RECOGNIZING THE NEED

Efforts to strengthen science, technology, engineering, and math education are a major priority for the state and the nation. Scientific and technological advances have transformed the workplace, especially in traditionally middle-class, blue-collar jobs such as manufacturing. These and many other jobs now demand higher levels of STEM knowledge and skill. The number of non-STEM jobs requiring these skills is also growing.

Building a STEM-capable workforce ensures that all citizens are prepared to meet the changing demands of the modern workplace and provides businesses with the talent needed to compete successfully in the global economy.

Creating a STEM-capable U.S. workforce requires a more expansive vision for STEM. This vision includes students and workers at all education levels, working on the farm, the factory floor, the laboratory, and everywhere in between using STEM capabilities to learn, adapt, install, debug, train, and maintain new processes or technologies. This vision includes women, traditionally underrepresented groups, and blue-collar workers who were hard hit by transformations in the domestic and global economy.

—Maria T. Zuber, Ph.D., Chair, National Science Board, National Science Foundation, and MIT vice president for research, in testimony before the U.S. House of Representatives, March 2017

Oklahoma communities are already taking great strides toward meeting the evolving demands of the STEM workforce. Education partners at all levels—in public schools, in career and technology education, and in higher education—have boosted their STEM course offerings, aligned their instruction with STEM career pathways, and collaborated as members of STEM-focused partnerships. Oklahoma industries and employers have placed a premium on recruiting STEM-ready workers and supporting education and training efforts at all levels. Interest in related credentials and certificates remains strong. City government leaders and taxpayers have supported investments in local schools and city infrastructure to meet the changing needs of learners and employers.

A “pathways approach” encourages a shift in the focus of questions concerning workforce competitiveness from “how many degrees/workers” do we have, to “what kinds of knowledge and skills” are needed. A pathways approach likewise moves away from a near-term focus on educating individuals for today’s jobs to a strategy that focuses on equipping individuals with applicable skills and generalizable STEM and non-STEM competencies needed to adapt and thrive amid evolving workforce needs.

—Revisiting the STEM Workforce, National Science Board, 2015

The State of Oklahoma wants to recognize the ongoing efforts of individual communities and regions in preparing the state to compete on a global level. Oklahoma Statutes authorize the Governor to designate a STEM Community or a STEM Region. No approach to addressing the need for a STEM-capable workforce will be the same. However, each STEM Community or STEM Region should have these characteristics:

✔ Awareness of community STEM education and workforce needs;
✔ Engagement by multiple stakeholders in partnerships and coordinated activities aimed at addressing local needs, as well as the promotion and recognition of those activities; and
✔ Evidence of sustained commitment to developing a STEM-capable workforce, including planning and progress benchmarks.
MAKING THE CASE FOR RECOGNITION

Designation of a STEM Community or STEM Region serves as official recognition of the hard work and dedication of Oklahoma communities to building a successful STEM talent pipeline that can respond to local and state workforce demands. Specifically, recognition offers value to everyone in the community:

- **Students** can see the value placed by the community and the state on their STEM-related career pathways, academic plans, and course choices.
- **Parents and other taxpayers** can see an added return on their investment in local STEM initiatives and activities.
- **Educators, business owners, and community leaders** receive public acknowledgment of their existing partnership and workforce development efforts.
- **Individuals and businesses seeking to relocate** can consider the community’s dedication to STEM education and training as another factor in their decision.

Seeking designation as a STEM Community or STEM Region is not difficult. Simply follow the guidelines in this document to prepare and submit the application. (The primary contact for an application can be a local employer, an education leader, a civic leader, or other responsible individual.) A state-level committee of STEM education and workforce development advocates reviews each application and uses a rubric to determine its completeness. Successful applications reach the appropriate legislative representatives for submittal to the Governor. No fee is involved with the application process.

The approach to being designated a STEM Community or STEM Region can be unique for each community. It should document ongoing efforts and plans among community stakeholders aimed at strengthening local STEM education opportunities and workforce development activities. Communities of any size are eligible to apply for the STEM Community designation. If a city or town by itself does not have the partnerships or other characteristics that the designation requires, then multiple communities can work together to apply as a STEM Region.

