

**US Department of Education**  
**Small Business Innovation Research Program**  
**Annual E. O. 13329 Report (Encouraging Innovation In Manufacturing)**  
**Response to Question 17 in the FY2015 Annual Report to SBA**

The U.S. Department of Education (ED) operates its SBIR program at the Institute of Education Sciences (IES). The ED SBIR Program uses a contracts mechanism to provide up to \$1,050,000 in funding (\$150,000 for Phase I; \$900,000 for Phase II) to small business firms and partners for the research and development (R&D) of commercially viable education technology products for use by students and teachers in education and in special education settings.

Broadly speaking, ED's SBIR program is designed to support and encourage R&D in manufacturing through "environment or societal, and systems level technologies" (as defined by SBA, 2005). These projects encompass a range of manufacturing topics, such as artificial intelligence, information technology devices, software, systems, devices, and product design.

In 2015, attention was paid in identifying projects that were manufacturing-related. Of the 21 contracts awarded, many are conducting R&D of software and hardware components, which if demonstrated to be a feasible could potentially be manufactured and commercialized on a broader scale during Phase III of the SBIR program.

Examples of ED SBIR Manufacturing-Related Projects:

With a 2015 Phase II award, Schell Games is developing Happy Atoms, a set of physical models paired with an iPad app to cover high school chemistry topics in atomic modeling. The modeling set (which is manufactured to bring the product to market) includes individual plastic balls representing the elements of the periodic table. Students use the iPad app to take a picture of models they create. Using computer-generated algorithms, the app then identifies the model and generates information about its physical and chemical properties and uses. The app also informs students if a model that is created does not exist. Happy Atoms replaces or supplement lesson plans to enhance chemistry teaching. The app includes teacher resources suggesting how to incorporate games and activities to reinforce lesson plans and learning. For more information, see:

<http://ies.ed.gov/funding/grantsearch/details.asp?ID=1598>

With a 2011 Fast-Track award, Diversified Construction Services developed the STEM Solar Explorations platform. This platform is a multidisciplinary solar energy field laboratory to supplement middle school standards. The hardware component (which is manufactured to bring the product to market) includes physical solar equipment to capture real-time data to be wirelessly transmitted to classrooms. The web-based component hosts the STEM curriculum focusing on energy concepts, a dashboard to present data, and materials to facilitate teacher training and implementation. The platform allows students to apply knowledge to daily changes in the position of the sun and to solar energy production, and to conduct hands-on investigations to address curricular content. For more information see here: <http://ies.ed.gov/funding/grantsearch/details.asp?ID=1216>

In FY2015, ED SBIR implemented the following procedures to give priority to manufacturing related projects:

- 1) Placed a notice in FY2015 SBIR program solicitations that details Executive Order 13329;
- 2) Placed a forced-choice question in the 2015 SBIR program solicitations for applicants to indicate (yes or no) whether their proposed project is “manufacturing-related;”
- 3) Placed language in the solicitation advising potential applicants that ED SBIR offices will give priority to manufacturing-related projects in the event of a tie in the award selection process. (Note: This “tie-breaker” specification allows the ED SBIR program to apply an additional preference without compromising the quality standards or established criteria of the program).

In FY2015, ED SBIR used the following procedures and mechanisms to promote and support Executive Order 13329:

- 1) Maintained the notice on the ED SBIR website that describes Executive Order 13329, provides a definition of manufacturing-related projects in education, and provides a web-link to the Executive Order;
- 2) Continued tracking and reporting success stories demonstrating the impact of the SBIR program on manufacturing;
- 3) Placed a notice in FY2015 SBIR program solicitations on manufacturing;
- 4) ED SBIR will continue to discuss how to best implement Executive Order 13329 related to manufacturing.