

## Issue

Workforce availability has become a significant problem for the domestic mining industry. Without an adequate workforce, the basic building blocks of the economy - energy and minerals - cannot be domestically produced. The new global emerging middle class will continue to create competition for mineral resources that will likely increase demand well into the future. However, it is unlikely that there will be sufficient skilled mine labor to satisfy this demand over the next 20 years.

Energy Information Administration (EIA) projections have the mining industry growing by about 50,000 workers by 2019, however the industry will need 78,000 additional replacement workers due to retirement, for a total of 128,000 new positions by 2019. By 2029, more than half the current workforce will be retired and replaced (~221,000 workers) creating a skill and knowledge gap the industry may be challenged to accommodate. Finding and retaining skilled labor is likely to be a lasting problem for mining companies.

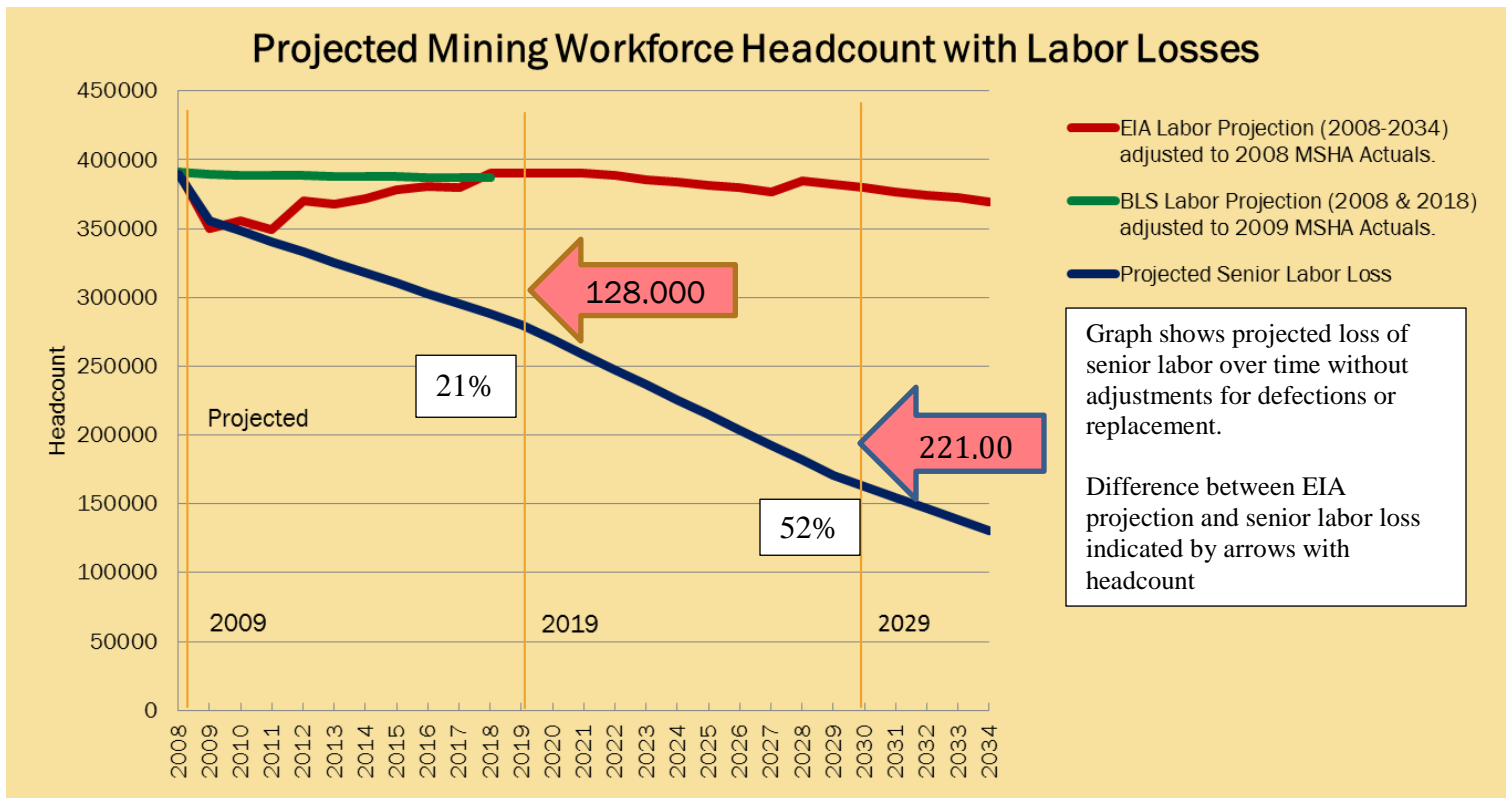


Figure 1. EIA projections for labor needs for metals, nonmetals and coal through 2034. Projection based on BLS data modeled by EIA 2012

## Background

Mining is a global business. The United States mining workforce is subject to many of the tidal forces that affect the industry outside the borders of the U.S. For instance, mine labor shortages in Australia can affect the domestic mine workforce if wages and other benefits in Australia and elsewhere exceed those in the U.S. Conversely, gaps in the U.S. mine workforce market may create a draw for foreign labor.

Mining will be one of a handful of sectors that will add jobs at a fairly constant rate (11,000 to 13,000 per year) over the next 20 years driven by retirement of the current workforce and projected increase in demand for resource production. These will tend to be well-paying, relatively long-term jobs. On the downside, the U.S. may not presently have the skilled labor or educational base to meet the current resource demand, and the skilled labor that does exist may well be lured to places promising higher wages (Australia, Canada, etc.).

There has been a steady decline in the number of mining and mineral engineering programs at U.S. colleges and universities from a high of 25 in 1982 to 14 in 2014. There has also been a corresponding decline in U.S. faculty (~120 in 1984 to ~70 in 2014) in these programs as well as a shortage of qualified candidates to fill these faculty vacancies. Federal funding of studies and research in mining has been drastically reduced and the dissolution of the former federal Bureau of Mines removed all funding for mining schools under the Mining and Mineral Resource Institutes Act of 1984. While there has been a noticeable increase in the number of graduates from mining and mineral engineering programs since 2004, it is doubtful that U.S. schools, as they are currently staffed, will be able to keep up as demand for qualified graduates has outstripped supply (Fig. 2). Unless this is corrected, the nation risks losing its capacity to provide new science and engineering professionals for the mining workforce.