DOCUMENTING THE APPLICATION ELEMENTS

The application for designation as a STEM Community or STEM Region should document local needs and plans. The completed application serves as the “roadmap” to the STEM-related priorities in the community or region. As a result, no “typical” application exists. A completed application must address each of the following five (5) topics:

1. **Evidence of Community Awareness**—This section briefly summarizes the data that describes the STEM education and workforce development needs of the community or region. *Documentation in this section can include:*

   - Data about local industry needs/projections in terms of jobs
   - Data about gaps in the local STEM workforce pipeline (demand versus supply)
   - Data about local workforce development needs and plans
   - Existing STEM pathways in local education and training opportunities (such as individual career and academic plans for students)
• Examples of regular career awareness opportunities/events involving students, parents or guardians, and employers
• Support for STEM-related credentials and certifications among education providers and employers
• Support for STEM-related activities and initiatives of CareerTech student organizations, Cooperative Extension organizations, scouting organizations, and other organizations

2. Evidence of Partnerships—This section identifies existing and planned partnerships within the community (or region) that contribute to the efforts of STEM education and workforce development. *Documentation in this section can include:*

• Chamber of commerce initiatives and plans
• Education-employer partnerships (local or state businesses or industries, public schools, technology centers, higher education entities, workforce development organizations)
• Cooperative agreements
• Education or training alliances
• Work-based learning programs in STEM careers
• Industry-education advisory boards
• Participation in career academies, maker spaces, robotics competitions, coding camps, math and science camps and competitions, afterschool programs (before school, afterschool, and summer enrichment programs), National PTA’s STEM + Families initiative, and other organized STEM-related activities
• Participation/membership in national STEM organizations and initiatives
• Connections with industry advocacy groups

3. Evidence of Planning and Progress—This section re-states major outcomes involving key STEM partners (listed above), results benchmarks, and the status of progress toward each. *This section resembles a mini action plan that answers these questions:*

• Outcomes/Goals—What are the major goals of each partnership, initiative, or activity?
• Measures/Benchmarks—How will results be measured for each outcome or goal?
• Status—For each outcome or goal, is it completed, in progress, or planned?

4. Evidence of Promotion and Recognition—This section lists promotion activities and recognition events relating to the work of the STEM partnerships. *Documentation in this section can include:*

• Examples of certificates
• Examples of local media coverage
• Examples of industry recognition events and communication outlets (newsletters, websites, social media, etc.)
• Examples of promotional materials, such as the STEAM Programming Toolkit from the American Libraries Association
• Recognition events and ceremonies

5. Evidence of Sustainability—This section identifies plans or commitments to support and expand the work of the STEM partnerships. *Documentation in this section can include:*

• Examples of activity or event growth or expansion plans
• Examples of facilities growth or improvement plans relating to STEM activities
• Examples of long-term targets in community, education, and employer planning
• Examples of planned budget commitments for partnerships and activities
• Examples of teacher recruitment efforts in STEM subject areas

At the college and university levels, biopharmaceutical companies are leveraging partnerships with educational institutions to prepare students for specific careers within the industry. The Manufacturing Institute–Deloitte study recommends that, among multiple strategies to affect the skills gap, companies should “design curriculums in collaborations with technical and community colleges” and corporate executives seem to agree, with “72 percent agreeing involvement with local schools and community colleges is effective.” The study recognizes that executives “see the need to develop the talent pipeline both in their companies and communities.”

—Enhancing Today’s STEM Workforce to Ensure Tomorrow’s New Medicines: Biopharmaceutical Industry Partnerships with U.S. Colleges and Universities, TEConomy Partners, LLC and The Pharmaceutical Research and Manufacturers of America (PhRMA), June 2017

APPLICATION CHECKLIST

General Reminders

✓ Submit a MS Word document not to exceed ten (10) pages (excluding a cover sheet and letters of support).

✓ Use the Calibri or Times New Roman font and a 12-point font size.

✓ Single-space the text in each application section and double-space between sections.

✓ Number the pages in the completed application.

✓ Include the five section headings as listed:
  o Evidence of Community Awareness
  o Evidence of Partnerships
  o Evidence of Planning and Progress
  o Evidence of Promotion and Recognition
  o Evidence of Sustainability

✓ Include the documentation for each section, as described on earlier pages of this Guide.

✓ Make a copy of the completed application and letters of support for your records.

✓ Email (1) the completed application and (2) letters of support to: resourcecenter@careertech.ok.gov. In the email subject line, say “STEM Community Application.”
Application Cover Sheet—Add a cover sheet. Provide the following information on the cover sheet:

STEM COMMUNITY/STEM REGION APPLICATION
For: [CITY/REGION NAME]
Date: [MONTH, DAY, YEAR]
Submitted by: [NAME OF PRIMARY CONTACT]
Email: [EMAIL ADDRESS OF PRIMARY CONTACT]
Phone: [PHONE NUMBER OF PRIMARY CONTACT]
Address: [NON-RESIDENTIAL MAILING ADDRESS OF PRIMARY CONTACT]

TIP: The primary contact for an application can be a local employer, an education leader, a civic leader, or other responsible individual. The application review committee may need to contact this individual with any questions about the application.

