New Mexico State University

ARROWHEAD CENTER

LEADING ECONOMIC DEVELOPMENT FOR NEW MEXICO STATE UNIVERSITY

Identification of Key Barriers in Workforce Development

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NM STATE UNIVERSITY

Live, Learn and Thrive

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1.0 INTRODUCTION

This report documents the identification of key barriers in the development of an adequate national security workforce as part of the National Security Preparedness Project (NSPP), being performed under a Department of Energy (DOE)/National Nuclear Security Administration (NNSA) grant. This report is due March 31, 2008, as performance measure 3.3.1 (Grant No: DE-FG52-07NA28084, Arrowhead Center proposal, Page 17).

Many barriers exist that prevent the development of an adequate number of properly trained national security personnel. Some barriers can be eliminated in a short-term manner, whereas others will involve a long-term strategy that takes into account public policy. A portion of the workforce that is retiring is taking legacy knowledge with them that will be difficult, if not impossible, to replace.

2.0 IDENTIFICATION OF KEY BARRIERS

2.1 EDUCATION

Continuous and rapidly changing technological innovations often require new and advanced technological skill sets. By the time a workforce is trained in a new technological innovation that technology has already changed making it difficult for training and education programs to keep up. This creates a shortfall in the workforce that affects both public and private sector. It is a vicious cycle that perpetuates the shortage of a properly trained and skilled workforce. When properly trained and skilled employees are hired, it is important to provide continuous skill improvements and training to ensure they remain current in their technological knowledge and skills.

To compound the situation, often a disconnect between educators and industry exists. Educators are not necessarily preparing students for real-world employment possibilities in either the public or private sectors. Add to that a shortage of qualified educators in key academic departments and the shortage of a skilled workforce is further exacerbated.

Student interest in a number of critically important fields and specialties such as physics, chemistry, and engineering has been in long-term decline. This can be attributed to several factors such as poor educational STEM (science, technology, engineering, and math) preparation in primary, middle, and high schools, as well as a suppression of inquiry and imagination in middle and high schools. Poor educator preparation in these fields can be manifested because of no real-world experience and a lack of accountability for instructors and institutions.

The lack of involvement by parents and communities also contributes to a lack of interest in these fields and a misunderstanding of current and future career paths. Therefore, students are not properly informed by educators of the potential in these fields. The most notable factor is the lack of importance of science and technology in the national conscience, and the perception that true expertise in these fields is not currently valued in society.

Often secondary and post-secondary students do not realize the immense opportunities available in the science and engineering fields, and many do not enter these fields as a

result. Students often lack mentors or role models in the fields of science and engineering. When added to the fact that students live in a society in which everything is available immediately, numerous years of educational preparation for employment in the national security fields is not attractive. Further, the prohibitive cost of post-secondary education is a major determining factor.

Current NNSA employees with an associate's degree come with a special set of circumstances. The pay scale is often lower, whereas the employment positions typically are located in high-cost-of-living areas. These employees are often less mobile. Relocation packages are not always generous or comprehensive enough to be attractive to this level of employee. It is imperative that continuing education be stressed with this level of employee so they will be current in their skills and remain as viable employees.

Job forecasting for national security personnel is not used in an adequate manner. The current system for providing qualified employees to the science and technology community does not keep up with the requirements of the industry. There is very little effort to create true partnerships between government, industry, and academia. Oftentimes, resources are not properly leveraged.

There is a disadvantage created by not utilizing the huge non-traditional talent pool available. This pool of potential employees is often disconnected from the educational system and not utilized by current government and industry leaders. There is a definite need for employees with an associate's degree. However, there is no real outreach or marketing program to attract non-traditional talent pools to provide these potential employees.

2.2 SECURITY CLEARANCE

The necessity of a security clearance by employees is often a barrier to employment with NNSA, and potential employees and students often are not informed of this requirement. Students may pursue an educational degree with an eye toward working for NNSA, only to find out after graduation they are not eligible for a security clearance, and thus not eligible for employment with NNSA. The generation currently in secondary and post-secondary education is experiencing higher incidence of drug use or drinking or felony convictions that prohibit them from qualifying for a security clearance. Drug use can be over come; however, the latter two are permanent conditions that result in a permanent inability to obtain a security clearance.

A long-standing problem with a myriad of causes and consequences exists in the actual security clearance process. Recent legislation addressed a number of the issues that could lead to some improvements.[1] However, critical improvements are still needed in the areas of investigation and adjudication backlog, reciprocity and portability, standardized data, and process. This is coupled with the long-held government belief that there are too many security clearances at this time, the over-classification of positions, documents and information, and current technological barriers.

An entire cadre of fully trained employees that could contribute to the national security workforce currently is not able to qualify for a security clearance. As a result, there is strong competition for employees with a security clearance that are skilled and properly trained. This leads to a work environment that is often intense and employees that suffer from burnout and are difficult to retain.

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[1] United States Congress (n.d.). 2004 Defense Authorization and National Intelligence Reform Acts. Retrieved December 4, 2007, at http://www.cbo.gov/ftpdoc.cfm?index=5841&type=0&sequence=0

2.3 DIVERSITY

An inclusive and diverse workforce is difficult to obtain. There is an under-representation of minorities and women employees at the NNSA. This is compounded by the fact that there is a lack of mentoring and role models and a high level of peer pressure. Additionally, there is often a lack of clear articulation of degrees and time horizons, and the view that graduate degrees only translate into teaching positions.

2.4 JOB MARKET

As a result of an inadequate level of a skilled national security workforce, strong competition exists for those that are properly trained. The widespread use of technology enables potential employers to have constant contact with current NNSA employees. The lure of the private sector, which often yields more generous salaries and benefits, is very appealing.

2.5 RECRUITMENT

Many reasons exist why secondary and post-secondary students don't think of career opportunities in the national security fields. Especially with female and minority students, an image problem exists with the fields of engineering and science. Many students are unaware of the wide variety of opportunities available. Extra curricular programs involving math, engineering, and the sciences are rare. These types of programs could serve as recruitment tools for educators and provide opportunities to expose students to possible careers at the NNSA.

2.6 RETENTION

A high turnover rate among young professionals occurs at NNSA. This happens between seven and eight years of experience and has been linked to a lack of challenging work, layoffs, base closures, completion of educational commitments, completion of military commitments, lucrative opportunities in private business and industry, and lack of incentives to remain at NNSA.[2]

3.0 CONCLUSION

The majority of the barriers to the development of an adequate and properly trained workforce rest with the educational system. These are not barriers that have developed in the short-term; these barriers have been in existence for many years. This report makes it clear that educational institutions cannot continue to educate students in a "business as usual" manner. Much is to be gained by everyone when educators — in partnership with NNSA — work to inform students, especially female and under-represented students, of potential opportunities in science and engineering and provide the students with a technology-mediated, project-based educational effort.

There are many barriers that affect the development of a national security workforce. There also are many solutions that will lead to tearing down the barriers.

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[2] National Security Workforce: Challenges and Solutions Workshop (NDIA, AIA in collaboration with DDR&E) (n.d.). Retrieved December 5, 2007, from http://www.ndia.org/Content/NavigationMenu/Meetings_and_Events/Past_Events/534E_National_Security_Workforce.htm