### Mining Engineers - BS/MS Graduate Count from Accredited U.S. Programs (1974-2013)

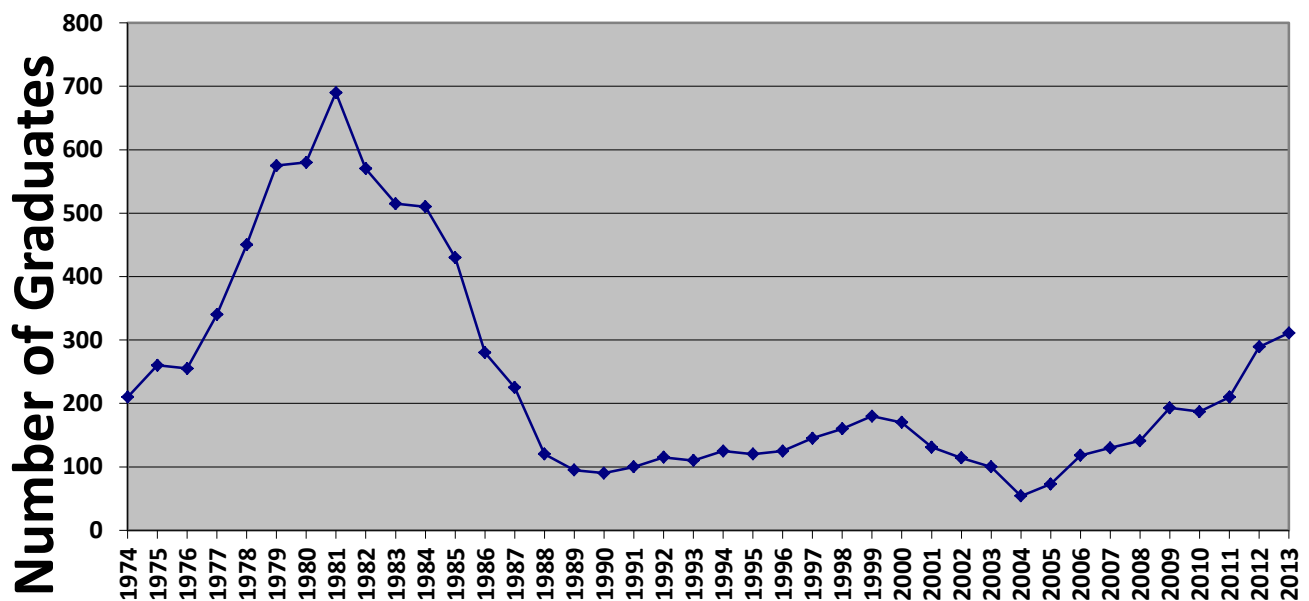


Figure 2. *SME Guide to Mineral and Material Schools*, 2013

## SME Statement of Technical Position

- The mining industry pays some of the highest wages in the U.S., according to the Bureau of Labor Statistics.
- Mining labor constitutes less than one quarter of one percent of the available U.S. workforce; yet this small workforce is the starting point for a value chain that consistently contributes 13 to 14 percent of the U.S. economy.
- Based on BLS data modeled by EIA, the U.S. mining industry is projected to grow over at least the next ten years. In addition, industry retirements will create even more significant and immediate labor needs.
- A number of health and safety issues will likely result from this situation as younger, inexperienced employees fill open positions.
- In order to fill these jobs, the mining industry is often forced to turn to foreign schools or workers to fill the vacancies with qualified employees.
- The U.S. has an obligation to preserve and foster the human capital necessary for national economic, energy and minerals security.
- Federal support for U.S. mining schools is necessary to maintain qualified faculty and an educational pipeline to supply workers to meet a growing global minerals demand.

## Possible Legislative Remedies

### S. 1600 Critical Minerals Policy Act of 2013

This legislation directs the Secretary of Labor to assess the domestic availability of technically trained personnel necessary for critical mineral assessment, production, manufacturing, recycling, analysis and forecasting, and to perform an analysis of skills deemed in the shortest supply and projected to be in short supply in the future. Further, it directs the Secretary and the National Science Foundation to conduct a joint competitive four-year grant program for institutions of higher education to implement integrated critical mineral education, training and workforce development programs.

### The Energy and Mineral Schools Reinvestment Act (EMSRA)

EMSRA would provide funds for existing programs at accredited petroleum and mining schools, applied geology and geophysics programs, and to individuals for degrees in petroleum and mining engineering, petroleum/mining geology and geophysics and mineral economics. All schools accepting the funds have a duty to increase the number of undergraduates enrolled in the supported programs and to produce more engineers, geologists and geophysicists for the petroleum and mining industries. All students receiving a scholarship have a duty to complete a degree program in energy and mineral resource geosciences or engineering.

#### References:

Society for Mining, Metallurgy & Exploration Inc., 2012, *Emerging Workforce Trends in the U.S. Mining Industry*, 40 pp.

National Academy of Sciences, 2013, *Emerging Workforce Trends in the U.S. Energy and Mining Industries*, 390 pp.

U.S. Department of Labor, Bureau of Labor Statistics, 2013, *Civilian labor force level, labor force statistics from the current population survey*.