Letters of Support—Attach multiple letters of support to the email with your completed application. There is no required number of letters of support. Each letter should come from a representative of a partnering organization. Examples could include: mayor, school district superintendent, school district board president or chairperson, university administrator, employer, chamber of commerce director, technology center superintendent, advisory council president, etc.

NOTE: Each major partner must provide a letter of support.

TIP: Scan each signed letter in PDF format (many photocopiers do this) and attach the PDF files to the email with the MS Word application document.
NOTES ON THE APPLICATION REVIEW PROCESS

A state-level committee of STEM education and workforce development advocates reviews each application and uses a rubric to determine its completeness. Members of the committee will include representatives from industry, higher education, K-12 education, the Oklahoma State Department of Education, and the Oklahoma Department of Career and Technology Education. The rubric helps to ensure that each application receives a thorough and consistent review. Successful applications reach the appropriate legislative representatives for submittal to the Governor. No fee is involved with the application process.

During the review process, members of the review committee may decide to contact the STEM Community/STEM Region primary contact person (identified on the application cover sheet) about any questions.

The listed primary contact person will receive feedback via email about the status of the application submitted.

Communication about a final STEM Community or STEM Region designation is the responsibility of the appropriate legislative representatives and/or the Office of the Governor.

QUESTIONS?

Contact the Resource Center for CareerTech Advancement:
resourcecenter@careertech.ok.gov
STEM COMMUNITY APPLICATION RUBRIC

Applicant: ________________________________________________________________________________________

Reviewer: _____________________________________________________________   Date: _____________________

1. Multiple letters of support must accompany the completed application. Each major partner must provide a letter. Incomplete applications will not be reviewed.

2. Applicants must receive an average total score of 37.5 points (75%) to qualify for the STEM Community designation. No applicant may receive a STEM Community designation if “Work Needed” applies to any of the criteria below.

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>EXCEPTIONAL</th>
<th>ACCEPTABLE</th>
<th>WORK NEEDED</th>
<th>SCORE &amp; COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Evidence of Community Awareness</td>
<td>10</td>
<td>8</td>
<td>5 - 0</td>
<td>Application lacks data about community or region STEM education and workforce development needs.</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>7</td>
<td></td>
<td>Data provided has a narrow focus and not a community-wide or regional focus.</td>
</tr>
<tr>
<td>2. Evidence of Partnerships</td>
<td>Application identifies multiple existing and planned partnerships. STEM-focused purpose of each partnership is stated.</td>
<td>Application identifies at least one existing or planned partnership. Incomplete description of STEM-focused purpose of each partnership is provided.</td>
<td>Application identifies no existing or planned partnerships.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Application provides data from multiple sources detailing both STEM education and workforce development needs. Data reflects a community-wide or regional focus.</td>
<td>Application provides limited data about community or region needs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Evidence of Planning and Progress</td>
<td>Application states major outcomes of identified partners. Benchmarks and status of each major outcome are identified.</td>
<td>Application states major outcomes but offers incomplete progress benchmarks for each.</td>
<td>Application includes no major outcomes, benchmarks, or progress indicators.</td>
<td></td>
</tr>
<tr>
<td>4. Evidence of Promotion and Recognition</td>
<td>Application documents multiple promotion activities and recognition events relating to the identified STEM partnerships. Activities and events span the calendar year and incorporate multiple media.</td>
<td>Application documents promotion and recognition activities of some partnerships, but not all. Activities and events are concentrated within a narrow period during the calendar year. Use of media is limited.</td>
<td>Application lacks evidence of promotion activities or recognition events.</td>
<td></td>
</tr>
<tr>
<td>5. Evidence of Sustainability</td>
<td>Application documents detailed plans or commitments to support or expand the work of identified partnerships in terms of personnel, time, funding, and other resources. Documentation includes long-term targets and related expenditure commitments.</td>
<td>Application documents short-term commitments to identified partnerships, commitments to some but not all partnerships, or commitments of some but not all resources.</td>
<td>Application lacks evidence of long-term commitments to identified partnerships.</td>
<td></td>
</tr>
</tbody>
</table>

TOTAL SCORE 50