Projects that have secured private sector matching funds at the targeted ratio of $1:$3 will receive their initial disbursement of STEM Pipeline Funds within three weeks of award notification.
2. Projects that have not secured private sector matching funds at the targeted ratio of $1:$3 will have until February 1, 2013 to do so.
3. Projects that do not secure private sector matching funds at the targeted ratio of $1:$3 by February 1, 2013 will be deferred for possible future funding consideration.

### X. Policies

**Grant Disbursement**

Following the applicant’s acceptance of the award letter, and the execution of the Standard Contract, or the Interagency Service Agreement, and any other required documents, the applicant can expect to receive disbursements on a schedule consistent to the needs of the project. After initial disbursement, progress-based disbursements will be dependent upon submission and acceptance of mid-year, end-of-year or interim progress reports, including:

- Progress towards meeting stated goals and objectives including enrollment projections;
- Engagement (as appropriate) with Regional STEM Networks;
- Sound fiscal management; and
- Quality and timeliness of reporting requirements.
Publicity
Grant recipients are obligated to acknowledge the funding source in all print materials, websites and press releases. The acknowledgement of the funding source contributes to the overall name recognition and branding of the STEM Pipeline Fund. The following, consistent wording should be used:

Short form: “The [insert project name] is funded through the Massachusetts’ Department of Higher Education’s STEM Pipeline Fund.”

Long form: (Use short form plus one or more sentences of the following): “The STEM Pipeline Fund was established through the Economic Stimulus legislation. The STEM Pipeline Fund seeks to improve teacher preparation in science, technology, engineering, and mathematics (STEM) subjects and to increase student interest in, preparation for, and success in STEM careers.”

Solicitor Responsibility
Solicitors may not alter (manually or electronically) the grant application language or any grant application component files. Modifications to the body of the grant application, specifications, terms and conditions, or application which change the intent of this grant application are prohibited and may disqualify a response.

All costs associated with responding to this RFP are the sole responsibility of the responding organization. The DHE reserves the right to use any and all ideas included in any response without incurring any obligations to the responding firm or committing to awards for the proposed services. Responses become the property of the DHE.

Legal Disclaimer
This RFP does not represent a contractual agreement by the DHE to any applying organization. Selected organizations will enter into a contractual agreement with the DHE upon award.

THE DEPARTMENT OF HIGHER EDUCATION RESERVES THE RIGHT TO REJECT ANY AND ALL RESPONSES AND THE RIGHT TO CANCEL THIS REQUEST FOR QUALIFIED PROPOSALS (RFP) AT ANY TIME PRIOR TO AWARD.
Appendix A – Workforce Development Goal

STEM Workforce Goal

Goal 6 – Align STEM education programs with the workforce needs of key economic sectors to:

- Improve the competence (knowledge, skills and attitudes) of current and prospective workers for in-demand career tracks across relevant job levels,
- Increase the availability and diversity of STEM competent workers to support the replacement (retirement) and growth needs of employers,
- Increase total employment of the STEM workforce, regionally and statewide.

Strategies – In collaboration with representatives of the regional and statewide education and workforce community, outreach to and engage employers that provide significant STEM employment in key economic sectors, with the objective of:

- Informing and continuously evolving STEM education programs based on current and projected industry practices (competency and certification requirements) aligning curriculum with in-demand career tracks and jobs;
- Partnering with vocational technical schools and programs, community colleges and state universities to adjust the capacity of education programs consistent with projected workforce demand;
- Facilitating the provision of internships, co-ops, externships, clinical placements, mentorships and other experiential learning/advising opportunities as a complement to classroom education, instruction and counseling;
- Promoting awareness of STEM education programs and workforce development pipelines to maximize hiring of the commonwealth’s STEM talent

Standard(s):

Identify and engage regional and statewide industry/education advisory groups with broad business representation that routinely collaborate to inform, plan, facilitate and promote STEM education programs

- Increase the number of STEM education programs that address in-demand career tracks and jobs for key economic sectors.
- Programs incorporate profession-based competencies and industry certifications as validation of student outcomes.
- Competency definitions and certifications are published for key industry sectors

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• Programs and pathway maps are aligned to competency and certification outcomes

• Programs produce a diverse and competent pipeline of STEM talent

Improve response of vocational schools and colleges/universities to adjust capacity of STEM programs consistent with projections for a more diverse pipeline of new and replacement STEM workers targeting the following categories of students over time.

• Adult incumbent workers - upgrading knowledge and skills in current industry

• Adult displaced workers - transferring and upgrading knowledge and skills for new opportunities

• Traditional students ages 18-24 seeking initial employment opportunities

• Aspiring workers – developing foundation knowledge and skills contextualized to STEM growth sectors and preparing for entry into post-secondary programs.

Increase the number of experiential learning opportunities offered in each key economic sector, statewide and regionally, as a percentage of enrolled students.

• Pre-employment/UI Internships

• Co-op placements

• Clinical Placements

• Teacher Externships

• Summer internships for high school and college students

• Connecting activities for K12 school year internships

Quantify the number and % increase of Massachusetts STEM talent hires including underrepresented groups

• Decrease persistent and above norm vacancy rates for in-demand STEM defined job categories

• Measure and report growth/decline of STEM job postings by economic sector and career tracks (technical, managerial and scientist/engineer) as a percentage of employment in these sectors/tracks.

Tool(s): TBD

Reference Data: ELWFD Job Vacancy Survey, other sources TBD
### Form 1  
**Template – Proposed Budget**

Please complete the table below with a breakdown of the requested funding from this @Scale initiative with funds from the DHE STEM Pipeline Fund and from private matching funds (please specify sources). Upon completion of the table, please provide an additional *Budget Narrative* that includes specific details of each budget item in the table.

**Instructions:** Double-Click on the table for it to become an interactive spreadsheet. Click outside the table to return to MS Word. **ONLY FILL IN CELLS HIGHLIGHTED IN YELLOW:** Non-Yellow cells contain formulas and will fill in automatically. Also, all cells are formatted for currency; you do not need to type in $ signs.

@Scale Project: __________________________ Project Manager: __________________________

<table>
<thead>
<tr>
<th>Categories</th>
<th>Total Grant Funds Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Salaries:</td>
<td>$ -</td>
</tr>
<tr>
<td>Administrator</td>
<td></td>
</tr>
<tr>
<td>Support Staff</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td></td>
</tr>
<tr>
<td>Travel</td>
<td></td>
</tr>
<tr>
<td>Contractual Services</td>
<td></td>
</tr>
<tr>
<td>Total Supplies &amp; Materials</td>
<td>$ -</td>
</tr>
<tr>
<td>Curriculum</td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Transportation</td>
<td></td>
</tr>
<tr>
<td>Training</td>
<td></td>
</tr>
<tr>
<td>Tuition &amp; Stipends</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Evaluation</td>
<td></td>
</tr>
<tr>
<td>Indirect Costs (10% Max)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$ -</td>
</tr>
<tr>
<td>Plus Private Matching Funds</td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>$ -</td>
</tr>
</tbody>
</table>

Calculate Unit Cost/Student and enter here: $__________

Calculate Unit Cost/Teacher and enter here: $__________